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Facing the Future, Western Washington University

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Exploring Global Issues: 
Social, Economic, and Environmental Interconnections

Teacher’s Guide

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Facing the Future
EXPLORING GLOBAL ISSUES
Social, Economic, and Environmental Interconnections
Teacher’s Guide
Second Edition

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About Facing the Future
Facing the Future is a program of Western Washington University. Facing the Future’s mission is to create tools for educators that equip and motivate students to develop critical thinking skills, build global awareness, and engage in positive solutions for a sustainable future.

Facing the Future develops and delivers standards-based hands-on lessons, student texts, curriculum units, and professional development opportunities for educators. Facing the Future curriculum is in use in all 50 U.S. states and over 140 countries by teachers and students in grades K-12, in post-secondary education, and across multiple subject areas. Facing the Future reaches over 1.5 million students through its programming.

For more information, visit www.facingthefuture.org.

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A Note to Teachers

Some links to external sites have changed or become inactive as time passed since the initial publishing of this material in 2013. These will not affect the overall effectiveness of the material. However, we apologize for any inconvenience this causes. When a new edition of the product is released these links will be updated.

Links that have become inactive or URL moved locations will be indicated by the symbol:

Thank you for your understanding and for using Facing the Future material.
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Introduction

Why teach global issues and sustainability?

In today’s interconnected world, students are charged with the task of understanding events in deeply complex ways. Learning about events happening in the world without looking at their root causes and considering multiple perspectives can leave students unprepared to understand global complexities. On the other hand, making connections among events and understanding patterns can offer rich insight into global issues and can teach students the skills needed to become citizens who make thoughtful and informed decisions.

In addition, as they become voting and working adults, students will encounter opportunities to improve conditions in their neighborhood, community, nation, and world. Cultivating the ability to consider today’s issues in the context of sustainability will help enable students to be part of lasting solutions. Classroom learning can prepare young people to explore the roots of global issues and devise sustainable solutions.

Imagine students are given the task to create an energy policy that addresses sustainable economic, environmental, and social practices. (Some day, one of your students might face just such a task in the real world.) To accomplish this, they would need to make connections between social studies and science, analyze historic energy use alongside modern trends, and think critically about the long-term consequences and benefits of different types of energy. In today’s world, these are essential skills. In their lives as workers, voters, neighbors, and parents, your students will need to be able to analyze, synthesize, and evaluate key information. It is never too early to start building these skills.

The National Council for the Social Studies states that the primary goal of education is to “prepare students to be engaged and effective citizens.”

Why use Exploring Global Issues?

Global Competence

The Asia Society, a leader in promoting global education, defines global competence as “the capacity and disposition to understand and act on issues of global significance.” Today’s most pervasive problems, such as poverty and conflict, affect people across the globe and are deeply interconnected with other issues. Understanding a problem in a single locale does not always tell the full story. A broader perspective can be essential to devise solutions that sustain diverse economies, societies, and environments.

Global competence can help students navigate college, careers, and the world. Exploring Global Issues (EGI) was created with the purpose of equipping students with the skills necessary to cultivate that global competence. The 24-chapter
textbook provides students the opportunity to learn about a number of different global issues and to understand how these issues connect to the long-term sustainability of environmental, social, and economic systems. The accompanying teacher’s guide provides teachers with a flexible support structure to create learning experiences where students can explore multiple perspectives, think critically, and enhance their understanding of these issues.

**Sustainability as a Lens**
To effectively address today’s most pressing issues, we must take sustainability into account. Sustainability—the notion that today’s resources should be available for both current and future generations—considers the well-being of people and the natural world. A solution to any given global issue should not worsen conditions for humans or the environment; doing so would only lead to additional problems. A sustainable solution can improve the well-being of a community today and long into the future.

Consider the example of a community facing malnutrition. One possible solution to address this problem is to teach community members to cultivate nutritious crops; doing so in an ecologically devastating way, however, is only a short-term fix. If new agricultural practices lead to soil depletion within a few years, the community will then face the problems of malnutrition and ecological degradation. A more sustainable approach might involve nutritious food crops well suited for the local environment and cultivated in ways that ensure long-term ecological productivity.

*Exploring Global Issues* addresses sustainable solutions within every chapter and throughout lesson activities. Students deepen their understanding of issues and use sustainability as a framework when considering long-term solutions.

**College and Career Readiness**
*Exploring Global Issues* also works to provide students the chance to pursue learning through the following ways: learning core academic content, critically thinking, and participating in authentic tasks.

### 1. Learning Core Academic Content
The content in *Exploring Global Issues* aligns with social studies and science standards at both national and state levels. *EGI* also aligns to 21st century skills, Common Core State standards, and Education for Sustainability standards.

In each chapter of the textbook, students are introduced to a global sustainability issue, including background information on the issue, ways in which it impacts the world today, and solutions being employed to address the problem in sustainable ways. Case studies, inspirational youth stories, and career profiles all provide real-world connections when learning about these issues.

By using resources in the teacher’s guide, educators have the opportunity to assess student knowledge in both formative and summative ways. All summative assessments are based on Norman Webb’s depths of knowledge. Depths of knowledge provide a way of understanding rigor in assessments. Students’ knowledge is measured at levels 1 through 3 for the end-of-chapter assessments and at level 4 for the performance-based assessments.

**Assessments in **EGI**: Multiple Ways to Measure Student Knowledge**

#### Formative Assessments
- Chapter discussion questions
- Collaborative hands-on activities
- Think-pair-shares
- Debates
- Peer and self assessments

#### Summative Assessments
- End of chapter tests with multiple choice and short answer questions
- Performance-based assessments with rubrics

### 2. Critically Thinking
The ability to think critically and solve complex problems is one of several factors that contribute to higher academic performance. Memorizing and
understanding information is one thing, but being able to make connections among disparate ideas, to formulate one’s own ideas about a subject, and to extrapolate ideas to novel situations indicates a much higher level of thinking. Critical thinkers do the following:

- Assess statements and arguments
- Seek new solutions
- Adjust opinions when new facts are found
- Look for evidence to support assumptions and beliefs
- Reject information that is incorrect or irrelevant

Throughout EGI, students have countless opportunities to think critically about what they learn. Within each chapter of the textbook, the Point/Counterpoint section provides students the opportunity to see two perspectives of real-world debates. These differing perspectives allow students to explore the complexity of the issue and push them to carefully weigh their own opinions. To take a side on an issue, students must assess the statements and arguments provided. For example, in the chapter on peace and conflict, students are asked to consider whether the international community should get involved in conflicts within a country’s own borders. This is not an easy question, as evidenced by the ongoing worldwide debate around the issue.

Guiding questions included at the beginning of each chapter focus students’ attention on the interplay of local and global manifestations of complex issues. These questions do not have prescribed answers. Rather, they are important because they allow students to engage in conversations and weigh evidence about how to best address issues. They also provide students a jumping-off point to delve into questions that require deeper thinking. Consider a sampling of these questions asked in different chapters:

- How can our individual and collective choices impact Earth’s climate, in both positive and negative ways?
- How can sustainable design revitalize a community?
- How can economic and human development help to alleviate poverty?

In addition, this curriculum tasks students with understanding how global issues connect to the three pillars of sustainability: society, environment, and economy. Such higher level systems thinking helps students understand how each issue impacts the world in multi-faceted ways and how solutions that emphasize sustainability can improve the well-being of people and the environment.

The accompanying teacher’s guide contains lessons for each chapter that continue to support critical thinking. The following are a few examples of activities in the teacher’s guide that help students develop higher-level thinking skills:

- In chapter 5, students assess indoor air quality within their schools
- In chapter 9, students compare trends in climate with potential causes over the last few centuries
- In chapter 16, students research and analyze the impacts of U.S. civil rights court cases
- In chapter 19, students analyze historic economic policies in order to understand their costs and benefits

3. Participating in Authentic Tasks

Through authentic learning activities, teachers provide students the chance to participate in real-world tasks. By providing students tasks that are authentic—that is, tasks that might be asked of a person working within a given field—they can engage in critical questions similar to those faced every day by citizens, governments, and businesses.
This learning bypasses superficial coverage of material and allows students to engage in personally meaningful and useful knowledge.\(^8\)

The teacher’s guide includes a variety of options for providing students with authentic tasks. Every chapter includes both service learning and project based learning ideas relevant to the chapter topic. Both service learning and project based learning provide students opportunities to participate in meaningful problem solving and decision making. By allowing students the chance to get involved, these forms of learning can help students connect to an issue directly and increase students’ personal engagement in improving conditions locally or globally.

The classroom becomes a source of inspiration as students come across real people taking strategic and sustainable actions to address problems in the world. Throughout the text, students learn about individuals such as Marisol Becerra, a Chicago teenager who connected the air pollution in her neighborhood to high rates of illness among community members and developed a campaign to educate people about this issue. They learn about international initiatives, such as the United Nations’ Millennium Development Goals, developed to monitor progress on the living conditions of people around the world. They also learn about ways that businesses, governments, community organizations, and individuals are working together on some of these issues. Armed with knowledge of how others have made a positive impact, students are then called on to attempt their own problem solving, to work on investigations, and to develop multiple perspectives. In this way, learning not only transforms students, but also the communities in which they live.\(^9\)

### Conclusion

*Exploring Global Issues* has been designed to build high school students’ foundational knowledge of global issues and sustainability. Here is a text that can engage students in the classroom, help students to excel academically, and provide students an opportunity to develop as empowered global citizens who can make a real difference in both local and global communities. Thank you for using these resources as a foundation to increase your students’ understanding of the world around them and to inspire them to improve our local and global communities.

6. Mansilla and Jackson.
Performance-based Assessments
The performance-based assessments in Exploring Global Issues are designed to assess student learning of content and skills within specific units of the textbook. The assessments are based on authentic real-life experiences that are intended to motivate students into being active participants in the learning process. The performance-based assessments are designed to be conducted after your students have completed each unit and are intended for both summative assessment purposes at the completion of the unit and interim assessment purposes within the course. You can familiarize yourself with the performance-based assessments prior to teaching the units so that you will be in a better position to administer the assessments once the instruction in the units is completed. The rubrics assess 21st Century Skills and Common Core Standards. You can also assess content knowledge through National Council for Social Studies standards:

1. Culture
2. Time, Continuity, and Change
3. People, Places, and Environments
4. Individual Development and Identity
5. Individuals, Groups, and Institutions
6. Power, Authority, and Governance
7. Production, Distribution, and Consumption
8. Science, Technology, and Society
9. Global Connections
10. Civic Ideals and Practices

This guide provides instructions for how to administer the performance-based assessments. There are 4 performance-based assessments that correspond to the following units:

• Essential Human Needs
• Our Collective Impact
• Human Health, Security, and Well-being
• The Global Economy

For each performance-based assessment, this guide includes:

• teacher instructions for administering the performance-based assessment
• driving question
• student handouts which include descriptions of the 3 products students will produce during each performance-based assessment
• Student Reflection Sheet
• Performance-based Assessment Holistic Scoring Rubric (the same rubric is used for each performance-based assessment)
Explanation of Performance-based Assessment Holistic Scoring Rubric

**Overall Score:** The overall score for the performance-based assessment is a holistic determination rather than an accumulation of points from each section. You should use the ratings given in the individual skill sections to determine the overall score that you believe is appropriate for the student’s work.

**Performance-level Descriptors:**

- **Exceeds Expectations (4):** The student has completed all of the required performance-based assessment products and the Student Reflection Sheet for scoring. The student demonstrates clear understanding of the major ideas, concepts, and skills of the rubric category. There are no gaps in understanding in the student’s knowledge of the unit content. No remediation of instruction is required.

- **Meets Expectations (3):** The student has completed all of the required performance-based assessment products and the Student Reflection Sheet for scoring. The student demonstrates general understanding of the major ideas, concepts, and skills of the rubric category. There are minor gaps in understanding in the student’s knowledge of the unit content. Minimal remediation of instruction may be required to improve student understanding and performance.

- **Performs Below Expectations (2):** The student has completed all of the required performance-based assessment products and the Student Reflection Sheet for scoring. The student demonstrates limited understanding of the major ideas, concepts, and skills of the rubric category. There are substantial gaps in understanding in the student’s knowledge of the unit content. Remediation of instruction is required to improve student understanding and performance.

- ** Performs Well Below Expectations (1):** The student has completed all of the required performance-based assessment products and the Student Reflection Sheet for scoring. The student demonstrates minimal or no understanding of the major ideas, concepts, and skills of the rubric category. There are complete gaps in understanding in the student’s knowledge of the unit content. Significant remediation of instruction is required to improve student understanding and performance.

- **There Is Insufficient Evidence (0):** The student has not completed all of the components of the unit performance-based assessment (i.e., performance-based assessment products and Student Reflection Sheet). Consequently, the work cannot be properly scored. The student must complete the performance-based assessment before the work can be scored. This score differs from **Performs Well Below Expectations (1).** You may choose to score the work at a later date, whether the student has submitted all of the work or not. If, upon the second submission, the student has not completed all of the required work, the highest score possible is **Meets Expectations (3).**
Global Issues

CHAPTER BIG IDEAS

- Global issues affect large numbers of people, span geographic and political boundaries, and persist over time.
- Understanding interconnections between global issues can help when considering solutions to these issues.
Guiding Questions
- How do we understand challenges facing the world today?
- How can youth be involved in creating solutions to global issues?

Key Concepts
- global issue
- systems thinking
- worldview
- media literacy
- global awareness
- personal solution
- structural solution

Supporting Vocabulary
- culture
- media
- technology
- economic globalization
- iceberg model
- leapfrogging

Summative Assessment
Chapter Test

Connections
World History connections:
Influence of technological advances; human migration; global issues relating to human interactions

Geography connections:
Impacts of global issues throughout the world

Economic connections:
Economic globalization; decreasing price of technology over time; North American Free Trade Agreement (NAFTA); media advertising

Civics connections:
Personal and structural solutions to global issues
### Activities in Teacher’s Guide: Suggested Sequence

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Discussion Questions from the Chapter Reading

**Introduction to Global Issues**
1. How does entertainment influence the way we think about the world around us?
2. What are different perspectives on globalization?
3. Use the iceberg model to analyze why there is a lack of educational opportunities in Sudan. What are possible root causes or underlying structures that result in obstacles to education?
4. What is the connection between sustainability and global issues?

**Global Issues Today**
5. How can understanding someone else’s worldview increase your global awareness?
6. Explain why media literacy is important when learning about local and global issues.

**Pathways to Progress: Global Issues**
7. Explain how Anne Mahlum was able to address poverty at a personal level.
8. Explain how the Urban Youth Collaborative was able to address education at a structural level.

**What You Can Do**
9. What is a global issue you are concerned about? What’s a personal solution you can take to address this global issue? What’s a structural solution you can take to address this global issue?
Chapter Assessment: Global Issues, page 1

Recall

Match the following words on the left with their definitions on the right.

1. Worldview  
   - events that happen over a given time that impact many people and places across boundaries

2. Global issues  
   - a comprehensive approach to problem-solving that considers how things are connected

3. Media literacy  
   - a set of assumptions, perspectives, and beliefs held by individuals and cultures through which we make sense of the world

4. Systems thinking  
   - an ability to access and evaluate media messages of all kinds in order to understand how these messages create meaning and what impact they have on society

Reasoning/Explanation

Complete the following multiple choice questions by choosing one correct answer.

5. Which example below best explains how water scarcity within a given country could transform from a national issue to a global issue?
   a. Children would have to walk miles to gather water instead of attending school.
   b. Conflicts between local villages will develop over who should have access to a well.
   c. Many people would become sick because they are using unclean water for cooking and drinking.
   d. A civil war would increase the number of people migrating as refugees move to neighboring countries.

6. Which of the following best demonstrates a structural solution to poverty?
   a. helping feed the homeless at a local shelter
   b. donating money to an organization that works on poverty issues in India
   c. creating a policy that provides additional social services to the poor
   d. educating a friend about the global impacts of poverty

7. Which of the following best demonstrates a question you could ask to determine possible bias when reading a newspaper article?
   a. When was this article written?
   b. Whose story is not told in this article?
   c. What’s the main idea of this article?
   d. What language is this article written in?
Chapter Assessment: Global Issues,  page 2

8. Which of the following is an example of a personal solution to climate change?
   a. riding a bike instead of driving to reduce greenhouse gas emissions
   b. creating a climate change program across the country to educate high school students
   c. developing an international policy to address climate change
   d. using a cap and trade system to regulate pollution released by businesses

9. Which statement best demonstrates how two cultures might clash on worldviews?
   a. One culture believes men should only receive an education while the other culture believes both genders should receive an education.
   b. One culture believes elementary school should include grades K–6 while the other culture believes elementary school should include grades K–5.
   c. One culture believes homework should be done in school and the other culture believes homework should be done out of school.
   d. One culture believes children should go to school at 7 a.m. and the other culture believes children should go to school at 9 a.m.

10. A neighborhood landfill has become full. Which question below best demonstrates a systems thinking approach for determining what to do next?
    a. Where can we put the new landfill?
    b. What city can take our additional garbage?
    c. Is there a way to reduce the amount of garbage produced?
    d. How many more landfills will we need in the next 10 years?

11. Review the iceberg model and answer the following question below:

   Based on the iceberg model, which example below would best explain a root cause for why these children are not in school?
   a. The children have teachers who are not very committed to teaching.
   b. A natural disaster has just devastated the area where these children live.
   c. A decade long war has been going on within the country.
   d. Teachers have joined a union and have gone on strike in the past week.

   Tip of Iceberg (single event):
   A number of children in Sudan are not in school.

   Below Water Line (pattern):
   These children have not been attending school for a number of years.

   At Base (root causes):
12. Which example below illustrates the idea of leapfrogging?
   a. A country jumps over laws in order to pay people less than a minimum wage.
   b. A country bypasses specific infrastructure, but can still provide modern technology for citizens.
   c. A country avoids international news coverage of domestic events in order to maintain privacy.
   d. A country sidesteps legal restrictions on importing specific kinds of produce.

13. Which explanation below best illustrates why the Campaign to Ban Landmines was so successful?
   a. The campaign was able to create public policies related to banning landmines in many countries.
   b. The campaign used the Internet to mobilize over 1,000 groups to educate people around the world about landmines.
   c. The campaign utilized the help of famous musicians, actors, and actresses to persuade governments to ban landmines.
   d. The campaign raised over $4 billion dollars from private foundations and became very credible to the international community.

14. Which statement best describes why people supported the North American Free Trade Agreement?
   a. NAFTA diminished cross-cultural differences between Canada, Mexico, and the United States.
   b. NAFTA closed borders for trade between Canada, Mexico, and the United States.
   c. NAFTA increased the number of jobs for people in Canada, Mexico, and the United States.
   d. NAFTA gave unlimited power to corporations and businesses within Canada, Mexico, and the United States.
Application/Complex Reasoning
Answer the following short answer questions below.

15. Use the global issues visual to the right to answer the question below:
   
   **Part A.** Choose 2 global issues and explain how they are related to each other.
   
   **Part B.** Identify a solution that would help to solve both of these issues.

16. **Part A.** Provide 1 way culture influences our global connections.

   **Part B.** Provide 1 way media influences our global connections.

   **Part C.** Provide 1 way technology influences our global connections.
Recall (4 points total)
1. Worldview—a set of assumptions, perspectives, and beliefs held by individuals and cultures through which we make sense of the world
2. Global issues—events that happen over a given time that impact many people and places across boundaries
3. Media literacy—an ability to access and evaluate media messages of all kinds in order to understand how these messages create meaning and what impact they have on society
4. Systems thinking—a comprehensive approach to problem-solving that considers how things are connected

Reasoning/Explanation (10 points total)
5. d
6. c
7. b
8. a
9. a
10. c
11. c
12. b
13. b
14. c

Application/Complex Reasoning
15. Part A. Answers will vary. (1 point)
   • Conflict and human migration are related because if there is conflict in a specific country, people may need to migrate to other countries.
   • Consumption and biodiversity are related because as more natural resources are consumed, biodiversity may decline.

   Part B. Answers will vary. (2 points)
   • A solution to conflict and human migration might be ensuring people’s needs are being met within their home country. This could mean good governance that ensures access to health, education, other indicators of a good quality of life.
   • A solution to consumption and biodiversity might be to educate people and businesses about how to use resources sustainably and which resources are endangered.

16. Part A. Answers will vary. (1 point)
   • Culture influences our global connections because as different populations migrate to different parts of the world, they inevitably bring parts of their culture to these new places.

   Part B. Answers will vary. (1 point)
   • Media influences our global connections because media shares what’s happening around the world through a specific lens.

   Part C. Answers will vary. (1 point)
   • Technology influences our global connections because inventions such as the Internet and cell phone provide us the opportunity to communicate in faster and more efficient ways than ever before.
Activity 1: From Issue to Opportunity

Overview
Students develop criteria for determining what makes an issue global in scope, brainstorm and list global issues, group and prioritize the issues into categories to highlight interconnections, and explore solutions.

Objectives
Students will:
• develop and discuss criteria for defining a global issue
• identify, group, and prioritize global issues
• explore and explain the interconnections between global issues as well as their solutions

Inquiry/Critical Thinking Questions
• What defines a global issue?
• How are global issues connected to each other and to our own lives?
• What is the benefit of understanding the connections between global issues?

Time Required
One 30-minute class

Key Concepts
• global issues
• interconnectedness
• leverage
• problems as opportunities

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
5. Individuals, Groups, and Institutions
7. Production, Distribution, and Consumption
9. Global Connections

National Science Education Standards
F: Science in Personal and Social Perspectives

National EFS Standards
3.1 Personal Action: Personal Change Skills and Strategies
3.2 Collective Action: Organizational and Societal Change Skills and Strategies

Materials/Preparation
Overhead: Defining a Global Issue
Butcher paper, 5 to 10 sheets
Tape or other means to hang the butcher paper on a wall
Marking pens, 1 per student
Sticker dots or stars, 2 per student

Activity
Introduction
1. Ask students what they think the phrase, “Think Global, Act Local” means.
2. Have them brainstorm, list, and discuss the defining criteria of a global issue. These may include the following: global issues have significant impacts, they affect large numbers of people or places, they are transboundary, they are persistent (occurring repeatedly over time), and they are interconnected. Use the overhead Defining a Global Issue to help lead this part of the discussion.

Steps
1. Have the class brainstorm and list on the board or overhead as many global issues as they can think of, assessing each issue against the agreed upon criteria for defining a global issue.
2. Look at the entire list and have the class develop categories into which similar issues can be grouped. For example, rain forest destruction, loss of natural habitat, global warming, and species extinction could all be categorized under the Environment. Other possible categories could include: Health, Human Rights, Energy, Food and Water Security, Peace and Conflict, Economics, Population, Governance, and Culture/Worldview. After deciding on 5 or more categories, write each category on the top of separate pieces of butcher paper and post them around the room.

3. Have 2 to 3 students go to each of the posted sheets and write the global issues from the brainstorm list under a relevant heading. There will likely be issues that fall under more than 1 category.

4. Give each student 2 sticker dots. Have students walk around the room, read all the posted sheets, and then place a sticker next to the global issues they believe are the 2 most important ones.

5. Conclude with the following questions.

Discussion Questions

1. Which issue had the most votes (stickers)? Is there a clear majority?

2. Which specific issue fell under the most categories?

3. Why is it that some issues seem to have many connections? How might this information be useful and what might this tell us about the issue(s)?

4. Explain the idea of leverage. The global issues that seem to be most connected to other issues are probably ones that have the highest leverage. Working on 1 or 2 issues that have several connections, therefore, can help alleviate many other problems. Brainstorm possible solutions to the high-leverage global issues.

5. Discuss the process of brainstorming, grouping, and prioritizing used in this activity. What potential does this process have for solving other problems?

6. When considering solutions to the issues you are most concerned about, do you see opportunities for you to get involved?

Social Studies Extension

Students can survey peers within their grade or school to determine what issues are most important to them. Based on this information, students can create a number of meaningful service learning projects. Students can create and distribute a paper survey or an online poll. If students decide to create an online poll, they can present their information using presentation software. After, they can visit www.facingthefuture.org to gather ideas on different types of projects their classmates could participate in within their school, local, or global community.

Additional Resources

- **Website:** This Week in Rap
  http://theweekinrap.com/
  This Week in Rap informs students of weekly global issues through the medium of rap.

- **Website:** Global Citizens Corps
  http://www.globalcitizencorps.org
  Global Citizens Corps is an international movement of youth who connect globally and act locally. The Corps educates people about the root causes of global issues and teaches how to embrace global citizenship.
Defining a Global Issue

What makes an issue “global”?

Global Issues Are:

• Significant

• Transnational or transboundary

• Persistent or long-lasting

• Interconnected
Activity 2: Making Global Connections

Overview
Students demonstrate the interconnectedness of global issues and solutions through a kinesthetic exercise using global issue cards and a ball of yarn.

Objectives
Students will:
• kinesthetically experience and visualize the interconnectedness of global issues
• understand how a change in one issue can positively and negatively affect a change in another issue

Inquiry/Critical Thinking Questions
• How are global issues interconnected?
• How does a change in one global issue affect other global issues?
• How are solutions to global problems interconnected?

Time Required
One 60-minute class

Key Concepts
• global issues
• interconnections

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
7. Production, Distribution, and Consumption
8. Science, Technology, and Society
9. Global Connections

National Science Education Standards
F. Science in Personal and Social Perspectives

National Efs Standards
3.1 Personal Action: Personal Change Skills and Strategies
3.2 Collective Action: Organizational and Societal Change Skills and Strategies

Materials/Preparation
Handout: Global Issues Cards, 1 card per student (or 1 per pair of students if you do the activity in pairs).
Ball of yarn
Activity 2: Making Global Connections  continued

Activity

Introduction

1. Write the following quote on the board and have students respond with a journal entry.
   • “Ours is a world of 24-hour-news cycles, global markets, and high-speed Internet. We need to look no further than our morning paper to see that our future, and the future of our children, is inextricably linked to the complex challenges of the global community. And for our children to be prepared to take their place in that world and rise to those challenges, they must first understand it.”
     — Roderick Paige, Former U.S. Secretary of Education

2. After they write for a few minutes, lead a class discussion about the quote, having students share their writing.

3. Tell students they are going to do an exercise that will help them see and experience how global issues are interconnected.

Steps

1. Have students stand in a circle. Pass out the Global Issues Cards to each student and keep 1 card for yourself. In classes with more than 16 students, you can have students pair up, choose 1 card between them, and do the activity together. Have the pairs stand so that 1 partner is in front of the other.

2. Read aloud the global issue on your card and then toss the ball of yarn to a student across the circle.

3. Have the students (together with their partners) read the global issue on their card and state how this issue is connected to your issue (e.g., healthcare is connected to poverty because most people living in poverty do not have access to basic healthcare; conflict is connected to discrimination because some wars are started when one group of people does not like another group based strictly on their ethnic background or religious beliefs; education is connected to population growth because people with higher levels of education tend to have fewer children). If the student(s) cannot figure out how the 2 issues are connected, other students in the circle can help. If no one in the circle can think of a connection, the student(s) can pass and continue the activity.

4. Once the students have stated how their issues are connected to the previous one, they hold onto a piece of the yarn and tosses the ball of yarn to someone else across the circle.

5. Continue the exercise until everyone has caught the ball of yarn, called out the interconnections, and is now holding a piece of the yarn. Have the last student throw the ball of yarn back to you. You should now have a representative “web” of yarn with every student holding a Global Issues Card and a piece of the yarn.

6. Have everyone pull the string so the web is taut.

7. Tug on your piece of the yarn and ask if anyone felt the tug. Have some others tug on the yarn and see who else feels it. Try tugging harder and see who feels it then. Ask what that tug might represent or signify about the connections between global issues.

8. Conclude the lesson with a discussion using the questions below. You may want to lead the discussion while the students are still standing and holding the string so the symbolism of the web is still present.
Activity 2: Making Global Connections  continued

Discussion Questions

1. Why might it be helpful to understand how and why global issues are interconnected?
2. Can you think of additional issues that might be interconnected like the ones we raised in this activity?
3. How can understanding the interconnectedness of global issues help us find solutions to the problems surrounding these issues?
4. What are some examples of places we could intervene in a system and maximize positive connections between various issues?
5. Identify not only where or when one could intervene in a system but how an individual’s actions can “snowball”— i.e., trigger other reactions in the system that build upon and sustain the positive effects of the original action. What kind of small action might “snowball” into a large result? How can small changes replicate and multiply to produce widespread and lasting change?
6. Consider a solution to one of the issues in the web. Trace the impacts of the solution through the interconnected web.

Writing Extension

Arrange students in groups of 5 or 6. Using a Global Issues Card, 1 student writes a few sentences about their issue on the top of a piece of notebook paper and then passes the sentences to the next student. That student then writes a few sentences that explains how the issue on their card is connected to the previous story. They then fold the paper so that only the last few sentences are visible, and pass it on to someone else. Keep passing, writing, and folding the paper until everyone has written part of the connections story. Once everyone has written, have each group open the whole story and read it aloud to the class.

Additional Resources

- **Website: Voices of Youth**
  [www.unicef.org/voy](http://www.unicef.org/voy)
  Voices of Youth is a UNICEF website that educates young people about global issues and what they can do to take action.

- **Video: The Global Wombat**
  The Global Wombat video makes connections between people and global issues around the world. It was created by the Foundation for Global Community ([http://www.globalcitizencorps.org/](http://www.globalcitizencorps.org/)), an educational public benefit foundation.

**Activity 3: What’s in the News?**

**Overview**
In this media literacy activity, students use an iceberg model to analyze the global patterns and underlying structural causes that drive events in the news.

**Objectives**
Students will:
- analyze several news articles using a model that helps identify the particular global patterns and economic, political, and social forces (i.e. structural causes) behind the story
- diagram the events, patterns, and underlying structures in a news article
- identify connections among news articles
- discuss structural solutions to address these events
- write an article about the emerging patterns and underlying causes of a particular current event

**Inquiry/Critical Thinking Questions**
- What are the economic, political, and social forces that drive the dramatic events we see reported in the news?
- How are news events connected to each other in terms of their underlying causes?
- What are some positive ways we can address the structural causes of many negative world events?

**Time Required**
One 60- to 120-minute class

**Key Concepts**
- newsworthy events
- global patterns
- economic, political, and social structures
- media literacy
- root causes
- structural solutions

**National Standards Addressed**
**National Council for the Social Studies**
3. People, Places, and Environments
9. Global Connections

**National Science Education Standards**
F. Science in Personal and Social Perspectives

**National EfS Standards**
3.1 Personal Action: Personal Change Skills and Strategies
3.2 Collective Action: Organizational and Societal Change Skills and Strategies

**Materials/Preparation**
- 1 sample news article to model the activity
- Overhead, Iceberg Model
- A variety of news articles, 2 or 3 per group. Gather articles from the newspaper, magazines, and/or the Internet about significant events in the world (you can gather the articles yourself and/or have students bring in articles).
- Butcher paper, 1 sheet per group
- Colored marking pens, 3 to 4 pens per group

**Activity**

**Introduction**
1. Ask the students to define the word **media** (means of communication, such as radio, television, newspapers, and magazine that reach or influence people widely).
2. Ask them what the word **literacy** means (the quality or state of being literate, especially the ability to read and write).
3. Finally, ask them to define the term **media literacy** (the ability to read, analyze, evaluate, and produce communication in a variety of media forms such as television, print, radio, computers, etc.).
4. Tell them that they are going to explore an aspect of media literacy by analyzing some news articles using a tool called the iceberg model.
Activity 3: What’s in the News? continued

Steps

1. Share with the class your sample news article about an important current event, such as a significant conflict, an environmental disaster, an economic situation, or a criminal activity.

2. Ask students to paraphrase the event depicted in the sample article in pairs.

3. Use the picture of the iceberg model and the information below to lead a class discussion about the relationship between current events and the global patterns and underlying economic, political, and social forces that propel them to prominence in the news.

   Explain that what we read about most often in the news are events—the newsworthy, exciting, and dramatic things that happen in our world. Events in the news are like the tip of an iceberg. The visible part of an iceberg is only about 10% of its total mass and the remaining 90% is underwater and never seen. However, it is this hidden 90% that the ocean currents impact and that determine the behavior of the iceberg’s tip. Likewise, news events “at the tip of the iceberg” may be things such as war in the Middle East, crime in our community, or a massive flood in China. On the news, these events are witnessed as dramatic isolated incidents—the forces that create and shape them (what happens “underwater”) are not often revealed.

   When we notice the occurrence of similar events (e.g., wars or terrorist attacks in other parts of the world, or other extreme natural disasters such as earthquakes or a tsunami), we are seeing the emergence of a pattern. It may appear that more of these events are happening, or it may be that the media is reporting these events more often. For example, we might read a news article in the paper today about a local robbery (an event). During the course of a year we may notice that there are several articles about robberies and other crimes committed in the same area of town (a pattern). Does this indicate that crime is up or just that we are hearing about it more frequently? Patterns underlie and act upon events, so they are shown just below the tip in the iceberg model.

   Finally, deep beneath the surface are the underlying structures or root causes that drive the events and patterns—just as the underlying ice mass drives the tip of the iceberg. These underlying structures or causes can be economic, political, or social. For example, the underlying cause of the robberies and other crimes may have to do with the economics of the area. Perhaps schools in that area are unable to offer quality education, or unemployment may be high. Underlying structural causes may be the growing gap between the rich and poor, a lack of education or job opportunities, or other forces that preclude sustainable livelihoods. Are underlying structural causes such as these typically revealed in news stories? If not, what effect does this have on how we understand an event and how we perceive the people who are involved in the event?

4. Go back to the sample news article, and together with the students use the iceberg model to analyze it. As an example, if you use an article about a war in Africa, you might look for a discussion in the article about Africa’s colonial past, arbitrary boundaries, population growth, the AIDS epidemic, environmental destruction, and poverty. Use the following questions to guide this analysis:

   • Has this type of event been in the news before?
   • Is it a recurring event?
   • If so, can you identify a global pattern that is driving these events?
   • What are some possible root causes of these patterns? For example, is the event related to poverty, lack of education and/or health care, or development practices that are not environmentally sound?
   • Does the article discuss some or all of these root causes?”

5. Before moving on, be sure students understand how to use the iceberg model to analyze a news article in terms of the events, emerging patterns, and underlying causes.
Activity 3: What’s in the News? continued

6. Arrange the class into groups of 3 to 4 students and give each group 2 to 3 different news articles, 1 sheet of butcher paper, and 1 set of marking pens.

7. In their groups, have the students read the articles, choose 1, and use the iceberg model to analyze the event and look for patterns and root causes. Have students discuss whether they have noticed other similar events in the news. Then have them brainstorm, discuss, and list on a separate piece of paper all of the root causes they can think of that might contribute to the event.

8. Have each group create an iceberg diagram of their news article by gluing or taping the article onto the top of the paper, listing and/or drawing the patterns they have noticed, and finally listing and/or drawing the underlying root causes. Their final diagram should have a shape similar to an iceberg with the news article at the top (the event), the pattern below, and the underlying causes at the bottom.

9. Explain to students they will also be using media literacy to analyze the information they were presented in their news article. Have them analyze the article through the following lens:
   • For whom was this article written?
   • From whose perspective is this story told?
   • Whose story is not told in this message?

10. Have each group present their iceberg models to the class. Discuss how many of the events presented connect to each other through similar underlying causes. For example, wars, social unrest, and environmental damage are often closely linked by factors such as poverty, lack of education, and limited resources. They can also share what they learned from their media literacy analysis.

11. Have each group discuss structural solutions that could be implemented to address the root causes of events and patterns identified in their articles.

12. Conclude with the following questions.

Discussion Questions

1. How did using the iceberg model to analyze the news articles help in your understanding of events, patterns, root causes, and their connections?

2. How does the iceberg model fall short as an analysis tool? In other words, are there news stories and/or events that would not fit this model?

3. What was the most surprising thing you found in your analysis?

4. How could you use the iceberg model to improve your reading skills (reading for content versus understanding)?

5. What do you suggest could be a solution that would directly target the event? What do you suggest could be a solution that would directly target the underlying structure? Which solution is easier? Which is a longer-term strategy?

Writing Extension

Have students rewrite their article explaining the event, but also including the patterns, underlying structures, and different points of view. Students can publish their articles in the school paper or submit them to the news source that published the original article.

Additional Resources

• Website: Fairness and Accuracy in Reporting
  www.fair.org
  Fairness and Accuracy in Reporting is a national media watch group working to invigorate the First Amendment by advocating for greater diversity in the press and by scrutinizing media practices that marginalize public interest, minority, and dissenting viewpoints.

• Book: Media Meltdown
  Authors Liam O’Donnell and Mike Deas developed a graphic novel that examines how media is made and the types of research people can do to assert critical media literacy. (Orca Book Publishers, 2009)
Creating new habits or breaking old ones takes time and can be challenging. Having a plan in place and anticipating potential obstacles can help you be more successful with this habit change. Complete the worksheet below and return to this each week as you evaluate your progress and when you need some motivation!

**Challenge**

- **Start date:** ______________________
- **End date:** ______________________

**Habit I would like to change:** ________________________________________________________

- **Cues (environmental and emotional factors and situations that trigger this behavior):** __________________________
- **Habitual routine:** __________________________
- **Reward (what you gain from this habit):** ________________________________________________
- **How does this habit relate to sustainability?** ____________________________________________

**Habit I would like to create:** _________________________________________________________

- **Cues (environmental and emotional factors and situations that you can use to remind you of your new routine):** __________________________________________
- **New routine:** _____________________________________________________________
- **Reward (what you will gain from this new habit):** __________________________
- **How does this new habit relate to sustainability?** ____________________________________
Activity 4: Navigating the Global Issues Net

Overview
Students determine ways to search the Internet effectively and find credible sources.

Objectives
Students will:
• apply strategies to search the Internet effectively
• understand that we are consumers of information
• evaluate information critically, to determine the accuracy of a source/reference

Inquiry/Critical Thinking Questions
• How can we use the Internet as a tool to effectively address global issues?
• What are critical questions we can ask ourselves when provided with information?

Time Required
One 60-minute class

Key Concepts
• global issues
• interconnections
• media literacy

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
9. Global Connections

National Science Education Standards
F. Science in Personal and Social Perspectives

National EFS Standards
3.1 Personal Action: Personal Change Skills and Strategies

Materials/Preparation
Internet access
Agree and Disagree signs, In large letters, write “Agree” in large print on a piece of paper and “Disagree” on another piece of paper. Tape the “Agree” sign to one wall in your classroom and the “Disagree” sign to the opposite wall.

Handout: Believe It or Not?, 1 per student pair
Activity 4: Navigating the Global Issues Net  continued

Activity

Introduction

1. Refer to the Materials/Preparation section for instruction regarding Agree and Disagree signs.
2. Write on the board the following statement: “Information found on the Internet is not credible. Anyone can write a blog, make a Wiki entry, or start a website. You should not believe what you read.”
3. Ask students to decide whether they agree or disagree with this statement. Those who agree should stand by the “Agree” sign. Those who disagree should stand by the “Disagree” sign.
4. Ask for volunteers from each group to explain why they agree or disagree. Make sure that no one has spoken twice before everyone has spoken once. If a student makes a persuasive case for one side, other students are welcome to switch to that side.
4. After this sides debate, ask students to return to their seats.

Steps

1. Have students answer the following question: The Internet is a defining trait of globalization, an electronic highway of information that connects the world. Some think of the Internet as one large book that the world is writing. How can someone navigating this huge resource know whether it is a reliable source of information?
2. Share with students how on one hand, the Internet is an essential and remarkably productive tool for exploring global issues, especially because it can provide up-to-date information from a range of sources, including governmental, commercial, and nongovernmental websites. On the other hand, the “global issues net” is huge and uneven in both quality and reliability. In addition to being immensely time consuming, “surfing the net” can be overwhelming—and even misleading, if done recklessly or uncritically.
3. Ask students what websites they like to visit when searching the net and for what purpose do they use this website (e.g., information or entertainment)?
4. Ask them if they believe everything they read on these specific websites. Are they more likely to agree with a source that confirms their own beliefs? How do they sort truth from fiction?
5. Explain to students when they search for information on the Internet, they should make sure they critically evaluate websites to make sure the information they receive is legitimate.
   Option: Have students identify a global issue as a class and visit a specific website together to analyze whether they think it’s credible or not.
6. Explain to them that in pairs, they will choose a global issue they would like to know more about and determine if websites they visit are valid or not.
7. Before they begin, you can share a few tips on how to analyze a website’s credibility:
   • Be wary of personal websites that are not affiliated with an organization. They tend to be less accountable and less reliable.
   • If it’s been more than a decade since the website has been updated, you may want to reconsider the site.
   • Analyze the URL address. You can determine what type of organization produced the site: .edu is an educational institution, .org is a nonprofit or other nongovernmental organization, .gov is a governmental body, and .com is a corporation or company.
   • Check for links that do not work on the website. If there is an excessive amount, reconsider using the site.
8. Pass out the handout Believe It or Not? to student pairs.
Activity 4: Navigating the Global Issues Net  continued

9. After students have done research, they can compile these results so that everyone knows sites to visit and sites to avoid.

10. Ask the following discussion questions.

Discussion Questions

1. What advice would you offer students when they are researching information on the Internet?

2. What are the benefits and consequences to having endless amounts of information accessible through the Internet?

3. When researching information on global issues, what resources aside from the Internet can you use?

4. What are ways you can evaluate if these resources are credible?

Writing Extension

Write an annotated bibliography (a brief description and evaluation of the source) for websites you visit related to a specific global issue you are interested in learning more about. Include a citation with the website name and URL address on the first line, followed by a paragraph that summarizes the website’s content and its usefulness for different audiences.

Additional Resources

- Website: Project Look Sharp
  http://www.ithaca.edu/looksharp/
  Project Look Sharp is a media initiative of Ithaca College that provides materials, training and support for effective integration of media literacy with critical thinking into classroom curricula. There are tips and tools that support classrooms in how to evaluate websites.

- Website: The Center for Media Literacy
  http://www.medialit.org/
  The Center for Media Literacy is an educational organization dedicated to promoting and supporting media literacy education.
Believe It or Not?

Directions: Follow the steps below to determine what sites are reliable when researching global issues.

1. After you have chosen a global issue to research, visit a search engine such as Google or Yahoo and begin a search of this issue by typing in key words (i.e. population growth in India, conflict in Bosnia).

2. Choose three websites you think look legitimate as resources and answer the following questions about these websites in the chart below.

<table>
<thead>
<tr>
<th></th>
<th>Website 1</th>
<th>Website 2</th>
<th>Website 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Website address</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name of author</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the author of the material on the website an expert in the field?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What is the background/affiliation of the organization connected to the website (i.e., university? governmental organization? corporation?)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the content seem credible (i.e., are citations listed on the website, can facts be verified by another source, etc.?)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is this website biased and how?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Based on the information you researched, do you think this website is credible? Why or why not?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Sustainability, or sustainable development, is the process of supporting economic prosperity, social well-being, and environmental health.

Interconnected solutions to global issues can have sustainable effects for the future.
**Guiding Questions**

- How can sustainability promote environmental health, economic development, and human well-being?
- How are people working toward sustainable solutions to local and global issues?

**Key Concepts**

- sustainability
- sustainable development
- intergenerational responsibility
- interconnectedness
- fair trade
- green jobs

**Supporting Vocabulary**

- stewardship
- economic development

**Summative Assessment**

Chapter Test

**Connections**

**World History connections:**
collapse of past civilizations; the Earth Summit; the Brundtland Report; Montreal Protocol; Kyoto Protocol

**Economics connections:**
sustainable development; fair trade; green jobs

**Geography connections:**
global and local sustainability issues; human-environment interconnections

**Civics connections:**
personal and structural solutions to sustainability issues; youth-led nonprofit organizations; community growth
## Activities in Teacher’s Guide: Suggested Sequence

### Day 1

**Reading:** *Introduction to Sustainability*

**Activity 1:** *Apples to Apples?*—Students explore the idea of sustainability as a continuum or process by evaluating two seemingly identical apples according to various sustainability criteria.

**Activity 2:** *Drilling Down to Sustainability*—In small groups, students evaluate the sustainability of various resource extraction methods, from coffee farming to coal mining.

### Day 2

**Reading:** *Background on Sustainability*

**Activity 3:** *From Earth Charter to School Community*—“The Earth Charter” is used as a guiding document to envision how sustainability could look within their school community.

### Day 3

**Reading:** *Sustainability Today*

**Activity 3:** *From Earth Charter to School Community, cont’d*

### Day 4

**Reading:** *Sustainability Today*

**Activity 4:** *Is It Sustainable?*—Students use a model to evaluate the sustainability of an object or process and to determine ways to make an unsustainable item or process more sustainable.

### Day 5

**Reading:** *Pathways to Progress: Sustainability*

**Activity 5:** *Envisioning Sustainability*—Students work together to brainstorm economic, environmental, and sociocultural characteristics of a sustainable community.
Discussion Questions from the Chapter Reading

Introduction to Sustainability
1. What comes to mind when you hear the word “development”? How does your definition of development correspond to the definition of “sustainable development” provided in the chapter?

2. What are some specific actions that would be examples of intergenerational responsibility?

3. Think about a choice you made recently in your life. Use one of the sustainability frameworks to determine if you think it was a sustainable choice or not.

Background on Sustainability
4. What are factors that can lead to a civilization’s collapse? In looking at our society, what can we do now to make sure that we prevent collapse?

5. The World Commission on Environment and Development created a report titled, “Our Common Future.” The report wanted to transform economic growth into something that also supports environmental health. How might considering the health of the environment when making economic decisions be helpful?

Sustainability Today
6. What are examples of sustainable choices you have seen different groups (i.e. schools, government, businesses) make in your local community? If you haven’t seen groups making sustainable decisions, what might prevent them from doing so?

Pathways to Progress: Sustainability
7. What kinds of decisions did the community in Moss Point make in order to live more sustainably?

8. Margaret Mead, a famous anthropologist once said, “Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has.” Do you agree with this statement? Why or why not?
Recall
Match the following words on the left with their definitions on the right.

1. Sustainability raising resources of living for people around the world without depleting Earth’s standards
2. Sustainable development leaving ample resources for future generations on Earth
3. Interconnectedness helping people now to meet their needs for a good life without compromising ability of future generations to meet their needs
4. Intergenerational responsibility the idea that natural and human-constructed systems interact and impact each other

Reasoning/Explanation
Complete the following multiple choice questions by choosing one correct answer.

5. A business that sells cotton T-shirts has decided to implement some sustainability measures, in response to consumer demand. Which of the following options would best help them achieve their goals?
   a. finding a cotton supplier who will sell at lower prices than their current supplier
   b. changing their trucking routes to only go through large cities
   c. using cotton grown without toxic chemicals that can contaminate soil and groundwater
   d. hiring sales clerks and executives that have attended college

6. Consider the following story: A group of enthusiastic international visitors travel to a small island in the South Pacific. When they visit, they determine that the island does not have a reliable source of fresh water for drinking, such as a well for accessing ground water. Instead, residents have to collect rain in barrels and get water from a stream that runs through the island. Without consulting the island’s residents, the international visitors decide to build a well on the island so that island residents can more easily access water on a daily basis, even on days with no rain. After the visitors build the well, island residents continue to obtain water as they always did, from rain water and the stream.

   Why isn't the well project a good example of sustainable development?
   a. The well did not provide easier access to water.
   b. The visitors did not take into consideration the needs and desires of island residents.
   c. Rain water is healthier for drinking than other kinds of fresh water.
   d. Any project led by international volunteers cannot be sustained after they leave.
7. Which **best** replaces X in the flow chart?

During the 1980s, scientists traced this thinning back to halogen gases produced by refrigerators and fire extinguishers.

As a result, the rate of ozone depletion has decreased significantly.

- b. The Montreal Protocol, created in 1987, established limits on how many ozone-depleting gases could be used.
- c. The Montreal Protocol, created in 1987, supported scientific research on the ozone layer.
- d. The Montreal Protocol, created in 1987, charged governments money based on a country’s impact on the ozone layer.

8. Which job is the **best** example of a green job?

- a. forest ranger who protects endangered wildlife
- b. medical doctor who treats patients in rural areas
- c. solar panel installer who installs panels in urban areas
- d. volunteer who cleans up garbage near rivers

9. Use the graphic organizer to the right to answer the question.

Economically: provides living wage for coffee farmers

Socially: allows farmers in Costa Rica to sustain local culture.

How could coffee from Costa Rica be sustainable?

- a. Environmentally: grown in a way that doesn’t destroy wildlife habitats
- b. Environmentally: needs fewer resources because it’s grown on coffee plantations
- c. Environmentally: needs less water because of rain in Costa Rica
- d. Environmentally: produced in bulk on plantations instead of rainforests
10. Which example below best illustrates how a government can take action to support sustainability?
   a. take out loans from other countries to build the economy
   b. convince citizens to consume as much as possible to boost the economy
   c. enforce ways citizens can enlist in the military to enhance security
   d. retrofit a number of existing government buildings for energy efficiency

11. Each of the reasons below explain why a civilization may not be able to sustain itself, except:
   a. conflict
   b. climate change
   c. unemployment
   d. environmental damage

12. Which of the following best demonstrates an example of a community decisions that supports a sustainable future?
   a. enlarging a parking lot to accommodate more drivers
   b. keeping a school lawn beautiful by using lawn chemicals
   c. preserving local wetlands to provide a barrier against storms
   d. maximizing the amount of land available for housing development

13. Which example below best demonstrates how a business can make a commitment to sustainability?
   a. by reducing the amount of packaging created and therefore reducing waste
   b. by building factories in other countries and paying workers less so goods will cost less
   c. by exponentially increasing the amounts of goods sold so economies will develop
   d. by marketing products to people all over the world in order to create a global community

14. Which personal decision demonstrates the concept of intergenerational responsibility?
   a. interviewing senior citizens and recording their stories
   b. babysitting a neighbor’s children while he or she runs an errand
   c. playing on a sports team with people of all different ages
   d. participating in river clean ups every month
Chapter Assessment: Sustainability, page 4

Application/Complex Reasoning
Answer the following short answer questions below.

15. Use the Sustainability Venn Diagram to answer the question below:

- **Part A.** Provide one example of how sustainability can support the environment.
- **Part B.** Provide one example of how sustainability can support the economy.
- **Part C.** Provide one example of how sustainability can support a society.

16. In 1992, the United Nations convened a conference on Environment and Development called the Earth Summit. A document known as Agenda 21 resulted from negotiations at this Earth Summit. The document begins:

   Humanity stands at a defining moment in history. We are confronted with a perpetuation of disparities between and within nations, a worsening of poverty, hunger, ill health and illiteracy, and the continuing deterioration of the ecosystems on which we depend for our well-being. However, integration of environment and development concerns and greater attention to them will lead to the fulfillment of basic needs, improved living standards for all, better protected and managed ecosystems and a safer, more prosperous future. No nation can achieve this on its own; but together we can—in a global partnership for sustainable development.¹

- **Part A.** How does Agenda 21 support the idea of sustainability?
- **Part B.** When thinking about solutions to global issues, why should we consider all three parts of sustainability (the environment, society, and the economy)?

Recall (4 points total)
1. Sustainability—leaving ample resources for future generations on Earth
2. Sustainable development—raising resources of living for people around the world without depleting Earth’s standards
3. Interconnectedness—the idea that natural and human-constructed systems interact and impact each other
4. Intergenerational responsibility—helping people now to meet their needs for a good life without compromising ability of future generations to meet their needs

Reasoning/Explanation (10 points total)
5. c
6. b
7. b
8. c
9. a
10. d
11. c
12. c
13. a
14. d

Application/Complex Reasoning (6 points total)
15. Part A. Answers will vary. (1 point)
   • Conserving natural resources
   • Creating wildlife habitats for endangered species
   Part B. Answers will vary. (1 point)
   • Creating policies that provide economic opportunities for people from all different sectors
   • Providing livable wages for all people working
   Part C. Answers will vary. (1 point)
   • Allowing people to practice their religion safely in public spaces can support tolerance and respect of diversity
   • Upholding different cultures’ traditions and customs

16. Part A. Answers will vary. (1 point)
   • Agenda 21 acknowledges there are number of issues the world faces today and believes that solutions that address people and the planet can be the answer.
   Part B. Answers will vary. (2 points)
   • The environment, the economy, and society are inextricably connected. Thinking of solutions to some of the world’s biggest problems can therefore be considered from a systems perspective and can have long-term benefits. If we only care about a growing economy, but don’t consider human needs or a clean environment, this can be detrimental to a sustainable future. There can be limits to growth if we don’t consider all parts of sustainability.
Activity 1: Apples to Apples?

Overview
Students explore the idea of sustainability as a continuum or process by evaluating two seemingly identical apples according to various sustainability criteria. In a discussion, students consider how ambiguity is inherent in complex decision-making.

Objectives
Students will:
• evaluate how economic, environmental, and social concerns relate to the concept of sustainability
• recognize sustainability as a process rather than an endpoint

Inquiry/Critical Thinking Questions
• How is our idea about what is sustainable affected by the criteria we use to evaluate sustainability?
• How can we make sustainable choices based on available information?

Time Required
15 minutes

Key Concepts
• sustainability
• organic

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
7. Production, Distribution, and Consumption

National Science Education Standards
F. Science in Personal and Social Perspectives

National Efs Standards
2.1 Interconnectedness: Systems thinking

Materials/Preparation
Two apples (or tomatoes or other locally available produce), 1 organic from a different state or country and 1 conventionally grown in-state
Activity 1: Apples to Apples? continued

Activity

1. Review the definition of sustainability with students.

2. Show the class the two apples, but do not reveal anything about them (Apple 1 is the organic, non-local apple; Apple 2 is the conventional, locally grown apple). In a class discussion format, ask students which apple they think was produced in the most sustainable manner and why. (At this point, they are only guessing based on each apple’s appearance.) Also, what information would change their minds? Alternatively, you could ask students to write their answers down rather than express them verbally.

3. Reveal the following pieces of information, one category at a time. After each “reveal,” ask students which apple is most sustainable and why. There is no right or wrong answer as to which apple is most sustainable—for example, Apple 1 is grown with no pesticides, but Apple 2 requires less fuel for transportation.

4. Students will likely change their minds at least once about which apple they believe to be most sustainable.

Option: Allow students to taste samples of each apple.

<table>
<thead>
<tr>
<th></th>
<th>Apple 1 (Organic, Non-Local)</th>
<th>Apple 2 (Conventional, Local)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price to consumer</td>
<td>$1.00</td>
<td>$0.50</td>
</tr>
<tr>
<td>Amount of money received by farmer</td>
<td>$0.50</td>
<td>$0.25</td>
</tr>
<tr>
<td>Miles traveled (from farm to grocery store)</td>
<td>1000</td>
<td>200</td>
</tr>
<tr>
<td>Pesticides used</td>
<td>none</td>
<td>insecticides to kill insect pests (side effects include damage to aquatic invertebrates, pollinator insects, farm workers’ health, and groundwater quality)</td>
</tr>
<tr>
<td>Impact of production on soil health</td>
<td>good soil quality</td>
<td>poor soil quality</td>
</tr>
<tr>
<td>Taste</td>
<td>slightly sweet</td>
<td>slightly tart</td>
</tr>
</tbody>
</table>

Discussion Questions

1. In determining sustainability, is one aspect more important than the others? For example, do you think concerns about environment are more important than concerns about society or the economy?

2. What piece of information was most helpful in informing you about the sustainability of the apples?

3. What other pieces of information would help you to determine whether Apple 1 or Apple 2 is the more sustainable choice?

4. Explain the meaning of the following phrase: “sustainability is a process, not an endpoint.”

5. Do you think people should be given more information to help them make more informed decisions about what to consume? Why or why not? If yes, who should provide that information and where? (At supermarkets? In the news? At school?)

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1 Soil quality is defined as “the capacity of a soil to sustain biological productivity, maintain environmental quality and promote plant and animal health.” J.P. Reganold et al., “Sustainability of three apple production systems,” in *Nature*, April 2001.
Activity 2: Drilling Down to Sustainability

Overview
Students discuss and debate the sustainability of various resource extraction methods and determine if alternatives would be more sustainable.

Objectives
Students will:
• identify methods by which natural resources are extracted and the ways in which these methods affect people and places
• apply the principles of sustainability to a critical examination of natural resource extraction
• make connections between sustainability and human behavior

Inquiry/Critical Thinking Questions
• What are impacts of natural resource extraction on societies, environments, and economies?
• How do our individual actions connect to sustainability?
• How can we make sustainable choices?

Time Required
One 45-minute class

Key Concepts
• sustainability
• natural resource extraction

National Standards Addressed
National Council for the Social Studies
1. Culture
3. People, Places, and Environments
5. Individuals, Groups, and Institutions
6. Power, Authority, and Governance
7. Production, Distribution, and Consumption
8. Science, Technology, and Society
9. Global Connections
10. Civic Ideals and Practices

National Science Education Standards
D. Earth and Space Science
F. Science in Personal and Social Perspectives

National Efs Standards
2.2 Ecological Systems: Respect for limits
2.2 Ecological Systems: Tragedy of the commons

Materials/Preparation
Handout: Extraction & Sustainability, 1 set of cards for each group of 5 students (for each sheet, cut out 4 role cards and give 1 to each student in a group)
Handout: Is It Sustainable?, 1 per student group
Activity 2: Drilling Down to Sustainability  

Activity

Introduction

1. Ask students to recall the meaning of sustainability, based on the chapter reading.
2. Use student-generated definitions to generate a mutually agreed-upon definition of sustainability. Write this on the board for students to refer back to throughout the activity.
3. Let them know that they will use this definition to explore the sustainability of different ways that we use Earth’s resources.

Steps

1. Divide the class into groups of 5.
2. Give students the following instructions: “Each group will consider the sustainability of different natural resources that are extracted from the earth for human needs. When a resource is extracted, it is removed from the environment so that we can use it to create products that we use. Each person within your group will receive a role card that provides some information about your perspective on the extraction of that resource. Each person should read aloud their role card to the group; as you work together during this activity, try to retain the perspective presented on your role card. As a group, work together to determine how resource extraction impacts the long-term well-being of people and the planet. Work as a group to complete the handout, Is It Sustainable? You will have to reach consensus to recommend whether or not extraction of the resource should continue. Choose one person in your group to record answers on the handout and another person to report to the class your group’s analysis of the sustainability of resource extraction.”

3. Hand out Extraction & Sustainability role cards to each group so that one group has 5 different role cards for gold, another group has 5 different role cards for timber, and so on.
   - **Note:** These cards represent just a few perspectives on and types of natural resource extraction.
4. Pass out 1 Is It Sustainable? worksheet to each group.
5. Allow groups ample time to read their roles and work through the handout together. Leave 10 to 15 minutes at the end of class for each group to share their analysis of the sustainability of the resource extraction method(s). What is the resource, and how is it currently extracted? Is it extracted sustainably? If not, how could it become more sustainable?
6. Wrap up with a short class discussion using one or more of the following questions.

Discussion Questions

1. Are any natural resources extracted near where you live? If so, how does that extraction affect the local environment, economy, and society?
2. What drives natural resource extraction? What part do our individual choices play?
3. What are positive results of resource extraction?
4. What are some negative impacts of resource extraction?
5. What possible action could consumers take to support sustainable extraction?
6. Based on the different perspectives you heard in your groups, what are the challenges to implementing sustainable practices?
Activity 2: Drilling Down to Sustainability  

Writing Extension
Choose a specific natural resource to study further. Develop a policy for sustainable resource extraction that can be used by countries that want to ensure that their citizens are only buying sustainably extracted (mined, harvested, drilled, etc.) resources. Include ideas for making extraction better for individuals and communities, local and global economies, and the environment. Have students share their ideas with appropriate stakeholders (government representatives, nonprofit organizations, retailers, consumers, etc.).

Additional Resources
• Video: Congo’s Bloody Coltan
  www.pulitzercenter.org/openitem.cfm?id=177
  This short video produced by the Pulitzer Center focuses on how the extraction of the mineral coltan (for use in electronics like cell phones) has help to support the current civil war in Congo.
• Website and Video: The Goldman Environmental Prize
  www.goldmanprize.org/2009/northamerica
  2009 Goldman Environmental Prize Winner, Maria Gunnoe, witnessed the pollution of her homeland and drinking water by toxic coal mining waste. She was able to stop future environmental devastation by testifying against the practice of mountaintop removal. This website includes a 5-minute video about Maria’s work, alongside information about the impacts of mountaintop removal mining on West Virginia communities.
• Article: The Real Price of Gold
  http://ngm.nationalgeographic.com/2009/01/gold/larmer-text/1
  In this National Geographic article from January 2009, Brook Larmer writes for National Geographic about different cultures’ perspectives on gold and how gold extraction around the world has had serious impacts on both humans and the environment.

Websites for further research on natural resource extraction:
• Monterey Bay Aquarium (seafood)
  www.seafoodwatch.org
• World Diamond Council (diamonds)
  http://diamondfacts.org
• Earth Justice (coal)
  www.earthjustice.org
• No Dirty Gold (gold)
  www.nodirtygold.org
• World Wildlife Foundation (timber)
  www.panda.org/what_we_do/footprint/forestry/
• Global Exchange (coffee, chocolate)
  www.globalexchange.org/campaigns/fairtrade/
• National Resource Defense Council (petroleum, coal)
  www.nrdc.org/energy/default.asp
• Global Witness (coltan)
  www.globalwitness.org
Extraction & Sustainability,
Group A: Gold

I am a gold miner in Indonesia. I work at a large open-pit mine owned by a foreign company. Each day, I operate a machine that digs out thousands of pounds of ore (rocks and dirt that contain tiny amounts of gold). I have never actually seen the gold. The ore is transported somewhere else, where people extract the gold. The area where we remove the ore has become a giant pit that cannot be used for anything else. I make more money than most of my neighbors. In fact, I’m paid more than $600 each month. I have a house and a television, thanks to this job.

I am the vice president of a cell phone company. Most people think that gold is only used for jewelry, but our engineers have found small quantities of gold to be extremely useful in cell phones. Gold is a good conductor, meaning that electricity can run through it. This is why gold is used in many electronics. We only use a tiny amount in each cell phone. Cell phones are very important because people can use them anywhere in the world. People in rural areas can use cell phones to communicate in places that don’t even have land-line telephones. If we didn’t use gold, we’d find another metal conductor that also has to be mined. Each year more and more people are buying cell phones, and we have to keep up with the demand. That’s why we continue to buy gold.

I am an employee of the national government in Indonesia. We have seen more and more gold companies come to our country to mine gold for products that will be made and sold in other countries. Since we have been blessed with this resource, why not sell it to make money for our country? It is true that the areas where we currently allow open pit mining are becoming toxic. However, we will make sure that those areas are safely enclosed so that they don’t hurt anyone. We want to make sure that foreign companies continue doing business in our country so that we can invest the money into improving the lives of our citizens.

I am an environmental scientist. I worry about how open pit mining is permanently altering the environment. The deep pits that are created are so large they can be seen from space. Also, this type of mining relies on a process called cyanide leaching. A chemical called cyanide is sprayed on dirt and rocks that are removed from the pit. The cyanide bonds to tiny bits of gold and silver as it trickles down through the ore. Cyanide is very toxic—it is a killing agent used in gas chambers. If it leaks into soil or water, it can contaminate streams, killing fish and other wildlife. Some companies recycle and reuse the cyanide to reduce their environmental impacts.

I am a resident of a small community in Indonesia next to a large open-pit mine. At first I thought the mine would be great because it can provide many jobs. Unfortunately, the cost of living is now much higher. The miners make good money, so they are able to pay higher prices for food, electricity, and land to build homes. Those without mining jobs can no longer afford all of these things. We have also watched the devastation of our environment. The mining company dumps waste rocks onto our beautiful rainforests. What will be left when the mining company is finished?
Extraction & Sustainability,
Group B: Timber

I am a forester in Canada. I make my living by harvesting trees. These trees can be used for all sorts of things everyone needs, like furniture, construction materials, magazines, tissues, and toilet paper. Our company cuts down large areas of trees and then lets those areas grow back for 20 years or more. We even speed the process up by planting tree seedlings in areas we’ve harvested. We prefer to plant fast-growing tree species, like pines. When these trees get large enough, we go back and cut them again. So long as people need wood and paper products, I’ll have a job.

I am a salesperson at a large paper company. We sell paper to companies that print newspapers and magazines. Some of our customers now want paper that has been recycled instead of paper made only from new trees. We find that the best paper is still made mostly from new trees, but we also want to make sure our customers are happy. If people are willing to pay more for recycled paper, we will start making more of it. Our company wants to make a profit, so we will do what we need to do to make our customers happy.

I am a furniture maker. Whereas some wood can be recycled, that’s not always true for furniture. Some builders recycle wood to build new homes and businesses. However, I need large beautiful trees to create luxurious dining tables and chairs. As long as people pay me well to create these items, I will continue to make them. I prefer working with hardwood trees, which are typically older and more valuable than pine trees. I don’t really care where the wood comes from so long as it holds up well. A good piece of furniture can be passed down from generation to generation until it becomes an antique. Cheap furniture, on the other hand, tends to break more easily. I don’t want my customers to have to keep buying new tables and chairs because their old ones broke.

I am a wildlife biologist. I’m concerned about the effect that large-scale timber harvesting has on ecosystems. There are many species of animals that can’t survive without a healthy forest. For example, in the Southeastern United States the red-cockaded woodpecker can only be found in older forests. They create nests in dead trees in mature pine forests. These birds are considered a keystone species because many other forest species (including insects, birds, lizards, and squirrels) use their nests. Scientists know that each species is important because it is connected to the lives of other species in its food web.

I am an indigenous person whose family has lived in the same forest for more than 100 years. The forest provides us with food, shelter, and medicines. Trees are one of our most valuable natural resources. Last year a portion of the forest in which my community lives was cut down by a logging company. That forced several families to move from their homes. We must protect what remains of our forests so that they can continue to provide us with essential resources.
Extraction & Sustainability,  
Group C: Coal

I am a site manager for a coal mining company in West Virginia. Most of the people I know also work for the mining company. Some of us used to work in mine shafts that went deep underground. The company I work for now prefers to get coal through mountaintop removal. It is a lot faster and doesn't require as many people. Plus, now I don't have to worry about dying if a mine shaft collapses. In mountaintop removal, we use giant machines to basically blow the top off of a mountain to make it easier to get to the coal inside the mountain. I know my job is important because many power plants in the United States burn coal to create electricity.

I am a coal miner. I work in a shaft mine. It's what my father and grandfather did. I don't know how to do anything else. As soon as I graduated high school, I started working as a coal miner. Right now I work in a mine that is 700 feet deep. It is dangerous work, but the number of job-related deaths of miners is a lot lower than it was in my father's time. Once I was in a mine that partially collapsed. Luckily, emergency crews were able to get me and my coworkers out before we ran out of air. I'm hoping I can stay healthy and safe so that I can continue to provide for my family.

I am a citizen of a small mountain community in the Appalachian Mountains of West Virginia. Our state has long been known for its beautiful mountains. Lately, however, these mountains have been scarred by mountaintop removal. Not only does mountaintop removal destroy the beauty of the mountains, but it's also ruined my well, which is my family's only source of drinking water. The dirt and rocks that are exposed during mountaintop removal are usually dumped into nearby valleys. In my community, a company dumped the rubble in a valley where a stream runs through. Now the stream is discolored and cloudy. A lot of people I know have cancer and other diseases that no one used to have. We have complained, but the mining companies keep doing business as usual.

I am the Chief Executive Officer for a company that owns several coal-fired power plants. Coal is an ideal fuel source. For one thing, we have tons of it right here in the United States. That makes it much easier and safer to access than oil that has to be imported from the Middle East or South America. For another thing, coal contains more energy that can be turned into electricity than competing fuels, like natural gas. Our country was built on coal. Some of these people who want to use renewable fuels like wind and solar energy to generate electricity just don't understand how much better coal is. So many power plants are already set up to burn coal that it doesn't make sense to change things while we still have plenty of coal.

I am a mechanical engineer. I believe that we can and should stop mining coal right now. We have other technologies available right now—such as wind turbines and solar cells—that could supply us with all the electricity we need. Burning coal for electricity releases air pollution, including greenhouse gases that result in climate change. The earth is already getting warmer from our use of these dirty fuels. Let's invest in clean alternative fuels now!
Extraction & Sustainability,
Group D: Petroleum

I am a **marine biologist**. I study organisms that live in the oceans. Petroleum oil drilling like the kind that happens off the coast of Texas and Louisiana worries me. When hurricanes blow over oil rigs (structures that house the machinery that drills into the ocean floor to get petroleum), petroleum can spill into ocean waters. Oil spills can also happen when oil is being transported by boat from one place to another. When oil enters a marine ecosystem, it can be disastrous. Aquatic birds, mammals, and fish can all become covered in the thick oil, leading to death in some cases. The use of petroleum also has been linked to climate change, which also impacts our oceans. Climate change causes oceans to become more acidic, which can kill sensitive species like coral.

I am an **oil company spokesperson**. I believe that petroleum is hands-down the most efficient fuel source for our nation’s transportation needs. We already have the technology in place to use petroleum for creating diesel, gasoline, and jet fuel. By drilling off the coast of the United States, we reduce our need for foreign oil. This is much safer for our country than relying on oil from countries that may have unstable governments. Oil drilling is a relatively safe industry; very few accidents have occurred in recent years. Plus, it provides many jobs in the U.S.

I am a **roughneck on an oil rig**. It’s a tough job, but it pays well. You have to be in good shape to work on an oil rig, that’s for sure! I help to set up and carry out the drilling. I’m responsible for maintaining the pipes that carry the oil; I constantly check to make sure there are no leaks. I also help with mechanical maintenance, like making sure the engine is working right. Our rig runs all the time, so I work long hours. I don’t really mind, but my family wishes I spent more time at home. Every once in a while I hear about an accident where a rig blew up or about a storm that sank a rig into the ocean. Those accidents can be fatal for the crew on the rig. All of the factory jobs in my hometown have been moved overseas, so this job is even more important now.

I am an **alternative fuels investor**. I fund research on alternative fuels so that we can do all the things we love to do without relying on petroleum. While most people think the only way we can move our cars is with gasoline that comes from petroleum, I have found that there are quite a few other options that could be profitable. Electric cars could be the wave of the future, especially in places where the electricity is provided by renewable fuel sources like wind power. These cars simply need to have their batteries recharged after use, and they don’t require any gasoline. Another possibility is hydrogen fuel cells. These amazing devices convert hydrogen and oxygen into water, producing electricity in the process. Most alternative fuels don’t produce air pollution like gasoline does. This could help fight climate change and smog.

I am a **parent** with three children. We have a large vehicle so that everyone has plenty of room when we need to go somewhere. Unfortunately, it takes quite a lot of gasoline to power such a large vehicle. I hope that our country will continue to have enough oil for everyone’s needs. I’m afraid that if our oil supply starts declining, gas prices will go up. If we have to pay any more for gas than we already do, our family will have to cut back on other expenses. We don’t have much money left after we pay our monthly bills, so I don’t know how we could afford higher gas prices. I understand there might be environmental consequences from oil drilling, but my family and I try to minimize our environmental impacts in other ways.
# Extraction & Sustainability,

**Group E: Coffee**

I am a **coffee grower** in Ethiopia. Coffee is a wonderful crop to grow because everyone loves coffee! Unfortunately, I cannot get a fair price for my coffee. I sell the beans to a man who then sells them to a company that will roast them. I make hardly any profit. I feel like I have to sell my beans so cheaply because otherwise I won't sell them at all. My son and daughters have had to drop out of school because I can't pay their fees. The village school requires money to pay for books, uniforms, and teachers. Instead of attending school, my children now help me in the fields. I enjoy their company, but I worry that they will grow up to be poor like me.

I am a **shade-grown coffee farmer** in Costa Rica. Coffee is a shrub that grows well in rainforests, where there are tall canopy trees that shade the coffee bushes. This is how coffee was meant to be grown. Unfortunately, some of the major companies selling coffee want coffee growers to grow a type of coffee that can survive in full sunlight. They can get higher yields for growing coffee in the sun, but the higher yields come at the price of the rainforest ecosystem. To grow full-sun coffee, first all the trees and shrubs have to be cleared from an area. Once they are cleared, the rainforest ecosystem takes many, many years to regrow.

I am a **coffee supplier**. Some people call me the “middleman” in the coffee industry. I talk to coffee growers and buy their beans for as low a price as I can. Then I resell those beans to companies who roast them to make coffee for drinking. I make my living by being the person in the middle of the transaction between the people who produce coffee beans and the people who sell them to coffee drinkers. Some coffee roasters are starting to engage in direct trade, whereby they send a representative to make deals with coffee growers directly. That means no money for me. I know that coffee growers should make more money because for a long time they haven't been paid fairly for what they grow. But how will I make a living if I'm squeezed out of the process?

I am the **owner of a coffee shop**. I have heard about “fair trade” and “direct trade” programs that provide coffee growers with more money. It makes sense—why should a coffee farmer only make pennies for a cup of coffee I sell for $2? However, fair trade coffee is more expensive than the coffee I can get from my supplier. The same goes for organic coffee that has been grown without pesticides or harmful chemicals. My customers complain any time I increase my prices. Since I have never heard a customer ask for organic or fair trade coffee, I'm guessing no one would even care if I did buy those types of coffee beans.

I am an **eco-tourism guide** in Costa Rica. I make my living by providing tours through the rainforest. People from all over the world come to Costa Rica to visit our rainforests. They are eager to see beautiful plants and animals that live in the forest. Sun-grown coffee threatens my business because it requires cutting down forests to let in sunlight. Forests don't have to be cleared to grow shade-grown coffee, which is good for the animals that rely on the forest and also for people like me who make a living from the rainforest.
Group members:_________________________________________________________________________________________

Natural resource discussed:_________________________________________________________________________________________

1. What are impacts of resource extraction on the environment?
________________________________________________________________________________________
________________________________________________________________________________________

2. Overall, is extraction of this resource environmentally sustainable?
   a. Why, or why not?
   _______________________________________________________________________________
   _______________________________________________________________________________
   b. How could it be made more sustainable?
   _______________________________________________________________________________
   _______________________________________________________________________________

3. How does resource extraction affect local and national economies?
________________________________________________________________________________________
________________________________________________________________________________________

4. Overall, is extraction of this resource economically sustainable?
   a. Why, or why not?
   _______________________________________________________________________________
   _______________________________________________________________________________
   b. How could it be made more sustainable?
   _______________________________________________________________________________
   _______________________________________________________________________________

5. How does extraction impact people and communities?
________________________________________________________________________________________
________________________________________________________________________________________
6. Overall, is extraction of this resource socially sustainable?
   a. Why, or why not?
   ___________________________________________________________
   ___________________________________________________________

   b. How could it be made more sustainable?
   ___________________________________________________________
   ___________________________________________________________

7. On a scale of 1 to 5, where 1 is not sustainable at all and 5 is completely sustainable, rate the overall sustainability of extracting this resource.
   Not sustainable  |  Completely sustainable
   -----------------|------------------------
   1                | 2                      | 3                      | 4                      | 5                      

8. Should the natural resource you discussed continue to be extracted?
   a. If yes, is there a particular method that is most sustainable? What is it?
   ___________________________________________________________
   ___________________________________________________________

   b. If not, why should this resource no longer be extracted?
   ___________________________________________________________
   ___________________________________________________________
Activity 3: From Earth Charter to School Community

Overview
Students use the Earth Charter as a tool to brainstorm ways that their school might support sustainability and learn about the Charter’s global history. They envision how their school could be different if it incorporated some or all of the Earth Charter’s 16 principles encompassing ecological integrity, social and economic justice, democracy, nonviolence, and peace.

Objectives
Students will:
- understand and then translate principles of sustainable development into concrete ideas for action
- determine ways in which the school community might implement sustainability practices, principles, rights, and responsibilities

Inquiry/Critical Thinking Questions
- How might principles of sustainable development be applied to a school community?
- How might the Charter be used as a tool to guide sustainable living and learning practices?
- What does the history of the drafting of the Charter—through a genuine, sometimes contentious, global grassroots process over many years—teach us about negotiation and democratic processes?

Time Required
Two 45-minute classes

Key Concepts
- sustainable development
- Earth Summit
- diversity
- ecological integrity
- justice
- peace
- nonviolence

National Standards Addressed

National Council for the Social Studies
3. People, Places, and Environments
5. Individuals, Groups, and Institutions
6. Power, Authority, and Governance
10. Civic Ideals and Practices

National Science Education Standards
F. Science in Personal and Social Perspectives

National EFS Standards
2.2 Ecological Systems: Environmental justice
2.4 Social and Cultural Systems: Social justice
2.4 Social and Cultural Systems: Governance
3.2 Collective Action: Organizational and societal change skills and strategies

Materials and Preparation
Online Article: Earth Charter, 1 copy per student. You can access the article here, http://www.yesmagazine.org/issues/a-new-culture-emerges/earth-charter
Handout: The Earth Charter, 1 copy per student or two copies per group of 4. You can access the Earth Charter to print for students here, http://www.earthcharterinaction.org/content/pages/Read-the-Charter.html/
Handout: From Earth Charter to School Community, 1 per group of 4 students

Sustainability © FACING THE FUTURE www.facingthefuture.org
Activity—Day 1

Introduction

1. In a think-pair-share format, ask students to consider specific ways in which their school is (or is not) working toward sustainability. Ask them to consider benefits, costs, and potential obstacles to working toward sustainability.

2. Ask pairs to share their ideas.

3. Now ask students if they think there are areas in which their school community could be more sustainable. Students should define sustainable.

4. Ask students to name 1 thing that might make their school community more sustainable—environmentally, socially, and/or economically.

5. Explain to students that the Earth Charter is an international declaration of principles created to build a just and peaceful society for the 21st century. It was drafted between 1994 and 2000 by thousands of individuals and by people in hundreds of organizations all over the world, as an initiative from the United Nations World Commission on Environment and Development.

6. Have students read the YES! Magazine article on the history of the Earth Charter and explore the challenging and tumultuous process of building consensus across nations and cultures in the drafting process.

Steps

1. Divide the class into groups of 4.

2. Give each group 2 copies of The Earth Charter to share and 1 copy of the handout, From Earth Charter to School Community.

3. Instruct students to work in their groups of 4 to complete From Earth Charter to School Community. Their ideas about how the school might support each of the principles may take the form of actions, behaviors, rules, attitudes, plans and structures, or other creative means.

Option: Have students read more about how youth have used the Earth Charter:

www.earthcharterinaction.org/content/ (see Areas of Work: Youth), and have students explore the Earth Charter Youth and Student Activists blog: ecyg.wikispaces.com/home.

Activity—Day 2

Steps

1. Allow students time to complete the handout from Day 1, if they have not already.

2. Ask each student group to review their ideas within each of the 4 categories (I, II, III, and IV) and choose 1 idea from each category that they think is most important. Have them put a star by those 4 ideas.

3. Have each group present their top 4 ideas to the class. You may want to take notes, or ask a representative from each group to write their ideas in a shared space where each group's top 4 priorities can be included.

Option: Have the class vote on their favorite ideas from all of the ones shared. Use these ideas to guide students in an action project that will result in their school community supporting 1 or more of the Earth Charter’s principles.

Discussion Questions

1. Is your school already engaged in any of these ideas for supporting environmental, social, or economic sustainability?

2. Do you think the new ideas generated during this exercise would be easy or difficult to implement?

3. Why do you think that these steps have not yet been taken?
Activity 3: From Earth Charter to School Community  continued

4. How could you move from ideas to action?
   Take 1 idea and explain how you think it could become a reality. How would you start? Who would you need to join you? What else would you need to do?

5. Was the Earth Charter a useful tool for envisioning how your school community could support sustainable choices? Why, or why not?

6. Which, if any, of the parts of the Earth Charter are most applicable to your school right now?

Civics Extension
Use this activity to generate a School Sustainability Plan, which provides a vision of how your school might look if it were dedicated to supporting sustainability and a roadmap for achieving that vision. How would the campus look? What would students and teachers be doing? How would the surrounding community be involved? What policies would enforce this vision? Transform the vision into reality by crafting a School Sustainability Plan outlining specific goals for the school and ways to achieve them. Include a mission statement summarizing your school’s commitment to sustainability.

Additional Resources
• Website: The Earth Charter Initiative  
  http://www.earthcharterinaction.org
  The Earth Charter Initiative website includes the full text of the Earth Charter in dozens of languages, a list of endorsers of the Earth Charter, and information about Earth Charter activities happening all over the world, including youth-driven projects, youth online courses, and a youth toolkit.

• Website: UNESCO  
  Read more about the United Nations’ Education for Sustainable Development efforts around the world.

• Website: Earth Charter US  
  www.earthcharterus.org
  This website houses the official organization for mainstreaming the Earth Charter in the United States, which is now an Affiliate of Earth Charter International.
### The Earth Charter

## I. Respect And Care For The Community Of Life

1. Respect Earth and life in all its diversity.

2. Care for the community of life with understanding, compassion, and love.

3. Build democratic societies that are just, participatory, sustainable, and peaceful.

4. Secure Earth’s bounty and beauty for present and future generations.

## II. Ecological Integrity

5. Protect and restore the integrity of Earth’s ecological systems, with special concern for biological diversity and the natural processes that sustain life.

6. Prevent harm as the best method of environmental protection and, when knowledge is limited, apply a precautionary approach.

7. Adopt patterns of production, consumption, and reproduction that safeguard Earth’s regenerative capacities, human rights, and community well-being.

8. Advance the study of ecological sustainability and promote the open exchange and wide application of the knowledge acquired.
### The Earth Charter

<table>
<thead>
<tr>
<th>III. Social And Economic Justice</th>
<th>How Your School Community Could Support This Idea</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. Eradicate poverty as an ethical, social, and environmental imperative.</td>
<td></td>
</tr>
<tr>
<td>10. Ensure that economic activities and institutions at all levels promote human development in an equitable and sustainable manner.</td>
<td></td>
</tr>
<tr>
<td>11. Affirm gender equality and equity as prerequisites to sustainable development and ensure universal access to education, health care, and economic opportunity.</td>
<td></td>
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<tr>
<td>12. Uphold the right of all, without discrimination, to a natural and social environment supportive of human dignity, bodily health, and spiritual well-being, with special attention to the rights of indigenous peoples and minorities.</td>
<td></td>
</tr>
</tbody>
</table>

### IV. Democracy, Nonviolence, And Peace

| 13. Strengthen democratic institutions at all levels, and provide transparency and accountability in governance, inclusive participation in decision making, and access to justice. | |
| 14. Integrate into formal education and life-long learning the knowledge, values, and skills needed for a sustainable way of life. | |
| 15. Treat all living beings with respect and consideration. | |
| 16. Promote a culture of tolerance, nonviolence, and peace. | |
Activity 4: Is It Sustainable?

Overview
Students use a common sustainability framework to analyze the sustainability of a variety of actions taken by individuals, businesses, and governments. Student groups determine ways to increase the sustainability of these actions.

Objectives
Students will:
• define sustainability and its three key components: the economy, the environment, and society
• identify and describe a range of activities undertaken by individuals, businesses, and governments (e.g., foods eaten, transportation used, products bought, services provided, laws passed)
• determine the sustainability of these activities based on a set of criteria that includes impacts on the economy, the environment, and society
• present their findings using a Venn diagram
• analyze if and how an unsustainable activity can be altered to adhere to the three components of sustainability

Inquiry/Critical Thinking Questions
• What does “sustainability” mean and how does it apply to human activity?
• How is the sustainability of an individual, business, or government activity determined?
• How can we balance the needs of people, protect the environment, and have a vibrant and equitable economy?
• How can an activity be made more sustainable?

Time Required
One 45-minute class

Key Concepts
• sustainability
• economy
• environment
• society

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
7. Production, Distribution, and Consumption

National Efs Standards
2.1 Interconnectedness: Systems thinking
2.2 Ecological Systems: Respect for limits
2.3 Economic Systems: True cost accounting

Materials/Preparation
Overhead: Components of Sustainability
Three different colored 2”x2” sticky notes, enough for each student to have 1 sticky note of each color
Draw a Venn diagram, like the one in the Components of Sustainability overhead, on a large sheet of butcher paper (or project the overhead onto a whiteboard)
(Optional) Handout: Investigating Sustainability, 1 per group of 3 students
Activity 4: Is It Sustainable?  continued

Activity

Introduction

1. Review the three components of sustainability using the overhead, Components of Sustainability. Explain that in determining whether an action or product/service is sustainable, many people who study sustainability take into account three key elements: the environment, the economy, and society/equity. In order to determine whether or not something is sustainable, the activity being evaluated would be assessed in relation to each of these principles, or “standards of sustainability.” This assessment reveals how the action or item impacts the economy, the environment, and society in either negative, positive, or neutral ways. You may need to review the definitions of “economy,” “environment,” and “society.”

2. Using the Venn diagram (on the butcher paper or projected on the whiteboard), explain that a Venn diagram’s purpose is to demonstrate that issues overlap and share common traits. Explain that this tool can be used to evaluate the sustainability of activities, products, and actions.

Steps

1. Explain that they will list and analyze the sustainability of several different activities, products, and actions from the following categories: individual activities (e.g., eating breakfast, driving to school, attending school, playing guitar), business products and services (e.g., clothes, housing, computers, restaurants), or government actions (e.g., passing laws and regulations such as speed limits and burn bans, provision of services such as utilities and trash).

2. Before breaking the class into groups, choose one activity/item (such as riding the bus to school) and walk through an analysis of the activity with the whole class, asking if it is sustainable using the three components of sustainability (economy, environment, and society) as a guide. Alternatively, you may want to walk through this analysis with one of the apples from the prior activity.

Option: Use questions from the handout, Investigating Sustainability, to ask about the activity.

3. Arrange students in groups of 3 and assign each group one category: individual activities, business products and services, or government actions.

4. Have them create a brainstorm list of activities/items that fall within their assigned category. Be as specific and descriptive as possible during the brainstorm. For example, rather than list a cup of coffee, think about what kind of coffee you want to analyze—is it sun-grown coffee or Fair Trade certified?

5. From their brainstorm list, have students choose 2 items from their list and transfer these to individual color-coded sticky notes (use different colored sticky notes for each category, such as blue for individual activities, yellow for business activities, and green for government activities).

6. Have students place their sticky notes on the Venn diagram in the area they think the activity best fits, depending on whether the activity is economically, environmentally, and/or socially sustainable. If an activity is both environmentally and economically sustainable, place the sticky note in the area of overlap between the environment and economy circles. If an activity is not sustainable in any of the three categories, place the sticky note outside the Venn diagram. Many actions are not inherently sustainable or unsustainable. For example, harvesting timber does not have to be an unsustainable action; it can be done in a manner that promotes ecosystem health and continued forest production.
Activity 4: Is It Sustainable? continued

7. Have each group explain to the class how they decided on the placement, giving concrete examples and evidence to support their decision. Encourage each member of the group to participate in the discussion, and answer questions from the class.

8. Conclude with the following discussion questions.

Discussion Questions

1. If someone asked you what sustainability meant, how would you respond?

2. Can everything we do be measured against the standards of sustainability? What are some examples of activities that would be especially difficult to measure and especially easy to measure?

3. Why do you think people use the standards of sustainability to assess human activities? How and where could this process be useful?

4. Whose needs should be met when there are trade-offs involved (e.g., between economic and environmental priorities)? How can these contradictions be resolved?

5. Choose an unsustainable activity from the Venn diagram and explain how it could be made more sustainable.
Components of Sustainability

SOCIETY

ENVIRONMENT

ECONOMY
Investigating Sustainability

Environment:

• Does the activity/item use a minimal amount of resources? Are the resources renewable?
• Can the activity be done without damaging plants or animals?
• Does it improve air, water, and soil quality, rather than leading to pollution or erosion?
• Does it use resources at a rate that allows the resource to be renewed or regenerated?
• Is the waste created by the activity recycled or recyclable?
• Does the activity generate a limited amount of waste?
• Does this activity contribute to the conservation of natural resources?

Society:

• Does the activity/item contribute to people’s quality of life?
• Does it positively affect culture(s)?
• Are individuals and communities involved in making decisions about the activity, and is the decision-making process fair and democratic?
• Is it an equitable activity (i.e., does it offer more options and opportunities to certain groups of people than others)?

Economy:

• Does the activity/item have a positive impact on either local or global economies?
• Does it create meaningful and satisfying work for individuals?
• Does it contribute to a community’s economic development?
• Do all people receive equal economic benefits from the activity, rather than some people benefiting at the expense of others?

Overall Sustainability:

• Can the activity be done without causing damage in the three areas: economy, environment, and society?
• Can this activity be done so that people in the future will have the same opportunities to do this activity as people today?
Activity 5: Visioning Sustainability

Overview
Students envision what a sustainable community looks like by determining what economic, environmental, and cultural elements should and should not be included.

Objectives
Students will:
• envision the economic, environmental, and social characteristics that support a sustainable community
• develop their own definitions of a sustainable community
• consider how their community could benefit from working toward sustainability

Inquiry/Critical Thinking Questions
• How can we design a community to ensure the economic, environmental, and social well-being of its citizens?
• What steps would move our community toward a more sustainable future?

Time Required
One 45-minute class

Key Concepts
• sustainable development
• community planning
• infrastructure
• economy
• governance

National Standards Addressed
National Science Education Standards
F. Science in Personal and Social Perspectives

National EFS Standards
2.1 Interconnectedness: Systems thinking
2.2 Ecological Systems: Urban design/land management
3.2 Collective Action: Community-based and societal decision-making
3.2 Collective Action: Organizational and societal change skills and strategies

Materials and Preparation
Handout: Designing a Sustainable Community, 1 per student

Activity
Introduction
1. Ask students to close their eyes and picture what they think their community is likely to be like in 50 years (when they may be grandparents). Will people in 50 years be better off or worse off? Will economic systems be vibrant, so that everyone has meaningful employment; or will the gap between the richest and the poorest grow? Will environmental systems be healthy, so that the water, air, and soil are clean; or will environmental systems be polluted? Will social systems be strong, so that people work and live together peacefully; or will social divisions plague your community?

2. Ask them to reopen their eyes and share words or phrases that describe how they think their community will be in another 50 years.

3. Now ask students to close their eyes again. This time, ask them to visualize what they want their community to look like in 50 years. How will people treat each other? What opportunities will be available? What will the state of the environment be?
Activity 5: Visioning Sustainability  continued

4. Have students open their eyes again. Ask them to describe how their vision for the future changed when you asked them to think about what they want to happen, instead of asking what they think will happen.

5. Before moving on, make sure students understand why it is important to envision an outcome. If we cannot visualize what we want the future to look like, it will be difficult to make that future happen.

Steps
1. Pass out a copy of the handout, Designing a Sustainable Community, to each student.
2. Group students into design teams of 2 to 3 students each.
3. Provide students with the majority of the remaining class time to work through the handout with their group members.
4. Ask one member of each group to share their “Guiding Vision Statement” from the handout. Have another group member write the group’s statement on the board.
5. Ask students to read through all of the Guiding Vision Statements on the board and identify commonalities. What concepts seem to be central to designing a sustainable community?

Option: Have students give a short presentation to a relevant audience, explaining their ideas for how to develop a sustainable community. This could involve attending a City Council meeting or inviting a local government representative into your classroom.

Discussion Questions
1. If your community does not look like the one you designed on the handout, what are possible reasons?
2. Consider one of your answers on the handout. How could you transform it into reality? What steps would you take? What resources would you need? Who would you need to work with?
3. What is a potential obstacle to making your goal a reality? How might you overcome that obstacle?
4. Who in your community would benefit from working toward making your community more sustainable?

Art Extension
Have students draw a representation of their sustainable communities, either by doing freehand drawings or with graphic design software. A key could be included that explains how certain items in the drawing are elements of a sustainable community.

Additional Resources
• Film: Ecological Design: Inventing the Future
  What do flying bicycles, Rocky Mountain jungles, “living machines,” and recyclable homes with their own “metabolism” all have in common? They are unique, inexpensive solutions to the design dilemma of sustainable living and are all featured in this 60-minute film by Brian Danitz and Chris Zelov.

• Videos: Green Living Project
  http://www.greenlivingproject.com/projects/
  Watch short films featuring various efforts around the world to live sustainability and to build sustainable communities.
Designing a Sustainable Community

1. What would a sustainable community look like?

2. What services, opportunities, and forms of assistance would be available to citizens?

3. How would neighborhoods be structured?

4. What elements of infrastructure (physical structures like roads and buildings) would be essential?

5. What kinds of infrastructure would not be present?

6. What activities and events would be encouraged?

7. What activities would not be encouraged?

8. What would government look like? How would citizens be involved?

9. What rules or laws would govern the community?

10. What types of economic activity or employment opportunities would be available?

Guiding Vision Statement:
A sustainable community is one in which…
CHAPTER BIG IDEAS

- Food insecurity and hunger are not necessarily the result of insufficient food.
- Malnutrition affects both poor and rich people but in different ways.
- Food scarcity is related to poverty, political stability, environmental/geographic factors, and inefficient or unsustainable farming methods.
- A typical Western diet is associated with a large ecological footprint.
- Some industrial farming techniques may not be sustainable long-term.
Guiding Questions
• How can we ensure that all people have access to nutritious food?
• What agricultural practices are compatible with a healthy planet?

Key Concepts
• food security
• Green Revolution
• genetically modified organisms
• malnutrition
• hydroponics
• aquaponics

Supporting Vocabulary
• patent
• tilling
• soil erosion
• fertilizers
• irrigation
• aquifers
• intensive rotational grazing
• farmland grab

Service Learning Component
Service Learning Project Idea #1
• Question: How can you improve upon the availability or access of foods that are both good for producers and consumers in your community?

• Hook Resource: Food Desert Locator
  www.ers.usda.gov/data/fooddesert/
  Use the Locator to determine if areas near you include large numbers of low-income communities without reliable access to nutritious foods.

• Project: Students will survey peers, family members, and community members, asking them questions about how availability of nutritious foods could be improved in your community. Survey questions might include:
  • What is one food you wish your grocery store carried that it doesn’t?
  • Do you buy fresh and organic foods?
  • Do you buy foods grown locally, in season?
  • If not, why not?
  Students will present their findings to local grocery store managers and owners, urging them to make these foods available. Students may also choose to publish their results in a local newspaper where people can read what is important to the community at large.

• Additional Resources:
  • Brief: Availability of Healthy Food in Corner Stores in Hartford, CT
    Please visit http://publichealth.uconn.edu for additional information.
    Four-page research brief from the University of Connecticut explains the methodology and findings for a “Healthy Corner Store Inventory.”
Service Learning Project Idea #2

- **Question:** How can we cultivate a greater connection with raw foods and the process of growing food?

- **Hook Resource:** Jamie Oliver’s Food Revolution
  - [http://www.youtube.com/watch?v=bGYs4KS_djg](http://www.youtube.com/watch?v=bGYs4KS_djg)
  
- **Project:** Students will plan a school garden, either to serve as a demonstration garden or to grow food for community members in need. Student may pair up with a local pantry to distribute the food produced. Students may also need to conduct some research prior to starting their garden:
  - What species would grow best in your area?
  - What resources will you need?
  - How much will it cost?
  - How will you keep it up during school holidays and breaks?

Additional Resource:

- **Video:** How It’s Made
  
- **Project Based Learning Component**

Project Based Learning Idea

- **Overview:** Students will develop a teaching module to educate younger students about where and how their food is produced.

- **Driving Question:** How could you explain to young children where their food comes from?

- **Hook Resource:** Jamie Oliver’s Food Revolution
  - [http://www.youtube.com/watch?v=bGYs4KS_djg](http://www.youtube.com/watch?v=bGYs4KS_djg)

- **Individual Project:** Students develop a teaching module to explain to young students (1st grade) about where their food comes from. This should be appropriate for 2 to 3 hours of instruction. The teaching module should include a) anticipated student learning
outcomes, b) key vocabulary terms, c) specific instructions for teaching students about key concepts, and d) a plan to assess student learning. The teaching module should also take into consideration a variety of learning styles, from kinesthetic to visual learning.

• **Group Project:** Students develop and deliver a teaching module to explain to young students (1st grade) about where their food comes from. Student groups will need to write out their lesson plan(s) and prepare to deliver the content to young learners. Students will partner with a nearby elementary school to share their teaching unit with their target audience (1st graders). Each student group can teach their module to a small group of young students.

• **Additional Resources**
  For learning more about where our food comes from:
  • **Book:** *Stuff: The Secret Lives of Everyday Things*
    http://www.sightline.org/research/books/stuff
    This short book from the Sightline Institute includes chapters about where our burgers, fries, and sugary sodas come from. (World Future Organization, 1998)
  • **Website:** *Food Dialogues*
    http://www.fooddialogues.com/
    U.S. Farmers & Ranchers Alliance website, brings farmers and ranchers together with consumers to educate people about food and farming.

  For creating educational materials:
  • **Website:** *Stanislaus County Office of Education*
    http://lessonplanbuilder.org/lessons/help.cfm
    Lesson plan builder provides a framework for developing a basic lesson plan.
  • **Website:** *The Teaching Effectiveness Program at University of Oregon*
    http://tep.uoregon.edu/resources/faqs/preparingtoteach/lessonplan.html
    Provides tips for constructing lesson plans.
  • **Website:** *The NSDL Science Literacy Maps*
    http://strandmaps.nsdl.org/information
    Provides information about how to teach age-appropriate science concepts.

**Summative Assessment**
Chapter Test

**Connections**

**World History connections:**
Globalization of food markets; Green Revolution, indigenous agriculture

**Economics connections:**
Government subsidies; influence of colonialism on agriculture, poverty, and hunger

**Geography connections:**
Human–environment interactions; influence of geography on food availability; sustainable land use; geography of food scarcity

**Civics connections:**
Personal and structural solutions to food issues
### Activities in Teacher’s Guide: Suggested Sequence

#### Day 1

**Reading:** *Introduction to Food*

**Activity 1: What Causes Hunger?**—Students will each read about the drought that affected the Horn of Africa in 2011 and identify root causes of famine. In small groups, they will share what they learned about causes and consequences of famine.

#### Day 2

**Reading:** *Background on Food*

**Activity 2: What to Eat?**—Students brainstorm around the meaning of malnutrition and possible root causes of malnutrition. In pairs, they construct an ideal diet for a day, considering how many calories and which nutrients are important to include in their meals.

#### Day 3

**Reading:** *Food Today*

**Activity 3: What the World Eats**—In a matching exercise, students work to connect countries’ food availability with information about each country’s geographic, economic, and sociopolitical features. Students identify factors that may contribute to food availability or scarcity within a particular country. By examining a map of world hunger, students see for themselves where hunger is most prevalent in the world and discuss possible root causes.

#### Day 4

**Reading:** *Food Today*

**Activity 4: Food Fight**—Students will research and debate the question of whether a vegetarian lifestyle is advisable, considering both environmental resources and human health.
Day 5

**Reading:** *Pathways to Progress: Food*

**Activity 5:** *Sustainable Agriculture*—Students take a “quiz” that reveals information about how environmental resources—including soil, water, and organisms—are impacted by agricultural practices. In pairs, students research currently available techniques for producing food in more sustainable ways and discuss challenges and tradeoffs for adopting these techniques.

Days 6–8

**Reading:** *Career Profile: Nonprofit Founder*

**Activity 6:** *School Food Audit*—Students work in teams to audit the sustainability of the food system at your school. Students use their audit findings to determine how well the school’s food system sustains health, community, and environmental resources. They develop and discuss recommendations for improving pieces of the system.
Discussion Questions from the Chapter Reading

Introduction to Food

1. When you read that there is more than enough food grown to feed everyone on Earth, what is your reaction?
2. In addition to grain, what other resources do you think would be needed to raise livestock? What are the sustainability implications of this resource use?

Background on Food

3. What are some reasons for groups of humans to switch from hunting and gathering to farming? What evidence seems to suggest that the rise of agriculture was inevitable?
4. What can we learn about sustainable agriculture from indigenous groups like the Incas?
5. What are two positive results of the Green Revolution?

Food Today

6. Some people think that genetically modified foods should be labeled so that consumers know they are eating GMOs. What do you think?
7. Do you think food should be patented? Why or why not?
8. How might globalization of food markets be connected to hunger?

Pathways to Progress: Food

9. Have you ever worked to make change as a consumer (perhaps by asking for a particular product or by providing feedback about a product or service)? How could you do something similar to support sustainable food systems?
10. Some farmers in other countries think the U.S. Farm Bill unfairly penalizes them. What do you think—is it fair for the government to ensure that farmers can sell their crops at low prices abroad?
Chapter Assessment: Food, page 1

Recall
Match the following words on the left with their definitions on the right.

1. Malnutrition the state in which all people have sufficient physical and economic access to nutritious food to maintain a healthy and active life

2. Food security the result of poor nutrition, resulting from either an insufficient, excessive, or unbalanced diet or an inability to absorb foods

3. Green Revolution the technique used to grow plants using nutrient-rich water instead of soil

4. Hydroponics when hybrid seeds, fertilizers, pesticides, new machinery, and irrigation projects began to be used around the world

Reasoning/Explanation
Complete the following multiple-choice questions by choosing 1 correct answer.

5. Use the photograph to answer the question.

Which of these statements best explains how the farming technique shown in the photograph affects the environment?

a. It prevents the erosion of soil.
b. It limits the spread of harmful pests.
c. It depletes the topsoil of nutrients.
d. It contributes to the pollution of streams.

6. Use the flow chart to answer the question.

Settlers moved to the Great Plains in the 19th century. X This practice damaged the soil support system that held the soil in place. Dust storms removed topsoil from the land, making the land unproductive.

Which of these statements best replaces the X in the flow chart?

a. Farmers planted genetically modified crops in the fields.
b. Farmers tapped into aquifers on the prairie to water their crops.
c. Farmers practiced crop rotation with wheat and corn.
d. Farmers tilled the prairie to create fields for wheat and corn crops.
7. In 2011, the Centers for Disease Control and Prevention reported that 33% of adults in the United States are obese. At the same time, malnutrition is a major problem in the United States as well.

Which of these statements best explains why both malnutrition and obesity are problems in the United States?

a. Wealthier Americans eat much more food than poorer Americans.
b. Many Americans have low metabolisms and are unwilling to exercise.
c. The American agricultural industry is unable to produce enough food for all Americans.
d. Many Americans eat a diet high in calories but low in essential vitamins and minerals.

8. Which of these farming techniques has the largest environmental impact?

a. practicing intensive rotational grazing
b. using no-till methods to grow corn
c. growing fish in freshwater pens
d. raising cattle on feedlots

9. Which of these statements best explains why the patenting of genetically modified crops by multinational corporations creates controversy in developing countries?

a. Developing countries fear losing control over their economic and agricultural independence.
b. Farmers in developing countries lack the technology needed to grow the genetically modified crops.
c. Developing countries lack the ability to ban the importation of genetically modified crops.
d. Consumers in developing countries foresee paying higher prices for food bought in stores.

10. Which of these statements best explains the effect of the “farmland grab” by wealthy countries and investors?

a. Inhabitants of local communities are forced to produce food at lower prices.
b. Land is set aside for restoration and sustainable agricultural methods are practiced.
c. Prices for food commodities are increased on the international market.
d. Traditional subsistence farming is restored in rural communities of developing countries.
11. Use the graphic organizer to answer the question.

Which of these statements best replaces the X in the graphic organizer?

a. The decline in the number of trees in the forest allows nutrients to be restored to the soil.

b. The release of greenhouse gases from deforestation contributes to global climate change.

c. The reduction of plant life in the forest increases the amount of drinking water for humans.

d. The clearing of the forest increases the demand for biofuels made from sugar cane.

12. Which of the following consumer choices best supports a sustainable food production system?

a. buying food grown and harvested in hothouses during the off-season by farmers in developed countries

b. buying seasonal food that is grown with chemical fertilizers in urban gardens by local farmers

c. buying food grown and shipped during the off-season by small farmers in developing countries

d. buying seasonally appropriate food grown by local farmers and sold at farmers’ markets

13. Which of these choices is the best way civic action can help eliminate a “food desert” in an urban community?

a. banning convenience stores from local communities

b. forcing fast-food restaurants to include more fruit and vegetable options on their menus

c. supplying fresh fruits and vegetables to local stores

d. giving bus vouchers to community members to allow them to commute to stores out of their neighborhood
14. Use the graph to answer the question.

Based on the graph, which of these conclusions can best be reached?

a. The overall trend in fuel prices in 2009 decreased currency values and the amount of food produced worldwide, leading to inflation and starvation in developed countries.

b. The overall trend in fuel prices in 2007 discouraged the production of biofuels and global inflation, increasing the demand for food crops and the frequency of major economic swings in all countries.

c. The trend in fuel prices in the second half of 2008 increased the cost to produce and distribute food worldwide, contributing to food crises and political turmoil in developing countries.

d. The trend in fuel prices in the first half of 2008 encouraged global food exports and discouraged price controls and rationing, decreasing the percentage of disposable income spent on food in all countries.

Application/Complex Reasoning

Answer the following short answer questions below.

15. Farmers in developing countries frequently grow cash crops. They concentrate on growing one crop for export to the global market. The chart shows the price of selected cash crops for farmers in Ghana between 2001 and 2009.

Part A. Explain 1 reason why farmers in developing countries, such as Ghana, grow cash crops.

Part B. Explain 1 way the production of cash crops can have a negative effect on farmers in a developing country, such as Ghana.
16. Norman Borlaug is considered the “Father of the Green Revolution.” Use the following excerpts from Norman Borlaug about the Green Revolution along with what you have learned from this chapter about food to answer the prompts below.

“[We] are dealing with two opposing forces, the scientific power of food production and the biologic power of human reproduction. Man has made amazing progress recently in his potential mastery of these two contending powers. Science, invention, and technology have given him materials and methods for increasing his food supplies substantially and sometimes spectacularly….”

—Norman Borlaug, Nobel Peace Prize Acceptance Speech, December 10, 1970

“The green revolution is a change in the right direction, but it has not transformed the world into Utopia.”


Part A. Describe 1 agricultural practice or technology introduced by the Green Revolution.

Part B. Explain 1 positive result of the Green Revolution.

Part C. Based on Borlaug’s 2 statements about the Green Revolution, draw a conclusion about the environmental impact of the Green Revolution on the regions where programs were introduced.
Recall (4 points total)
1. Malnutrition—the result of poor nutrition, resulting from either an insufficient, excessive, or unbalanced diet or an inability to absorb foods
2. Food security—the state in which all people have sufficient physical and economic access to nutritious food to maintain a healthy and active life
3. Green Revolution—when hybrid seeds, fertilizers, pesticides, new machinery, and irrigation projects began to be used around the world
4. Hydroponics—the technique used to grow plants using nutrient-rich water instead of soil

Reasoning/Explanation (10 points total)
5. a 10. a
6. d 11. b
7. d 12. d
8. d 13. c
9. a 14. c

Application/Complex Reasoning (6 points total)
15. Part A: Answers will vary. (1 point)
   • To earn money to support their families rather than growing crops for subsistence farming to feed their families.
   • They have the chance to earn a large amount of money, if the price of the cash crop rises significantly and they effectively negotiate the sale of their crops to market traders.
   • Government programs encourage or force them to develop crops for export markets to raise hard currency for their countries.
   • Foreign lending institutions, such as the World Bank or International Monetary Fund (IMF), require as a condition of receiving a loan that a country promote economic development, shifting its agricultural production away from subsistence farming to growing crops for the global market.
   • As a legacy of earlier Western colonialist practices that created plantations for growing cash crops. Farmers continue to grow cash crops rather than revert back to subsistence farming.

Part B. Answers will vary. (1 point)
• The farmers are dependent on the market price of their crops to provide for their families. Because they are no longer growing food to feed their families they must buy most of their food. If the market price falls for their crop, they may not be able to provide enough for their families.
• The farmers frequently must use chemical fertilizers and herbicides/pesticides to grow monoculture crops for the world market. This is required because consumers expect the crop to be of a certain quality. The use of chemical fertilizers and herbicides/pesticides could damage the health of the farmers.
• Cash crops are a form of monoculture farming in which only one type of crop is grown. These crops frequently deplete the soil of minerals and nutrients that allow it to remain productive. This can lead to soil erosion and cause the land to no longer be productive over time. As a result, farmers could lose their livelihood.
16. **Part A:** Answers will vary. (1 point)
- hybrid seeds (an offspring of two plants of different races, breeds, varieties, species, or genera).
- fertilizers (fertilizers are designed to quickly add nutrients including nitrogen, potassium, and phosphorus to the soil)
- pesticides, which limit the pest damage that occurs in monocultures. Herbicides kill unwanted plants while leaving the desired crop relatively unharmed.
- new machinery, such as threshing machines, that run on petroleum products.
- modern irrigation techniques and the expansion of irrigation infrastructure.
- monocultures (fields where only one crop is grown)

**Part B:** Answers will vary. (1 point)
- dramatically increased crop yields. New high-yield varieties of rice, wheat, and other crops produced substantially higher yields than the traditional cultivars. Thus, countries were able to feed more of their people. Higher crop yields are credited with saving over a billion people from starvation.
- The introduction of new farming technologies and the spread of existing technologies to developing and developed countries
- increased food security. The increased food production led to increases in the calories consumed per day by people in the developing world.

**Part C:** Answers will vary. (2 points)
- While regions where the programs were introduced increased food production and food security, citizens were exposed to hazardous chemicals that create health problems.
- Despite the positive results of the Green Revolution, the intensive use of water required by the new varieties of crops depleted important water sources.
- The new farming techniques led to soil erosion, which undermines the long-term prospects for farmers in these regions.
- Inorganic fertilizers require large amounts of energy to create them. They also release greenhouse gas emissions that contribute to climate change. Heavy use reduces the number of species in an area, thus damaging the biodiversity important to life.
- The increased food supply has contributed to overpopulation, which increases the carrying capacity and ecological demands on a region. These changes are not sustainable in the long term.
- The increased use of tractors, trucks, and other machinery has increased farmers’ reliance upon petroleum products and played a major role in climate change.
- Agricultural biodiversity and wild biodiversity has reduced due to reliance upon a few high-yield varieties of each crop and an expansion into uncultivated areas in search of new farmland.
Activity 1: What Causes Hunger?

Overview
Students will each read about the drought that affected the Horn of Africa in 2011 and identify root causes of famine. In small groups, they will share what they learned about causes and consequences of famine.

Objectives
Students will:
• define famine
• explore root causes and consequences of famine
• discuss ways to end and/or prevent famine

Inquiry/Critical Thinking Questions
• Is lack of food production the primary cause of hunger?
• What underlying structures make people susceptible to famine?
• How can famine be prevented, even in places susceptible to drought?

Time Required
One 45-minute class

Key Concepts
• hunger
• food scarcity
• famine

National Standards Addressed
National Council for the Social Studies
1. Culture
3. People, Places, and Environments
6. Power, Authority, and Governance
9. Global Connections

National Science Education Standards
F. Science in Personal and Social Perspectives

National Efs Standards
2.1 Interconnectedness: Systems Thinking
2.3 Economic Systems: Poverty

Materials/Preparation
World map

Student Readings, students will read one of the following articles. If you have computer access for each student, the articles may be accessed online. Otherwise, you can print the articles; print enough copies so that 1/3 of your class can read each article.


Food
Activity 1: What Causes Hunger? continued

Activity

Introduction

1. Show students on a world map where the Horn of Africa is. The Horn of Africa includes the countries Djibouti, Eritrea, Ethiopia, and Somalia.

2. Let students know that this region has a long and rich cultural history. Some of the oldest ancestors of modern humans have been discovered in the region, including “Lucy” (*Australopithecus afarensis*) and “Ardi” (*Ardipithecus ramidus*). Cave paintings in Somaliland, a break-away region of Somalia, date back 5,000 years. 1 Ethiopia, once much larger than it is today, was a major economic and cultural center during the time of Pharaonic Egypt and on through the Middle Ages. Citizens of ancient Northeast Africa were employed in agriculture, engineering, medicine, and metallurgy.2

Option: Play the song, “Africa Must Wake Up,” for students (An MP3 can be downloaded on iTunes or Amazon.com, and videos are posted on YouTube). You may want to print out and share the lyrics with them so that they can follow along.

3. Ask students to think of more recent images they have seen from the Horn of Africa region. What news have students heard from the region? *(It is likely that someone will bring up droughts or famine. Periodic droughts are common in the region. In recent decades, droughts have turned into major famine events—for example, the famine in Somalia in the early 1990s.)*

4. Write the word “famine” on the board.

5. Ask students to share what comes to mind when they see the word “famine.” What does famine look like? Where does it occur? Who suffers from famine?

6. Ask students if they know about the 2011 famine in the Horn of Africa. Let them know that they will be studying root causes of this famine.

Steps

1. Divide the class into groups of 3. Let them know that each person in the group will read a different article and report back to the group about what they read.

2. In each group, one student will read Reading 1, a second student will read Reading 2, and a third student will read Reading 3. As they read, ask them to take notes on causes of famine identified in their article. Allow about 15 minutes for students to read.

3. Allow students to talk together as a group for about 5 minutes, sharing what they learned from their articles.

4. Ask each group to make a list of all the possible contributors to the famine in Somalia, as well as the effects of famine.

5. Ask students to share what they learned about root causes of the famine in Somalia. Back at the board, you can write these root causes above the word “famine” and draw arrows from each root cause to famine.

6. Now ask students to share what they learned about potential consequences of famine. You can write these words below “famine,” drawing arrows from famine to each one.

   - Drought/Weather
   - Conflict/Instability
   - Poverty/Cost of Food
   - Malnutrition & Stunted Growth
   - Death
   - Migration

7. Conclude with a discussion using the following questions.
**Activity 1: What Causes Hunger? continued**

**Discussion**

1. What were you most surprised to learn about famine?

2. The severe drought in 2011 affected the entire Horn of Africa, including Ethiopia and Kenya. Why do you think famine has only been “officially declared” in Somalia? Based on what you know about root causes of famine, how do you think Ethiopia and Kenya differ from Somalia?

3. How does the image of Somalia and the Horn of Africa today compare with the history of the region? What factors do you think could have led the region to destabilize?

4. Why might some donors be reluctant to send aid to the region?

5. What do you think is needed to end the famine in Somalia? How can additional deaths in the region be prevented?

6. What systems or structures could prevent future famines, in Somalia or elsewhere?

**Economics Extension**

Create a systems diagram to illustrate how the following are connected: population growth, climate change, food prices, political instability. Then write a narrative or op-ed to explain strategies for keeping food prices low.

**Geography Extension**

Research the history of the Horn of Africa to learn more about the ancient cultures of the region. What major economic, religious, cultural, and scientific contributions originated from this region? How do modern-day political borders in the region differ from ancient times? What forces resulted in these changes?

**Additional Resources**

- **Video:** Full length Bono, K'Naan Interview
  Anderson Cooper interviews international humanitarian Bono and Somali singer K’Naan about the crisis in Somalia.

- **Video:** TED Talk: The Danger of a Single Story
  Nigerian novelist Chimamanda Adichie warns of the dangers of hearing a single narrative about a place or a group of people. She encourages viewers to reach beyond the typical stories of Africa they see in Western news.

- **Article:** A Son Returns to the Agony of Somalia
Activity 2: What to Eat?

Overview
Students brainstorm around the meaning of malnutrition and possible root causes of malnutrition. In pairs, they construct an ideal diet for a day, considering how many calories and which nutrients are important to include in their meals.

Objectives
Students will:
• become familiar with suggested dietary guidelines
• understand how their daily nutrition choices can impact personal well-being
• recognize that malnutrition can affect both poor and wealthy people

Inquiry/Critical Thinking Questions
• What foods support human health and well-being?
• Why does malnutrition occur?
• What are possible outcomes of malnutrition?

Time Required
One 60-minute class

Key Concepts
• nutrition
• malnutrition

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
4. Individual Development and Identity
9. Global Connections

National Science Education Standards
F. Science in Personal and Social Perspectives

National Efs Standards
2.4 Social and Cultural Systems: Global Health
3.1 Personal Action: Personal Change Skills and Strategies

Materials/Preparation
Handout/overhead: Side–by–Side Lunch Comparison
Handout: What to Eat?, 1 per pair of students
Internet access

Activity
Introduction
1. Ask students to do 5-minute freewrite about what they typically eat in a day. Ask them to reflect on what foods they usually eat for breakfast, lunch, and dinner. Do they think they eat enough food? Too much food? The right kinds of foods to keep them healthy and feeling good?

2. Ask volunteers to share their ideas from the freewrite.

3. Ask if anyone has a definition for the word “malnutrition.” (You can ask them to consider the meaning of the prefix “mal” and the root of the word “nutrition.”)

4. Let students know that malnutrition can be the result of eating too little, eating too much, or eating the wrong kinds of food. In other words, malnutrition includes both undernutrition and overnutrition. It impacts people worldwide, not just those who live in poverty.

5. Ask students to collectively think about what a daily diet should entail. In a think–pair–share activity, have student pairs brainstorm what sorts of foods, nutrients, calories, or other considerations should be taken into account.

6. Show students the Side–by–Side Lunch Comparison, either as a handout or displayed with a document camera. Give them a few minutes to analyze both lunches. Ask them which lunch appears to be the better choice for an active high school student. What makes this diet the better choice?
Activity 2: What to Eat?  continued

Steps

1. Let them know that they will be constructing an ideal diet for a day. An ideal diet would help them to maintain a healthy weight based on their level of activity, age, and height.

2. Divide students into pairs. Provide each pair with a copy of the handout: What to Eat?

3. Allow them 30 minutes to construct their 3 meals for the day.
   - Note: Shorten this activity by asking them to only construct 1 meal.

4. When students are finished, ask them to summarize the types of foods that comprise their ideal diet. Are they primarily grains? Vegetables? Meats? (You may want to revisit the list students generated during the Introduction, to see which of their assumptions were correct and what new knowledge they have acquired.)

5. Lead a discussion using the following questions.

Discussion

1. How would you summarize the diet you created? What kinds of food should you eat more or less of?

2. What are possible barriers to actually eating the ideal diet you constructed?

3. Is the ideal daily diet you constructed likely to be more or less expensive than what most people you know eat? Why do you think this is?

4. What are root causes of obesity?

5. What are root causes of hunger and nutrient deficiencies?

6. What would convince you and other students you know to eat better?

Additional Resources

- Website: USDA
  http://fnic.nal.usda.gov
  View ethnic/cultural food pyramids. Click on “Dietary Guidance—MyPlate and Food Pyramid Resources—Ethnic/Cultural Food Pyramids” to view food pyramids for traditional diets, including Native American, Japanese, and Mediterranean.

- Article: Quality, not Quality: Why small doses of vitamins could make a huge difference to the world’s health
  http://www.economist.com/node/18440801
  In this Economist article, poorer people may have access to large quantities of food, but the food is not always nutritious. Micronutrients are an important, low–cost way to improve health and promote development.

- Video: City Critic: School Lunches
  http://video.nytimes.com/video/2011/03/05/nyregion/100000000700483/citycritic-school-lunch.html
  A 3-minute video takes a brief look into New York City school lunches, documenting how the school district shaped their lunch program into one that is both nutritious and tasty.
## Side-by-Side Lunch Comparison

### Which Is Best?

#### Lunch A

<table>
<thead>
<tr>
<th>Item</th>
<th>Calories</th>
<th>% Daily Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hamburger</td>
<td>279</td>
<td>Calcium: 6%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vitamin C: 3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Iron: 15%</td>
</tr>
<tr>
<td>French fries</td>
<td>539</td>
<td>Calcium: 2%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vitamin C: 8%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Iron: 13%</td>
</tr>
<tr>
<td>Soda (1 can)</td>
<td>210</td>
<td>Calcium: 0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vitamin C: 0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Iron: 0%</td>
</tr>
<tr>
<td>Cupcake</td>
<td>100</td>
<td>Calcium: 10%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vitamin C: 0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Iron: 0%</td>
</tr>
</tbody>
</table>

#### Lunch B

<table>
<thead>
<tr>
<th>Item</th>
<th>Calories</th>
<th>% Daily Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turkey and cheese sandwich</td>
<td>361</td>
<td>Calcium: 22%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vitamin C: 12%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Iron: 13%</td>
</tr>
<tr>
<td>Spinach salad (tomatoes, croutons, and dressing)</td>
<td>286</td>
<td>Calcium: 27%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vitamin C: 94%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Iron: 42%</td>
</tr>
<tr>
<td>2% milk (2 cups)</td>
<td>244</td>
<td>Calcium: 58%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vitamin C: 1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Iron: 0%</td>
</tr>
<tr>
<td>Large banana</td>
<td>200</td>
<td>Calcium: 1%</td>
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<tr>
<td></td>
<td></td>
<td>Vitamin C: 33%</td>
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<td></td>
<td></td>
<td>Iron: 3%</td>
</tr>
</tbody>
</table>

Plan three meals that will provide you with the correct amounts of the nutrients you need.

Breakfast

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Is it fresh or processed?</th>
<th>Cooked or raw?</th>
<th>calories</th>
<th>sodium</th>
<th>sugar</th>
<th>saturated fat</th>
<th>protein</th>
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</thead>
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</tbody>
</table>

**TOTALS**

Summarize why the breakfast you created is nutritious:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Food
## Lunch

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Is it fresh or processed?</th>
<th>Cooked or raw?</th>
<th>calories</th>
<th>sodium</th>
<th>sugar</th>
<th>saturated fat</th>
<th>protein</th>
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<td><strong>TOTALS</strong></td>
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</tbody>
</table>

Summarize why the lunch you created is nutritious:

____________________________________________________________________________________________
____________________________________________________________________________________________
____________________________________________________________________________________________

## Dinner

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Is it fresh or processed?</th>
<th>Cooked or raw?</th>
<th>calories</th>
<th>sodium</th>
<th>sugar</th>
<th>saturated fat</th>
<th>protein</th>
</tr>
</thead>
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<td><strong>TOTALS</strong></td>
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</tbody>
</table>

Summarize why the dinner you created is nutritious:

____________________________________________________________________________________________
____________________________________________________________________________________________
____________________________________________________________________________________________
____________________________________________________________________________________________
Activity 3: What the World Eats

Overview
In a matching exercise, students work to connect countries’ food availability with information about each country’s geographic, economic, and sociopolitical features. Students identify factors that may contribute to food availability or scarcity within a particular country. By examining a map of world hunger, students see for themselves where hunger is most prevalent in the world and discuss possible root causes.

Objectives
Students will:
• connect a country’s geographic, economic, and sociopolitical features with its degree of food security
• extrapolate information from a map of world hunger
• discuss root causes of food scarcity

Inquiry/Critical Thinking Questions
• Where are people suffering most from food scarcity?
• How do sociopolitical factors contribute to food scarcity?
• What is the connection between poverty and food security?

Time Required
One 50-minute class

Key Concepts
• regional diet
• hunger/food scarcity
• food security

National Standards Addressed
National Council for the Social Studies
1. Culture
3. People, Places, and Environments
6. Power, Authority, and Governance
9. Global Connections

National Science Education Standards
F. Science in Personal and Social Perspectives

National EFS Standards
2.3 Economic Systems: Poverty
2.4 Social and Cultural Systems: Peace and Conflict
2.4 Social and Cultural Systems: Governance
3.1 Personal Action: Personal Change Skills and Strategies

Materials/Preparation
Handout: What the World Eats, 1 per student
(Optional) World map available for students to locate countries
Handout: FAO Hunger Map 2010, 1 color copy to display using a document camera or overhead (map also available at www.fao.org/hunger/en/)

Activity
Introduction
1. Review the idea of food security (availability versus scarcity) with students. What does it mean to be “food secure”? What factors might contribute to food security?

2. Distribute a copy of the handout, What the World Eats, to each student. The handout can be completed either individually or in student pairs.

3. Allow students at least 20 minutes to try to match the 8 countries on page 2 with their consumption and health statistics on page 1. Students should complete the first and last columns on page 1. You may want to have them do this in pencil, as they will likely change their answers several times.

4. When students have completed the handout, stop for a quick discussion:
• What features of a country appear to be associated with high caloric availability per person?
Activity 3: What the World Eats  continued

- What features of a country seem to be correlated with low caloric availability per person?
- How does caloric intake available per person correlate with life expectancy? What additional factors do you think might influence this relationship?
- Can you predict a country’s overweight population based on caloric intake available? If not, what other factors might influence a population’s likelihood of being overweight.

Steps
1. Show students the interactive map of world hunger. The map provided is visible online at http://www.fao.org/hunger/en/.
2. Ask them to study the map for a few minutes.
3. Ask them to discuss the map with a partner sitting near them. What generalities can you make about world hunger from this map? What factors might be driving hunger in these places?
4. Have a brief class discussion, asking volunteer pairs to share the ideas they discussed.
5. Conclude with a discussion using the following questions.

Discussion
1. Why are maps like the FAO World Hunger Map useful tools? How could they be used to inform policy and decision-making?
2. What are possible unintended consequences of generalizing about a region based on information like the World Hunger Map?
3. Which countries appear to be the most food insecure? How do you know?
4. What factors seem to be correlated with food insecurity? Can you think of any other possible factors that would either contribute to food scarcity or be a consequence of food scarcity?

5. For the more food insecure countries, what would you recommend to move them toward greater food security?

Family and Consumer Sciences Extension
Determine what foods are eaten in each of the eight countries included in this activity. Create a profile of common foods for each of the countries. Ask students to think about the implications of these food choices. Are these foods expensive? Nutritious? Environmentally sustainable?

Additional Resources
- **Book:** Hungry Planet: What the World Eats
  Photographer Peter Menzel and writer Faith D’Aluisio team up to document how families eat around the world. (Napa, California: Material World Books, 2005)
- **Photographs:** What the World Eats
  Part I: http://www.time.com/time/photogallery/0,29307,1626519,00.html
  Part II: http://www.time.com/time/photogallery/0,29307,1645016,00.html
  View Peter Menzel’s photographs of families around the world pictured with their weekly groceries online.
What the World Eats,  page 1

Directions: Use information provided to match the food consumption and availability statistics for the Countries A-H listed below with the 10 countries described on the next page.

1. In the first column of the table below, include the country name that you think matches the statistics listed in that row.

2. In the last column, write down factors that you think contribute to high or low food availability in that country.

<table>
<thead>
<tr>
<th>Country</th>
<th>Caloric intake available daily (per person)</th>
<th>Overweight population (male/female)</th>
<th>Meat consumption (per person per year)</th>
<th>Life expectancy (male/female)</th>
<th>What factors may contribute to food availability in this country?</th>
</tr>
</thead>
<tbody>
<tr>
<td>A:</td>
<td>3,152</td>
<td>55/57%</td>
<td>71 pounds</td>
<td>75/79</td>
<td></td>
</tr>
<tr>
<td>B:</td>
<td>3,145</td>
<td>65/66%</td>
<td>129 pounds</td>
<td>72/77</td>
<td></td>
</tr>
<tr>
<td>C:</td>
<td>3,054</td>
<td>70/60%</td>
<td>235 pounds</td>
<td>78/83</td>
<td></td>
</tr>
<tr>
<td>D:</td>
<td>3,010</td>
<td>70/77%</td>
<td>132 pounds</td>
<td>76/77</td>
<td></td>
</tr>
<tr>
<td>E:</td>
<td>2,379</td>
<td>22/25%</td>
<td>68 pounds</td>
<td>72/65</td>
<td></td>
</tr>
<tr>
<td>F:</td>
<td>2,249</td>
<td>46/66%</td>
<td>329 pounds</td>
<td>60/66</td>
<td></td>
</tr>
<tr>
<td>G:</td>
<td>2,219</td>
<td>53/61%</td>
<td>52 pounds</td>
<td>63/69</td>
<td></td>
</tr>
<tr>
<td>H:</td>
<td>2,114</td>
<td>10/17%</td>
<td>31 pounds</td>
<td>46/49</td>
<td></td>
</tr>
<tr>
<td>Country</td>
<td>Geography</td>
<td>Average Annual Income (GDP/person in $PPP)</td>
<td>Poverty and Stability</td>
<td>Life Expectancy at Birth</td>
<td>Adult Literacy (% who can read and write)</td>
</tr>
<tr>
<td>-------------</td>
<td>----------------------------------------</td>
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</tr>
<tr>
<td>Australia</td>
<td>Large island in South Pacific; 44% of land is desert; 3% of land is arable; Caribbean island; Mostly tropical; Central America; Tropical and highland regions; 13% of land is arable</td>
<td>$41,000/person</td>
<td>Constitutional republic since 1900</td>
<td>82 years</td>
<td>99%</td>
</tr>
<tr>
<td>Chad</td>
<td>Landlocked country in central Africa; Independent republic since 1960; 35 years of ethnic warfare during last 50 years; home to 193,000 Sudanese refugees</td>
<td>$1,600/person; &gt;80% of population are subsistence farmers and herders</td>
<td>Independent republic since 1985; Socialist government ruled by a single party</td>
<td>48 years</td>
<td>99.8%</td>
</tr>
<tr>
<td>Cuba</td>
<td>Caribbean island; Mostly tropical; Central America;</td>
<td>$2,400/person; Less than 2% unemployed</td>
<td>Socialist government</td>
<td>78 years</td>
<td>93%</td>
</tr>
<tr>
<td>Guatemala</td>
<td>Desert, grassy plains, and mountains; 81% of land is used for grazing livestock (both grasslands and arid lands); Mostly mountainous and high; Northern Asia; Mostly mountainous; 13% of land is arable; Desert, grassy plains, and mountains; 81% of land is used for grazing livestock (both grasslands and arid lands); Mostly mountainous and high; 13% of land is arable; Desert, grassy plains, and mountains; 81% of land is used for grazing livestock (both grasslands and arid lands); Mostly mountainous and high; 13% of land is arable; Desert, grassy plains, and mountains; 81% of land is used for grazing livestock (both grasslands and arid lands); Mostly mountainous and high; 13% of land is arable; Desert, grassy plains, and mountains; 81% of land is used for grazing livestock (both grasslands and arid lands); Mostly mountainous and high; 13% of land is arable; Desert, grassy plains, and mountains; 81% of land is used for grazing livestock (both grasslands and arid lands); Mostly mountainous and high; 13% of land is arable; Desert, grassy plains, and mountains; 81% of land is used for grazing livestock (both grasslands and arid lands); Mostly mountainous and high; 13% of land is arable; Desert, grassy plains, and mountains; 81% of land is used for grazing livestock (both grasslands and arid lands); Mostly mountainous and high; 13% of land is arable; Desert, grassy plains, and mountains; 81% of land is used for grazing livestock (both grasslands and arid lands); Mostly mountainous and high; 13% of land is arable; Desert, grassy plains, and mountains; 81% of land is used for grazing livestock (both grasslands and arid lands); Mostly mountainous and high; 13% of land is arable; Desert, grassy plains, and mountains; 81% of land is used for grazing livestock (both grasslands and arid lands); Mostly mountainous and high; 13% of land is arable; Desert, grassy plains, and mountains; 81% of land is used for grazing livestock (both grasslands and arid lands); Mostly mountainous and high; 13% of land is arable; Desert, grassy plains, and mountains; 81% of land is used for grazing livestock (both grasslands and arid lands); Mostly mountainous and high; 13% of land is arable; Desert, grassy plains, and mountains; 81% of land is used for grazing livestock (both grasslands and arid lands); Mostly mountainous and high; 13% of land is arable; Desert, grassy plains, and mountains; 81% of land is used for grazing livestock (both grasslands and arid lands); Mostly mountainous and high; 13% of land is arable; Desert, grassy plains, and mountains; 81% of land is used for grazing livestock (both grasslands and arid lands); Mostly mountainous and high; 13% of land is arable; Desert, grassy plains, and mountains; 81% of land is used for grazing livestock (both grasslands and arid lands); Mostly mountainous and high; 13% of land is arable; Desert, grassy plains, and mountains; 81% of land is used for grazing livestock (both grasslands and arid lands); Mostly mountainous and high; 13% of land is arable; Desert, grassy plains, and mountains; 81% of land is used for grazing livestock (both grasslands and arid lands); Mostly mountainous and high; 13% of land is arable; Desert, grassy plains, and mountains; 81% of land is used for grazing livestock (both grasslands and arid lands); Mostly mountainous and high; 13% of land is arable; Desert, grassy plains, and mountains; 81% of land is used for grazing livestock (both grasslands and arid lands); Mostly mountainous and high; 13% of land is arable; Desert, grassy plains, and mountains; 81% of land is used for grazing livestock (both grasslands and arid lands); Mostly mountainous and high; 13% of land is arable; Desert, grassy plains, and mountains; 81% of land is used for grazing livestock (both grasslands and arid lands); Mostly mountainous and high; 13% of land is arable; Desert, grassy plains, and mountains; 81% of land is used for grazing livestock (both grasslands and arid lands); Mostly m...</td>
<td>48 years</td>
<td>93%</td>
<td>93%</td>
<td></td>
</tr>
<tr>
<td>Kuwait</td>
<td>Small country in Middle East, on coast of Persian Gulf; 98% food imported; 91% of land is barren desert; 90% of water is from desalinated sea water</td>
<td>$48,990/person; High revenues based on oil exports</td>
<td>Independent constitutional emirate (Muslim state ruled by prime minister appointed by monarch/dynasty); Experienced 36-year guerrilla war, killing more than 100,000 people and leaving many more refugees</td>
<td>77 years</td>
<td>93%</td>
</tr>
<tr>
<td>Mexico</td>
<td>Country bordering southern United States; Climate varies from tropical to desert; 13% of land is arable; Desert, grassy plains, and mountains; 81% of land is used for grazing livestock (both grasslands and arid lands); Mostly mountainous and high; 20% of land is arable</td>
<td>$13,900/person; 26% of population lives on less than $2/day</td>
<td>Federal republic; Independent from Spain since 1810; Instability caused by drug trafficking</td>
<td>76 years</td>
<td>96%</td>
</tr>
<tr>
<td>Mongolia</td>
<td>Southeast Asian archipelago; Mostly mountainous and high; 20% of land is arable</td>
<td>$3,500/person; 46% of population lives on less than $2/day</td>
<td>Parliamentary government; Independent from China since 1921</td>
<td>68 years</td>
<td>93%</td>
</tr>
<tr>
<td>Philippines</td>
<td>Southeast Asian archipelago; Mostly mountainous and high; Tropical climate; 20% of land is arable</td>
<td>$3,500/person; 46% of population lives on less than $2/day</td>
<td>Republic; Independent from U.S. since 1946</td>
<td>72 years</td>
<td>93%</td>
</tr>
</tbody>
</table>
Teacher Master
What the World Eats

A: Cuba
B: Mexico
C: Australia
D: Kuwait
E: Philippines
F: Mongolia
G: Guatemala
H: Chad

Sources:
Activity 4: Food Fight

Overview
Students will research and debate the question of whether a vegetarian lifestyle is advisable, considering both environmental resources and human health.

Objectives
Students will:
• research information about different diet choices
• determine the environmental and health consequences of a particular diet
• take and defend a position on whether a vegetarian diet or one that includes meat is preferable

Inquiry/Critical Thinking Questions
• What agricultural methods sustain environmental resources?
• How do dietary choices connect to environmental sustainability?
• What kind of diet requires significant environmental resources?
• Are certain types of diets healthier than others?

Time Required
One 60-minute class

Key Concepts
• vegetarianism
• sustainable agriculture
• healthy diet

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
4. Individual Development and Identity
9. Global Connections

National Science Education Standards
F. Science in Personal and Social Perspectives

National EfS Standards
2.4 Social and Cultural Systems: Global Health
3.1 Personal Action: Personal Change Skills and Strategies

Materials/Preparation
Handout: Viewpoints A–C—make enough copies so that 1/3 of students receive Viewpoint A, 1/3 of students receive Viewpoint B, and 1/3 of students receive Viewpoint C

Viewpoint signs, using 3 sheets of 3.5 x 11 paper, make the following 3 signs and hang them on 3 different classroom walls—Viewpoint A, Viewpoint B, Viewpoint C

Internet access

Activity
Introduction
1. Ask students to provide their own definitions for the word “vegetarian.” (A vegetarian is a person who does not eat meat. However, many vegetarians eat animal products such as dairy and eggs.)
2. You may want to have a quick discussion to further engage students: What thoughts or feelings come to mind when they hear that word? Are any students vegetarian? Do they know any vegetarians?
3. Let them know that they will be exploring the pros and cons of a vegetarian diet. Their goal will be to answer the question: Is a vegetarian lifestyle advisable, considering both human health factors and environmental factors?
**Activity 4: Food Fight continued**

**Steps**

1. Break students into groups of 3. Assign each student in a group to Viewpoint A, B, or C so that each group includes all viewpoints.
   - **Viewpoint A:** A vegetarian diet is the best way to promote personal health and environmental sustainability.
   - **Viewpoint B:** A diet that includes meat is necessary to maintain personal health and well-being.
   - **Viewpoint C:** Eating meat raised through environmentally sustainable practices is an important way to sustain rural economies.

2. Pass out the appropriate handout (Viewpoint A, B, or C) to each student in the group.

3. Give students 20 to 25 minutes to complete Part 1 of their handouts independently. They can use the suggested websites or any other relevant references.

4. Ask students to return to their groups and share their findings. As they share, group members should fill out Part 2 of the handout. Allow 10 to 15 minutes for this part of the activity.

5. Ask students to spend a few minutes a group discussing which argument (Viewpoint A, B, or C) is most compelling and why.

6. Call the class back together. Point out the 3 Viewpoint signs that you have hung on the classroom walls.

7. Tell students that they will need to choose with Viewpoint resonates the most with them. They should stand by the Viewpoint sign that they have chosen.

8. Call on students to explain why they chose a particular viewpoint. Let students know that they can change their minds and move to a different Viewpoint sign if they hear a particularly compelling argument that makes them rethink their original decision.

**Discussion**

1. What other possible viewpoints could have been included in this debate?
2. Which choice seems best from the standpoint of human health?
3. Which choice seems best from the standpoint of environmental resources?
4. How do you think the three viewpoints rank in terms of price to the consumer? Does this make you rethink your argument?
5. How might a person’s cultural or religious background impact the decision to eat or not eat certain foods?

**Art Extension**

Create a visually persuasive poster to educate and encourage others to adopt your viewpoint. You could display the posters in the school cafeteria.

**Additional Resources**

- **Website:** Debate.org
  - [http://www.debate.org/help/articles/tips-for-a-better-debate/](http://www.debate.org/help/articles/tips-for-a-better-debate/)
  Debate.org offers “Tips for a Better Debate.” These tips can help support students in crafting strong persuasive arguments.

- **Website:** Water Footprint Network
  - [http://www.waterfootprint.org](http://www.waterfootprint.org)
  Water Footprint Network provides statistics about water usage for growing various crops and raising different kinds of livestock. Click on “Product Water Footprints” to learn more.
Viewpoint A
A vegetarian diet is the best way to promote personal health and environmental sustainability.

Directions, Part 1: Use the resources below, or other credible sources, to find at least three ways in which a vegetarian diet is beneficial for personal health and/or environmental sustainability.

Resources to support Viewpoint A:


What are benefits of a vegetarian diet?
1. ____________________________________________________________
2. ____________________________________________________________
3. ____________________________________________________________

Directions, Part 2: Confer with your group members. As they share the findings from their research, take notes about the Pros and Cons of each of their viewpoints.

<table>
<thead>
<tr>
<th></th>
<th>Pros of vegetarian diet</th>
<th>Cons of vegetarian diet</th>
<th>Additional notes and considerations</th>
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<tr>
<td>Human Health</td>
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<td>Environment</td>
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**Viewpoint B**

A diet that includes meat is necessary to maintain personal health and well-being.

**Directions, Part 1:** Use the resources below, or other credible sources, to find at least three ways in which a meat-based diet is beneficial for personal health and/or environmental sustainability.

**Resources to support Viewpoint B:**


**What are benefits of a diet that includes meat?**

1. ____________________________________________________________

2. ____________________________________________________________

3. ____________________________________________________________

**Directions, Part 2:**

Confer with your group members. As they share the findings from their research, take notes about the Pros and Cons of each of their viewpoints.

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<tr>
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<th>Cons of meat-based diet</th>
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<td>Environment</td>
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**Viewpoint C**

Eating meat raised through environmentally sustainable practices is an important way to sustain rural economies.

**Directions, Part 1:** Use the resources below, or other credible sources, to find at least three ways in which a sustainably-harvested diet is beneficial for personal health and/or environmental sustainability.

**Resources to support Viewpoint C:**
- Christine Lennon, *Food & Wine*, “Why Vegetarians Are Eating Meat”:
- USDA, “Know Your Farmer, Know Your Food”:

**What are benefits of eating meat raised in an environmentally sustainable manner?**

1. __________________________________________________________________________

2. __________________________________________________________________________

3. __________________________________________________________________________

**Directions, Part 2:**

Confer with your group members. As they share the findings from their research, take notes about the Pros and Cons of each of their viewpoints.

<table>
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<th>Pros of sustainably-harvested diet</th>
<th>Cons of sustainably-harvested diet</th>
<th>Additional notes and considerations</th>
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Activity 5: Sustainable Agriculture

Overview
Students take a “quiz” that reveals information about how environmental resources—including soil, water, and organisms—are impacted by agricultural practices. In pairs, students research currently available techniques for producing food in more sustainable ways and discuss challenges and tradeoffs for adopting these techniques.

Objectives
Students will:
• learn about ways in which farming impacts environmental resources
• research environmentally sustainable methods of food production

Inquiry/Critical Thinking Questions
• What are the environmental impacts of producing food?
• What agricultural practices can sustain environmental resources?
• How is environmental health connected to agricultural sustainability?

Time Required
One 60-minute class

Key Concepts
• sustainable agriculture
• industrial agriculture
• life cycle analysis

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
7. Production, Distribution, and Consumption
8. Science, Technology, and Society
9. Global Connections

National Science Education Standards
F. Science in Personal and Social Perspectives

National EfS Standards
2.2 Ecological Systems: Respect for Limits
2.4 Social and Cultural Systems: Appropriate Technology

Materials/Preparation
(Optional) Prior to this activity, take a field trip to a local farm or community garden; have a farmer demonstrate how he/she grows crops or raises livestock
(Optional) Bring images to show students different examples of agriculture
Quiz: How Grows It?, 1 copy displayed using a document camera
Option: print 1 copy of the quiz for each pair of students
Set of 8.5 x 11 “answer cards” to hold up: A, B, C, and D—1 set per student pair
Internet access
Activity 5: Sustainable Agriculture  continued

Activity

Introduction

1. Ask students to close their eyes and envision a place where food is grown. What does it look like? Who is growing the food? What sorts of activities are happening?
   - It is likely that some students will have no experience for this activity. It can still be helpful to have them conjure up a mental image first to establish knowledge and misconceptions.
   
   Option: Have students sketch where they think food is grown or raised. Use the same questions as above to guide the activity.

2. Have students open their eyes. Ask students to raise their hands if they have ever seen food being grown. Has anyone seen a garden? What about a farm or a ranch? Ask volunteers to describe what they have seen.
   
   Option: If you had students sketch earlier, ask them to compare their ideas with other students. Do their ideas have any commonalities? What do students appear to be most confused or uncertain about?

3. Ask students to explain what processes are used to grow plants that will become food.
   - What happens first? (Often soil is tilled to break up soil pathogens and make it easy for seeds to sprout)
   - What happens next? (Seeds are planted)
   - What types of inputs or resources are needed? (fertilizers to provide plant nutrients, herbicides to kill weeds, insecticides to kill pests, gasoline to run plows and tractors, tractors to till soil and harvest plants, water)

   Option: Show students images from farms and ranches, including a variety of examples. (e.g., industrial agriculture, urban agriculture, subsistence agriculture, aquaculture, rooftop gardens, aerial images of crop circles, livestock grazing, feedlots)

Steps

1. Let students know that they are going to work together to take a quiz about agricultural practices and environmental consequences

2. Use a document camera to display, How Grows It?

   Option: Print copies of the quiz for students to read.

3. Ask students to confer with a partner to determine answers for each question. You may want to have them jot down their answers on a sheet of paper that they can refer back to. Allow them 10 to 15 minutes to determine answers. Ask them to make their best guesses, using what they know about food.

   - Note: You may want to let them know that they will be researching solutions and sustainable alternatives to the information provided in the quiz, to set a positive tone for the activity.

4. Distribute 1 set of answer cards (4 cards: A, B, C, and D) to each pair of students.

5. Go through the quiz, one question at a time. After you read each question and its answer choices, ask student pairs to hold up the card corresponding to their answer (A, B, C, or D).

6. Tally up student responses, indicating total votes next to each possible answer.

7. Go over answers to each question aloud, stopping to allow students to comment or ask questions.

8. For the research activity, students will need access to a library or to computers.

9. Number off student pairs. Each pair’s “number” corresponds to one of the questions from the quiz.

10. Give student pairs 10 to 15 minutes to research the issue raised in the question and to determine (or brainstorm) a possible sustainable alternative that would reduce the environmental impact.
Activity 5: Sustainable Agriculture  continued

11. Bring the class back together. Ask each student to share one possible solution to the problem they researched.

12. Conclude with a short discussion, using the following questions.

Discussion

1. Imagine you are a young farmer who is trying to determine which agricultural practices (tilling/plowing, irrigation, application of pesticides) will be best for the long-term future of your farm. What factors would you need to consider?

2. Which of the sustainable techniques/strategies seem to be the easiest to implement? What makes them seem easier than other practices? Why might it be difficult for a farmer to adopt some of the sustainable alternatives?

3. What mechanisms or institutions could encourage the adoption of more sustainable techniques?

Additional Resources

- **Book:** *The Omnivore's Dilemma*

- **Video:** *The Secret Life of Beef*
  This 6-minute video discusses the amount of meat Americans consume and ways to consume meat in ways that are healthier and more environmentally sustainable.

- **Website:** *Water Footprint*
  [www.waterfootprint.org](http://www.waterfootprint.org)
  The Water Footprint Network’s site allows you to view individual water footprints for various agricultural products, from barley to cotton.

- **Website:** *The American Geological Institute*
  The American Geological Institute has a series of slideshows about how soil is formed, why soil is important, and how it can be sustained.

- **Video:** *Surviving the Dust Bowl*
  [http://www.pbs.org/wgbh/amERICANEXPERIENCE/films/dustbowl/player/](http://www.pbs.org/wgbh/amERICANEXPERIENCE/films/dustbowl/player/)
  People who lived through the Dust Bowl provide oral histories of the time period and how their lives were forever changed by the Dust Bowl in this 52-minute PBS Special.
# Quiz: How Grows It?

1. Fertilizers supply nutrients to help plants grow.
   Which phenomenon is attributed to fertilizer runoff?
   - a. Climate change
   - b. Hole in ozone layer
   - c. Ocean acidification
   - d. Dead zones

2. Freshwater is a finite resource.
   What percent of water withdrawals in the U.S. are used for irrigation?
   - a. 17%
   - b. 37%
   - c. 57%
   - d. 77%

3. Pesticides are designed to keep pests, such as weeds and insects, from destroying crops.
   Which of the following is NOT a danger of using pesticides?
   - a. Pest resistance
   - b. Water pollution
   - c. Human poisonings
   - d. Killing weeds

4. It takes more water to produce animal protein than to grow a similar sized serving of cereal and grain crops.
   How many liters of water are needed to produce 1 kilogram (about 2 pounds) of pork?
   - a. 800
   - b. 1,200
   - c. 1,600
   - d. 2,200

5. Some food is never eaten at all.
   How much food produced in the U.S. gets thrown away rather than eaten?
   - a. 10%
   - b. 25%
   - c. 40%
   - d. 65%

6. The Amazon Rainforest is home to millions of plant and animal species, as well as indigenous human communities.
   Demand for what food is a primary driver of deforestation of the Amazon Rainforest in Brazil?
   - a. Beef
   - b. Chicken
   - c. Potatoes
   - d. Corn

7. Topsoil is the upper layer of soil, where most nutrients are found and most roots are concentrated.
   The rate of topsoil loss in the U.S. from erosion due to farming is ___ times faster than the natural rate of replenishment.
   - a. 1
   - b. 5
   - c. 10
   - d. 15

8. Topsoil is formed by rock weathering, decay of living organisms, and other nutrient inputs.
   How many years does it take nature to build an inch of topsoil?
   - a. 50 years
   - b. 100 years
   - c. 250 years
   - d. 500 years

9. A product life cycle considers all the steps and resources used to create and use the product.
   Which component of a can of corn’s “life cycle” uses the most energy?
   - a. Production (growing the corn)
   - b. Transportation
   - c. Home (cooking and storing)
   - d. Packaging
# Quiz: How Grows It?

10. Aquifers are naturally occurring areas where water is stored underground. Why are people concerned about the Ogallala Aquifer, a source of groundwater used to irrigate agriculture in 8 states, from Nebraska to Texas?
   a. Rates of withdrawals have exceeded natural recharge rates.
   b. Water in the aquifer is becoming increasingly muddy.
   c. Over time the water is becoming more salty.
   d. Toxic bacteria are growing in the aquifer.

11. A carbon footprint indicates the greenhouse gas emissions associated with something. Why is the carbon footprint for roses purchased in Great Britain smaller when the roses are grown in Kenya than when they come from the Netherlands?
   a. The distance to transport the roses from Kenya is smaller.
   b. Roses travel from Kenya by airplane and from the Netherlands by train.
   c. Kenya has stricter climate regulations.
   d. Roses are grown in greenhouses in the Netherlands and outdoors in Kenya.

12. In 1995 millions of fish in the New River in North Carolina died. What agriculture-related event was the cause?
   a. Misapplication of fertilizers
   b. Soil erosion from excessive plowing
   c. Overflow of a hog waste lagoon
   d. Pesticide runoff from a tobacco farm

13. Fish farming involves raising fish in tanks for food. Which of the following is an environmental consequence directly related to fish farming?
   a. Depletion of wild stocks for fish food
   b. Greenhouse gas emissions
   c. Unsustainable energy use
   d. Larger fish populations

14. Greenhouse gas emissions contribute to global climate change. Which component of the “life cycle” of a bottle of orange juice is responsible for the most greenhouse gas emissions?
   a. Use of fertilizers
   b. Transportation
   c. Processing (“squeezing”) oranges
   d. Packaging

15. Industrially grown fruits and vegetables often have to be harvested before they are ripe. What process is used to ripen industrially grown tomatoes and other fruits and vegetables?
   a. Exposure to sunlight
   b. Exposure to warm temperatures
   c. Exposure to ethylene gas
   d. Exposure to fertilizers
Creating new habits or breaking old ones takes time and can be challenging. Having a plan to help you remember to make changes, as well as set up systems and cues to help you maintain new behaviors, will make this process easier. Complete the worksheet below and return to this each week as you evaluate your progress and when you need some motivation!

**Habit**

**Challenge**

| Group members: __________________________________________________________________________ |

Please visit www.scientificamerican.com for more details

**References**

1. COSEE, Coastal Trends, “Dead Zones,” http://www1.coseecoastaltrends.net/modules/dead_zones/get_started/

**Quiz Answers**

1. d 2. b 3. d
4. b 5. b 6. a
7. c 8. d 9. d
10. a 11. d 12. c
13. a 14. a 15. c
Activity 6: School Food Audit

Overview
Students work in teams to audit the sustainability of the food system at your school. Students use their audit findings to determine how well the school’s food system sustains health, community, and environmental resources. They develop and discuss recommendations for improving pieces of the system.

Objectives
Students will:
• evaluate the impacts of a local food system on human health, community well-being, and environmental resources
• develop recommendations for making their school’s food system more sustainable
• weigh the costs and benefits associated with their recommendations

Inquiry/Critical Thinking Questions
• How can local systems be designed to support healthy food choices?
• What things are important to consider when buying food?

Time Required
Day 1–30 minutes
Day 2– during breakfast or lunch at school
Day 3– 60 minutes

Key Concepts
• consumption
• food waste
• packaging
• nutrition

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
4. Individuals, Groups, and Environments

National Science Education Standards
F. Science in Personal and Social Perspectives

National EfS Standards
3.1 Personal Action: Personal Change Skills and Strategies
3.2 Collective Action: Community-Based and Societal Level Decision-Making

Materials/Preparation
Handout: School Food System Audit sheets, 1 for each of the 3 groups. You may want to make a copy of the appropriate worksheet for each student in a group, so that they can record their own answers.

Option: If you have a large class, you may want to have 6 groups. Each of the 3 audit sheets could be divided into 2 parts so that each group is contributing.

Talk to your school’s principal and any other pertinent staff (janitorial, district nutritionist, cafeteria staff) to let them know about the project, troubleshoot any potential issues, and determine an ideal day/time to perform the audit.

Group 1 will be making observations. They will need access to the school cafeteria during a meal (breakfast or lunch). They may also need to visit vending machines.

Group 2 will likely need to speak with a school or district nutrition service director or cafeteria employees for portions of their audit. Information about low-income students may be provided by a school administrator or district website. Some of the student and staff preferences can be assessed through surveys (e.g., perform a census of 10 students who bring their own lunches and ask why).

Group 3 has the most “hands on” job. For the transportation questions, students may need to speak with a school or district nutrition service director or cafeteria employees. For the waste and recycling questions, they will need to do one of the following: a garbage “sort” of waste from the lunchroom, a sample “sort” using a small amount of waste to estimate numbers, or a visual audit to estimate numbers. (As a class you could do a “sort” of all trash cans at the end of lunch, or you could use a sample to provide an
Activity 6: School Food Audit  continued

estimate. For an estimate, you may want to collect trash from a small subset of students. You can use that to determine waste for the entire student population.)

• Note: First check with your school district to see if anyone has already completed a waste audit. You can use previously determined numbers, rather than doing your own audit.

Those in Group 3 sorting waste will need:
• disposable gloves
• safety goggles
• a large plastic pail or container to collect waste
• a scale or other means of measuring the weight of discarded food (in your results, indicate whether you weighed wet or dry)
• newspapers or a plastic tarp
• workspace to sort the waste

Permission forms to participate in the audit, if required by your school/district

Activity—Day 1

Introduction
1. Ask students to briefly discuss their existing ideas about how the food served at school sustains:
   • human health
   • community members
   • environmental resources
2. Let them know they will be auditing the food system in their school to determine how sustainable it is.

Steps
1. Break students into 3 large groups. Hand out copies of the Group 1 School Food System Audit handout to members of Group 1, copies of the Group 2 School Food System Audit handout to members of Group 2, and so on.

Option: If you have a large class, you may want to subdivide each group into 2 smaller groups. For example, you could have Group 1a and Group 1b and divide the audit tasks among them accordingly.

2. Give students 10 minutes to organize their groups. Each group should appoint a manager, who will ensure that all the questions on the audit get answered. Groups can divide up the questions for their audit, if they wish. Some questions may require an entire group, however.
3. Ask student groups to read through their audit worksheet carefully. They should determine what their census/survey methods will be and what materials they will need. Help them to think through any physical support they will need (tools, etc.) and any staff support (who will they need to involve or to interview?).

Activity—Day 2
Steps
1. During a meal (either breakfast or lunch), have students complete their audit handouts.

Activity—Day 3
Steps
1. Provide student groups 20 minutes to review their findings from the previous day and to discuss their recommendations.
2. Ask each group to present their findings and recommendations. Allow 10 minutes for each presentation.
3. Hold a 5- to 10-minute class discussion using questions provided below.
4. Determine as a class what you might do with this data and recommendations. Consider writing up a formal report for your principal or superintendent, presenting recommendations at a school board meeting, or writing a summary article for the school newspaper.
Activity 6: School Food Audit  continued

Discussion
1. Overall, how would you rate your school’s food system?
2. Does this audit ask the right questions? What other things should we consider when purchasing and consuming food?
3. Which of the recommendations do you think is the easiest to implement? How could you make that change happen?
4. Which of the recommendations do you think is the most important or transformational? What are possible obstacles to turning the recommendation into reality? How can you overcome those obstacles?
5. What are potential costs of some of the recommendations you proposed?

Civics Extension
Brainstorm people that you think could help you implement one or more of your recommendations. Then consider what you would tell them and how you would address them to get your recommendations implemented. Contact the person or people that you want to share your results and recommendations with. You might consider presenting to the school board, your parent-teacher organization, or the school district nutritionist.

Additional Resources
• Website: Declaration of the Youth Food Bill of Rights
  http://www.youthfoodbillofrights.com/
  A “Declaration of the Youth Food Bill of Rights” came out of the Rooted in Community Leadership Summit in Philadelphia in July 2011. These “rights” may spur your own thinking around food justice and the power of youth to transform food systems.

• Website: Slow Food on Campus
  www.slowfoodusa.org
  Click on “Programs” to read about Slow Food on Campus, a program that brings the Slow Food movement to high school and university campuses. Slow Food is a global, grassroots movement that links the pleasure of food with a commitment to community and the environment.

• Article: Audit Prompts Crackdown on Junk Food in Schools
  In this New York Times blog post, Dominick Tao writes about the results of an audit of vending machines in New York City schools. The audit prompted school officials to remove non-nutritious foods from the vending machines.

• Article: Students Behave Better with Healthy Lunches
  Changing the menu at a Wisconsin high school resulted in improved student behavior and academic performance. The school’s menus and nutritional analyses can be found on the Appleton Area School District website: http://www1.aasd.k12.wi.us/sp/Pages/default.aspx (click on “Lunch Menu”).

• Visual Audit Tips: Waste Audit Instructions from Ontario EcoSchools
  http://www.ontarioecoschools.org/forms&resources/waste_forms.html
  Click on “Waste Audit Instructions” to read about Ontario EcoSchools 3-page guide to performing a “visual audit” of school waste.
Audit team members: ________________________________________________________________

Date of audit: ______________________________________________________________________

Audit a single meal offered at your school, either breakfast or lunch.

If you are not sure of the basic nutritional composition of foods, use an online reference, such as USDA’s National Nutrient Database for Standard Reference:


1. List the number of items offered that are:
   • raw: ____________________________________________________________________________
   • cooked on site: ______________________________________________________________________
   • processed/packaged: __________________________________________________________________

Sustainability assessment of your findings: ________________________________________________

Recommendation: ______________________________________________________________________

2. What vegetable and fruit choices are available? List them: ____________________________________________________________________________

Sustainability assessment of your findings: ________________________________________________

Recommendation: ______________________________________________________________________
School Food System Audit,  page 2
Group 1: Sustaining Health

3. What sources of protein are available? List them: ________________________________
   ________________________________
   Sustainability assessment of your findings: ________________________________
   ________________________________
   Recommendation: ________________________________
   ________________________________

4. What sources of whole grain are available? List them: ________________________________
   ________________________________
   Sustainability assessment of your findings: ________________________________
   ________________________________
   Recommendation: ________________________________
   ________________________________

5. What beverages are available? List them: ________________________________
   ________________________________
   Sustainability assessment of your findings: ________________________________
   ________________________________
   Recommendation: ________________________________
   ________________________________

6. What other foods are available? List them: ________________________________
   ________________________________
   Sustainability assessment of your findings: ________________________________
   ________________________________
   Recommendation: ________________________________
   ________________________________

7. What else do you notice about the food offered, in terms of its impact on health and nutrition?
   ________________________________
   Sustainability assessment of your findings: ________________________________
   ________________________________
   Recommendation: ________________________________
   ________________________________

Food
Audit team members: ________________________________________________________________

Date of audit: ________________________________________________________________

Audit a single meal offered at your school, either breakfast or lunch. For this audit, you may need to speak with a school or district nutrition service director, cafeteria employees, or a school administrator.

1. Employment:

   *Note: It typically takes more manpower to cook foods from scratch rather than serve processed, pre-cooked food. Your school’s current cafeteria staff may not be able to prepare more foods from scratch.*

   a. How many people are employed by the food system at your school? _______________________________
   
   b. What are their primary jobs?______________________________________________________________

   Sustainability assessment of your findings:______________________________________________________

   Recommendation:_________________________________________________________________________

2. Price:

   a. How do the prices of a meal provided at school compare with prices of:

      i. a fast-food meal:______________________________________________________________

      ii. a meal at a restaurant:__________________________________________________________

      iii. food or drinks from a vending machine: _____________________________________________

   Sustainability assessment of your findings:____________________________________________________

   Recommendation:_________________________________________________________________________
3. Number of free and reduced-price meals offered: ________________________________
   a. What percent of students at your school qualify for free or reduced meals? __________
   b. Are there multiple healthy options for these students? ____________________________

Sustainability assessment of your findings: ____________________________________________

Recommendation: _________________________________________________________________

4. Student participation:
   a. How many students eat breakfast or lunch prepared at school? _______________________
   b. How satisfied are students with the menu options? _________________________________

   c. How many students eat meals brought from home? _________________________________
   d. Why do some students bring their own lunches? _________________________________

Sustainability assessment of your findings: ____________________________________________

Recommendation: _________________________________________________________________

5. Teacher/staff participation:
   a. How many teachers and other staff members eat lunch from the cafeteria? ______________
   b. How satisfied are teachers with the menu options? _________________________________

   c. Why do some teachers bring their own lunches? _________________________________

Sustainability assessment of your findings: ____________________________________________

Recommendation: _________________________________________________________________
Audit team members: ________________________________________________________________

Date of audit: ____________________________________________________________________

Audit a single meal offered at your school, either breakfast or lunch.

For the waste and recycling audit, talk to your teacher about how you will estimate waste numbers. Options include doing a trash can “sort” after the meal to determine the contents of the trash can, collecting and analyzing a small sample to estimate rates of waste, and doing a “visual” audit to estimate rates of waste. If you choose to sort a small sample or to do a visual sort, think about how you can extrapolate your findings for the entire school population.

For the transportation audit, you may need to speak with a school or district nutrition service director or cafeteria employees.

1. Packaging:
   a. How many items offered are individually packaged? _________________________________
   b. How many items offered are sold in bulk, with minimal packaging? ____________________

Sustainability assessment of your findings: _____________________________________________

__________________________________________________________________________________
Recommendation: __________________________________________________________________

2. Trays:
   a. Are trays reusable or disposable? _________________________________________________
   b. How many trays are used in a day? __________________________

Sustainability assessment of your findings: _____________________________________________

__________________________________________________________________________________
Recommendation: __________________________________________________________________
3. Waste:
   a. How much food is thrown out at the end of a meal? ____________________________
   b. Where does food waste go after it is discarded? ____________________________
   c. Which, if any, food containers are recycled? ____________________________
   d. What percentage of recyclables end up in the trash can, instead of the recycling bin? ______________

Sustainability assessment of your findings:__________________________

Recommendation:________________________________________________

4. Transportation:
   a. Which foods are provided from nearby farms or factories?_____________________

b. Approximately what percentage of food appears to be in season (that is, food that can be produced in your region during that season)?

________________________________________________

Sustainability assessment of your findings:__________________________

Recommendation:________________________________________________

5. Food production:
   a. What organic foods are offered? ____________________________

b. Are there any other kinds of foods that are certified as environmentally sustainable choices? __________

Sustainability assessment of your findings:__________________________

Recommendation:________________________________________________
Chapter 4

Water

CHAPTER BIG IDEAS

- Water is a renewable, but finite, resource.
- Most of the water we each consume is embodied in our food and durable goods.
- Many people around the world do not have access to potable or affordable water.
Guiding Questions
- What makes water plentiful for some people and scarce for others?
- How can structural and personal decisions around water support sustainability?

Key Concepts
- water scarcity
- physical water scarcity
- economic water scarcity
- potable
- groundwater
- aquifer
- water table
- virtual water
- potable
- economic water scarcity
- groundwater
- aquifer
- water table
- virtual water

Supporting Vocabulary
- hydrological cycle
- renewable resource
- finite
- improved sanitation
- water footprint
- water governance
- greywater

Service Learning Component
Service Learning Project Idea #1
- **Question:** How clean is the source of your drinking water?
- **Hook Resource:** GOOD: Drinking Water
  [https://www.youtube.com/watch?v=8_R_vpNQ0fJc](https://www.youtube.com/watch?v=8_R_vpNQ0fJc)
  This 3-minute video from GOOD Magazine introduces the main water quality issues in places without improved sanitation. Use this to introduce the importance of water quality, which students will be investigating in your community.

- **Project:** Have students research where the tap water for your school comes from. Students can then test the quality of the school’s tap water (from several different faucets or water fountains) using a water testing guide and perhaps with guidance from the school’s chemistry teacher. If possible, students could consult with a local water treatment facility to learn how the city treats water, the city’s standards for water quality, and to get guidance on interpreting the results of their water tests. Students can then publicize their findings through the school newspaper, in leaflets to distribute at local events, or online. If it is safe, they can encourage people to use it rather than bottled water, through posters that explain how much water is actually embodied in the bottled water (i.e., to transport the water and make the bottle).

- **Additional Resources:**
  - **Website:** A Primer on Water Quality
    This resource gives a brief overview of water quality and water standards. It also discusses the natural processes and human activities that affect the quality of water.
  - **Website:** Water on Tap: What You Need To Know
    [http://water.epa.gov/drink/guide/](http://water.epa.gov/drink/guide/)
    This PDF and other information about drinking water can be accessed from the U.S. EPA’s website. The resource helps to answer where drinking water comes from, how to know if it is safe, and how you can protect it.
• **Guide:** *Guidelines for Drinking-water Quality*
  These guidelines from the World Health Organization provide a framework for keeping drinking water safe.

• **Website:** *Food & Water Watch*
  This website is a good starting point to discuss and compare bottled water with tap water.

• **Video:** *The Story of Bottled Water*
  This 5-minute video from the Story of Stuff Project explores the environmental effects of the bottled water industry.

**Service Learning Project Idea #2**

• **Question:** What landscaping strategies would conserve water in your region?

• **Hook Resource:** *Save Water Today*
  Stating that 36 U.S. states are expected to face serious water shortages in 2013, this website provides tips on how to conserve and protect water at home, with landscaping, and in the great outdoors. It includes videos featuring celebrities sharing easy tips on how everyone can do their part in using water wisely, such as a 30-second PSA with the surfer Lakey Peterson.

• **Project:** Have students estimate water use for landscaping in your area, using local resources and online water calculators. Students can go to a local garden center to find out about climate-appropriate landscaping (e.g., drought-tolerant plants, native species), then set up a table at a local farmer’s market, community center, or school to present their findings to the public. (To take it a step further, students could offer people their labor as volunteers if they will redesign their yard for water sustainability.)

• **Additional Resources:**
  - **Website:** *Principles of Xeriscape Design*
    This guide outlines a practical approach to planning and creating a water-efficient landscape.
  - **Guide:** *Water Conservation in the Vegetable Garden*
    [http://cmg.colostate.edu/gardennotes/716.pdf](http://cmg.colostate.edu/gardennotes/716.pdf)
    This guide from Colorado State University outlines garden practices to help grow vegetables with water efficiency in mind.
  - **Website:** *Real People, Real Savings*
    [http://www.saveourh2o.org/real-stories](http://www.saveourh2o.org/real-stories)
    This website shows examples of real people’s water-efficient landscaping.

**Project Based Learning Component**

**Project Based Learning Idea**

• **Overview:** Students research different types of technology that have been developed to help people have access to potable water. In groups, students explore a specific region’s water issues and suggest the most effective type of technology.
Driving Question: What type of technology would best solve this region’s water issues?

Hook Resource: How to make filthy water drinkable

In this 10-minute TED Talk Michael Pritchard, an engineer, presents the portable Lifesaver filter he invented, which can change dirty water into drinkable water within seconds.

Individual Project: Have each student research a different water cleaning technology (such as LifeStraw, ceramic water filters, SolarBall and others) and identify the main benefits and trade-offs of this technology. Students should consider the economic, environmental, and social pros and cons of this technology and discuss whether or not the use of this technology is sustainable. Have students give a 2-3 minute class presentation discussing these pros and cons.

Group Project: In groups of 4-5, students research a region’s specific water needs. They then use what they have learned about different water technologies to propose both a short-term and a long-term plan for helping the people of the region gain better access to a potable water supply. If no existing technology seems to fit the region’s needs, students can design their own or communicate with companies that design water technology about how to improve their products.

Summative Assessment

World History connections:
Irrigation and the rise of the great civilizations; historical examples of water resource depletion; agriculture, industry, and domestic water use; climate change and resource availability.

Economics connections:
Agriculture, industry, and domestic water use; economic water scarcity; lack of water and economic development; water privatization.

Geography connections:
Climate change and resource availability; hydrology; physical water scarcity.

Civics connections:
Personal and structural solutions to water issues; conflict over water resources.

Additional Resources:
Website: World Water Day
http://www.unwater.org/about-unwater
Each year, the UN’s World Water Day highlights a specific aspect of freshwater. This website documents the different themes over the last several years.

Website: 6 Water Purifying Designs for the Developing World
http://inhabitat.com/6-water-purifying-designs-for-clean-drinking-water-in-the-developing-world/
This post on the Inhabitat blog gives an overview of water purifying devices.

Connections

World History connections:
Irrigation and the rise of the great civilizations; historical examples of water resource depletion; agriculture, industry, and domestic water use; climate change and resource availability.

Economics connections:
Agriculture, industry, and domestic water use; economic water scarcity; lack of water and economic development; water privatization.

Geography connections:
Climate change and resource availability; hydrology; physical water scarcity.

Civics connections:
Personal and structural solutions to water issues; conflict over water resources.
### Activities in Teacher’s Guide: Suggested Sequence

#### Day 1

**Reading:** *Introduction to Water*

**Activity 1:** *Water Carry*—Simulating the situation in many places around the world, students must complete a schoolwork assignment while carrying water from a distant source to their “home” reservoir. Students then consider solutions to this issue of gathering water. They analyze the connection between these solutions and sustainable development.

#### Day 2

**Reading:** *Background on Water*

**Activity 2:** *River to the Sea?*—Students explore the differing ideas of water as a right and water as a commodity. After learning about the Colorado River and its place in the hydrology of the western United States, students brainstorm reasons for why the river no longer reaches the sea. After learning about the various uses of water in the region, they make recommendations for water use in the future.

#### Days 3 & 4

**Reading:** *Water Today*

**Activity 3:** *A Personal Water Audit*—Students imagine how they would use only 5 gallons of water per day. They then explore their own water footprint by conducting a personal water audit of their direct water use over the next 24-hour period. On day 2, students are introduced to the idea of virtual, or embodied, water and estimate the amount of virtual water they consume.

#### Days 5 & 6

**Reading:** *Pathways to Progress: Water*

**Activity 4:** *Water, Water Everywhere?*—Students take on perspectives of different stakeholder groups involved in determining how to deal with increasing demands on a waterway. Stakeholder groups are encouraged to form alliances in order to reach consensus on the plan that will be best for everyone involved.
Discussion Questions from the Chapter Reading

**Introduction to Water**

1. If water is renewable, then why does water scarcity exist?
2. How is water consumption an environmental, economic, and social issue?

**Background on Water**

3. Discuss the interactions between human water consumption and aquifers. What might sustainable use of an aquifer look like? What might unsustainable use of an aquifer look like?
4. What has the effect of new water projects been on relations between the countries that share the Tigris and Euphrates over the past 50 years? What does this tell us about how technology, environment, and conflict are interrelated?

**Water Today**

5. Who should be held accountable when water resources are depleted to grow and produce the goods we buy (i.e., consumers, manufacturers, local governments)? Should virtual water be incorporated into the cost of products?
6. Water and wealth have long gone together; having one usually meant you also had the other. How could prosperity also lead to water scarcity? Give at least 3 answers, aside from increased population.
7. How might people be excluded from contributing to decisions about the water they use? Are you part of the decision-making process that governs your water sources?
8. What type of water governance do you think serves the most stakeholders—privately-owned water utilities, publicly- or government-owned water utilities, or some other type of water governance?

**Pathways to Progress: Water**

9. What are some arguments for facing water problems collectively? Are these compelling arguments?
10. How can individuals be a part of structural solutions?
Chapter Assessment: Water,  page 1

Recall
Match the following words on the left with their definitions on the right.

1. Physical water scarcity  clean, drinkable
2. Potable  depth to which a well must reach in order to find water
3. Virtual water  lack of water due to a higher demand for water than local water resources can provide
4. Water table  total amount of water used to produce a good

Reasoning/Explanation
Complete the following multiple choice questions by choosing 1 correct answer.

5. Water scarcity would be a deterrent to economic development within a developing country for all of the following reasons except:
   a. It would increase conflict within a country since people could be struggling over access to water.
   b. It would increase food insecurity because there could not be enough water to irrigate crops.
   c. It could increase population growth within a country because families would need more people to gather water.
   d. It could prevent young people from attending school if they need to gather water instead.

6. Which of the following statements best describes why energy production and water resources are intimately tied?
   a. All forms of energy production require water.
   b. Fossil fuels cannot be efficiently extracted from water-rich regions; they must come from dry climates such as the Middle East.
   c. In many parts of the world, countries with excess water resources trade with their drier neighbors, who have energy surpluses.
   d. Most major forms of energy production also produce water as a by-product.

7. Which of the following actions best illustrates a personal solution to water scarcity?
   a. creating new types of water technologies that increase water availability
   b. developing a government-based policy that limits the amount of water citizens use
   c. eating smaller amounts of meat and dairy, when there are alternative sources of nutrients
   d. running a campaign that raises money to create a well in a water-scarce area
8. How could lack of sanitation facilities contribute to water scarcity?
   a. Building toilets that flush could use up a community’s water supply.
   b. Human waste could contaminate a community’s freshwater supply.
   c. Treating wastewater could deplete a community’s water supply.
   d. Without improved sanitation facilities, the majority of water might be used for handwashing.

9. Which of the following phrases best describes one of the social consequences associated with water scarcity?
   a. desertification
   b. gender inequality
   c. inability to hold down a job
   d. lack of water infrastructure

10. If the water in an aquifer is used faster than it can be replenished, what is most likely to happen to the water table?
    a. The amount of groundwater will increase.
    b. The amount of precipitation will decrease.
    c. The level of the water table will drop.
    d. The zone of saturation will increase.

11. About 25% of the global population lives in regions that do not have the infrastructure required to extract water from rivers or aquifers.¹ Which of the following terms best describes this situation?
    a. economic water scarcity
    b. lack of improved sanitation
    c. physical water scarcity
    d. virtual water demand

12. Which of the following is most likely to contain the most virtual water in 1 serving?
    a. apple
    b. bacon
    c. lettuce
    d. green beans

13. Which term below best describes the type of water governance that gives for-profit companies control of water allocation?
   a. cooperative water management
   b. price regulation and subsides
   c. privatization
   d. public water utilities

14. International cooperation with respect to the Danube River Basin is a positive example of:
   a. economic scarcity
   b. hypoxia
   c. potable water
   d. water governance

Application/Complex Reasoning
Answer the following short answer questions.

15. Part A. If water is a renewable resource, then why are people concerned with water conservation?
   Part B. If water is a renewable resource, then why are people concerned with preventing water pollution?

16. Use what you have learned from the chapter and the following quote from Professor Arjen Y. Hoekstra (creator of the water footprint concept and cofounder of the Water Footprint Network) to answer the questions below.

   “Water problems are often closely tied to the structure of the global economy. Many countries have significantly externalised their water footprint, importing water-intensive goods from elsewhere.”¹

   Part A. How can externalizing a country’s water footprint contribute to global water scarcity?
   Part B. How can individuals like you help to reduce global water scarcity?

Recall (4 points)

1. Physical water scarcity—lack of water due to a higher demand for water than local water resources can provide
2. Potable—clean, drinkable
3. Virtual water—total amount of water used to produce a good
4. Water table—depth to which a well must reach in order to find water

Reasoning/Explanation (10 points)

5. c
6. a
7. c
8. b
9. b
10. c
11. a
12. b
13. c
14. d

Application/Complex Reasoning (6 points)

15. Part A. Answers will vary. (1 point)
   - Though water is renewable, there is only a limited amount.
   - Overuse of aquifers can deplete water faster than it can regenerate.

   Part B. Answers will vary. (1 point)
   - There is only a finite amount of water and a very small amount of this is freshwater; therefore, polluting this limited amount of freshwater can render it useless for human consumption.

16. Part A. Answers will vary. (2 points)
   - Buying goods and materials that have been grown, extracted, and/or produced in other countries can use a large amount of water.
   - The virtual water embedded in the goods we buy is usually much more than the amount of direct water we use.

   Part B. Answers will vary. (2 points)
   - Buying fewer goods
   - Buying local
   - Eating lower on the food chain
Activity 1: Water Carry

Overview
Students will simulate gathering water from a distant source, representing a day in the lives of many students in developing countries experiencing water scarcity. They will then consider how gathering water can impede education. They analyze larger consequences of this type of activity on sustainable development.

Objectives
Students will:
- simulate gathering water from a distant source
- consider the impact that water scarcity can have on societies
- understand how water and development are connected

Inquiry/Critical Thinking Questions
- How can gathering water impact a child’s education?
- What factors contribute to the large amounts of time women and children spend gathering water in water scarce regions?
- What are the consequences of water scarcity?

Time Required
One 60-minute class

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
7. Production, Distribution, and Consumption

National Science Education Standards
E. Science and Technology
F. Science in Personal and Social Perspectives

National EFS Standards
2.2 Ecological Systems: Respect for Nature
2.3 Economic Systems: Ecosystem Services
3.1 Personal Action: Personal Responsibility
3.2 Collective Action: Community-Based and Societal Decision-Making

Materials and Preparation
Tools: One 5-gallon bucket, filled with water
Tools: Five 1-gallon jugs numbered 1-5, 1 per group
Tools: Ten 1-cup containers, 1 per group
Tools: 1 ladle

Preparation: Select a location in advance, about 1,000 feet or 3 football fields from your classroom to place one of the 5 gallon buckets. If that much distance is not available, use what you have. This location should be at the end of a large field or somewhere else that students can reach without disturbing other classes. The students will be carrying the water from this location back to the classroom, cup by cup. Place the 1-gallon jugs in the classroom, or wherever you plan to have students bring their water.

Activity
Introduction
1. Take the class to where you have placed the 5-gallon bucket full of water, and ask if anyone knows how much it weighs (at about 8 lbs/gallon, the bucket should weigh about 40 lbs). Give anyone who wants to a chance to lift the bucket, asking them how far they think they could comfortably carry it.

2. Share with students that, on average, women in Africa and Asia walk 6 kilometers (3.7 miles) per day to fetch water. Have students estimate how far you have just walked from your classroom to this bucket.

3. Divide the students into 5 groups, and give each group a number. Each group represents a different household in the village.

4. Distribute two 1-cup containers to each group of students and explain that these represent their “buckets.”

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Activity 1: Water Carry  continued

5. Tell the students that each household has about 5 people, so each group needs to gather at least 5 “buckets” of water for survival. However, they would need 10 buckets to maintain good health. Since they only have 2 buckets per household, this will obviously take more than one trip. Explain that each household has a cistern with their group number on it (the gallon jugs, located in the classroom), where they can dump the water when they get back home.

6. Show them the ladle and explain that for sanitation reasons, the community has agreed that these are the only things that will touch the water. If the water source gets contaminated, everyone gets sick because there isn’t another safe source nearby. Explain that waiting in line for the well is part of the water-gathering process for many people.

7. Finally, before allowing students to begin carrying water, tell them that their “school day” begins in 10 minutes.

- **Note:** If you’ve reduced the distance, adjust the start of the “school day” to ensure that no group will be able to gather all their water in time to make it to school on time. This is the case for many children who must spend their mornings and afternoons gathering water by hand.

8. Direct students to their household’s “cistern” (gallon jug). Count down the time until the start of the school day.

9. Once a group reaches a half full gallon container, they may join the class. You can remind students that they are risking death for themselves, or one of their family members, if they only fill up their cistern halfway rather than completely.

**Steps**

1. Once each group is finished collecting water, have them reflect on this activity by answering the following questions:
   - How would your life be different if you had to walk 3.7 miles a day to get water?
   - How would this impact you and your family economically? Think of short and long term consequences?
   - The task of water collection often falls to women and girls. How does this contribute to gender inequality?

2. Once all groups have had a chance to discuss, ask students to share their answers.

   **Option:** After the discussion, give students time to research projects and organizations that are working to increase access to clean water.

3. Conclude with a class discussion.

**Discussion Questions**

1. What was the most time-consuming part of gathering water?

2. How do you think collecting water in developing nations impacts a child’s education? What impacts might this have on the child’s family or community?

3. The task of water collection often falls to women and girls. If women and girls are spending several hours a day collecting water, how does this impact their ability to hold a paying job or go to school? How does this contribute to gender inequality?

4. What might be the physical consequences of carrying water?

5. How is water scarcity connected with sustainable development?

6. Based on your research of ways to improve water access, which ones do you think should be implemented in places where there is water scarcity? Why?
Additional Resources

- **Website:** Water.org  
  [https://water.org/about-us/our-work/](https://water.org/about-us/our-work/)
  This nonprofit organization works with local communities to drill wells where they are needed.

- **Website:** Potters for Peace  
  Potters for Peace is an organization that teaches local potters to make highly effective ceramic water filters that have been used throughout the world to improve the safety of drinking water.

- **Video:** Water for Life: The Diary of Jay-Z  
  Hip-hop artist Jay-Z collaborates with the United Nations to address water scarcity in developing nations. This website features video clips and Jay-Z's personal blog from the experience.
Activity 2: River to the Sea?

Overview
Students learn about the current state of the Colorado River Basin, root causes of water scarcity, and what population growth will mean for people and the environment in this region. They create a strategic long-term plan that takes water conservation and population growth into consideration.

Objectives
Students will:
• understand how cumulative resource consumption affects a freshwater source
• examine water use from a supply perspective
• understand that water issues can cross political borders

Inquiry/Critical Thinking Questions
• What is the importance of the Colorado River in the western United States?
• What are root causes of water scarcity in this region?
• How can water use be made more efficient?
• How can we create water rights that support population growth and conservation?

Time Required
One 60-minute class

Key Concepts
• river basin
• water rights
• conservation
• population growth

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
5. Individuals, Groups, and Institutions
6. Power, Authority, and Governance
7. Production, Distribution, and Consumption

National Science Education Standards
F. Science in Personal and Social Perspectives

National Efs Standards
2.2 Ecological Systems: Respect for Nature
2.4 Social and Cultural Systems: Governance
3.2 Collective Action: Public Discourse and Policy

Materials and Preparation
Projector for the Map of the Colorado River Basin
Handout: A Sustainable Plan: Supporting Human Growth and Water Conservation around the Colorado River Basin, 1 for each group of 3 students
Internet Access

Activity
Introduction
1. Reveal the following arguments and explanations:
• Water is a commodity (a good that can be sold or traded).
• Water is a human right (all people are entitled to accessible and clean water).
2. Divide students into groups of 3.
3. Tell students they will have 5 minutes to discuss the statements above and answer the following:
• What are the pros and cons of each stance?
• What are some potential social, environmental, and economic consequences of each perspective?
• Which position does the group hold and why?
4. Have groups share their answers with the class.
Activity 2: River to the Sea? continued

Steps

1. Project the Map of the Colorado River Basin (link provided) and write the phrase, “first in time, first in right” on the board.


Western water law is based on the principle that the first person to establish use of a certain amount of a river’s water has a perpetual right to that same amount of water for as long as they can use it productively. When the Colorado River Compact was signed in 1922, the states now in the Upper Basin (Colorado, New Mexico, Utah, and Wyoming) had far fewer people than the states in the Lower Basin (Nevada, Arizona, and California). The states could not reach agreement on how to allocate water. Therefore, Secretary of Commerce Herbert Hoover suggested dividing the states into an Upper Basin and Lower Basin with each basin granted the right to use 7.5 million acre-feet (maf) of water each year. There have been several conflicts and ratifications to this compact, and new agreements since that time including The Mexican Water Treaty of 1944 which allocated 1.5 maf to Mexico.1

Newer research suggests that 1922 was a particularly wet period for the region. In 1922, it was thought that the river held about 17.5 maf, or 5.7 trillion gallons, of water. Today, however, the river holds an average of 14.7 maf. People are now working to determine how to re-allocate water to the states and Mexico in the midst of growing populations.2 In the last decade, so much of this water has been consumed, that it no longer reaches the Sea of Cortez.3

3. Have students examine the map and notice that there are two “basins” on the Colorado, an Upper Basin and a Lower Basin. Explain to students that a river basin is the portion of land drained by a river and its tributaries.

4. Let students know that the Colorado River serves 30 million people in 7 states and Mexico; in recent years, the river has experienced a number of droughts and water shortages. Population in this region is increasing.4

5. Ask students to brainstorm the multiple uses of the Colorado River. (This brainstorm can apply to any river or freshwater lake.)

6. Share with them some of the following ways the river is used:5

- agriculture (78% of the river is used for farming; the Colorado River Basin is known to produce alfalfa, cotton, carrots, lettuce, spinach, wheat, etc.)
- city water (30 million people use water from the river in cities like Los Angeles, Tucson, Denver, and Tijuana, Mexico)
- recreational use (i.e., water-skiing, swimming, and boating)
- fishing (several Native American tribes use the river for sustenance)

7. Share with students that if water withdrawals continue at current rates, the demands on the Colorado River will exceed the available supply of water. Decreasing water levels have already affected fish in the river. There are approximately 24 endangered and threatened species. Some fish have become endangered because there has been a reduction in the freshwater flow to the sea.

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4 Save the Colorado, “Life Blood of the American Southwest.”
5 Ibid.
8. Pass out the handout *A Sustainable Plan: Supporting Human and Environmental Growth around the Colorado River Basin* to each group.

9. Have students collaborate within their groups and use the Internet to complete the handout.

10. Bring the class back together. Ask each group to share their recommendations with the rest of the class.

11. Use the following discussion questions to build on these ideas.

**Discussion Questions**

1. If you were to prioritize the recommendations your classmates offered, which ones would you implement first? Why?

2. Basins in different parts of the country are experiencing similar issues around population growth and water conservation. Do you think the recommendations you offered could translate to these other areas? Why, or why not?

3. Water marketing is the idea that the water rights of a river can be transferred, leased, or sold from one party to another. Entities within a state or in different states could participate in essentially trading water. There have been debates around this issue. What do you think are the pros and cons of water marketing? Should water marketing be allowed?

4. On July 28, 2010, the United Nations declared water as a human right. Should other forms of nature also be granted water rights? Why or why not?

5. Which water uses do you think are the most important, and why? What legislative or economic policies could ensure that this use receives priority?

6. What are possible long-term implications of rivers no longer reaching the sea?

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**Geography Extension**

Have students visit the following National Geographic website to view an entire map of the Colorado River Basin. They can investigate and identify where specific water withdrawals are occurring:


**Additional Resources**

- **Film:** *Chasing Water*
  [http://www.mountainfilm.org/film/chasing-water](http://www.mountainfilm.org/film/chasing-water)
  In this 18-minute documentary photojournalist Peter McBride sets out to document the flow of the Colorado River from source to sea. But his attempt to float the Colorado ends in the dry delta.

- **Website:** *Colorado Division of Water Resources: Water Rights*
  [http://water.state.co.us/SurfaceWater/SWRights/Pages/default.aspx](http://water.state.co.us/SurfaceWater/SWRights/Pages/default.aspx)
  This website provides history and information about Colorado’s “first in time, first in right” laws.

- **Website:** *Save the Colorado*
  [www.savethecolorado.org](http://www.savethecolorado.org)
  The nonprofit organization Save the Colorado provides charts and information about the uses of the Colorado, the ongoing drought in the American Southwest, and what could occur in the region in the next several decades if current withdrawal rates and population growth continue.

- **Website:** *The Colorado River*
  [https://www.nationalgeographic.com/americannile](https://www.nationalgeographic.com/americannile/)
  This website is interactive and allows one to examine the river under differing amounts of precipitation, and learn more about diversions, dams, and species associated with the river. There is also a link to a zoomable map of the Colorado River.
A Sustainable Plan: Supporting Human Growth and Water Conservation around the Colorado River Basin,

Directions: Your task is to create 2 recommendations that will address water conservation and population growth. Answer the following questions to help support the development of your plan.

1. Analyze the following graph.¹

![Projected Population Growth between 2000–2030](image)

<table>
<thead>
<tr>
<th>Population Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nevada</td>
</tr>
<tr>
<td>Arizona</td>
</tr>
<tr>
<td>Utah</td>
</tr>
<tr>
<td>Southern California</td>
</tr>
<tr>
<td>Colorado</td>
</tr>
<tr>
<td>New Mexico</td>
</tr>
<tr>
<td>Wyoming</td>
</tr>
</tbody>
</table>

2. How do you think this projected population growth will impact the Colorado River?

_______________________________________________________________________________________
_______________________________________________________________________________________
_______________________________________________________________________________________
_______________________________________________________________________________________
_______________________________________________________________________________________
_______________________________________________________________________________________

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3. Research the total population of each of the states listed in the graph.
   Nevada: ________________________________
   Arizona: ________________________________
   Utah: ________________________________
   Southern California: ________________________________
   Colorado: ________________________________
   New Mexico: ________________________________
   Wyoming: ________________________________

4. How might total population and projected growth influence new negotiations around the River Compact?

5. Use the Internet to research 2 main reasons why water has been depleted in the Colorado River Basin.
   a. __________________________________________
   b. __________________________________________

6. Who and what will be impacted if the Colorado River Basin runs dry?

7. How do you think this might change the economy of the states in the region?

8. What are 2 recommendations you would make to ensure the long-term ability of the Colorado River to support human growth and other species in this region?
   a. __________________________________________
   b. __________________________________________
Activity 3: A Personal Water Audit

Overview
Students imagine how they would use only 5 gallons of water per day. They then explore their own water footprint by conducting a personal water audit of their direct water use over the next 24-hour period. On day 2, students are introduced to the idea of virtual, or embodied, water and estimate the amount of virtual water they consume.

Objectives
Students will:
• conduct a personal water audit to calculate the amount of water they directly consume
• estimate the virtual water embodied in the goods they consume
• consider ways to reduce their direct and indirect consumption of water

Inquiry/Critical Thinking Questions
• How do I consume water directly and indirectly?
• Where do opportunities exist to reduce my water consumption?

Time Required
• One 20-minute class, plus homework
• One 60-minute class

Key Concepts
• water consumption
• virtual water
• water footprint
• water audit

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
7. Production, Distribution, and Consumption

National Science Education Standards
F. Science in Personal and Social Perspectives

National Ehs Standards
2.1 Interconnectedness: Systems Thinking
3.1 Personal Action: Personal Responsibility

Materials and Preparation
Handout: Personal Water Audit: Direct Water Use, 1 per student
Handout: Personal Water Audit: Virtual Water Use, 1 per student
Internet Access, day 2
Tools: A 1-gallon container/bucket and a 5-gallon container/bucket

Activity—Day 1

Introduction
1. Share with students the following statement: “The UN suggests that each person needs 20-50 liters of water a day to ensure their basic needs for drinking, cooking, and cleaning.”
2. Write “20-30 liters” on the board and tell students that this is equivalent to 5.3-13.2 gallons (or have them convert this themselves).
3. Show students the 1-gallon container and the 5-gallon bucket to get a sense of these volumes.
4. In think-pair-share format, ask students to imagine they only have access to 5 gallons of water per day over the next week. How would they use this water? Which activities would they prioritize and which activities would they cut?

Activity 3: A Personal Water Audit  continued

Steps
1. Explain that over the next couple of days, each person will examine his or her water footprint.
2. Pass out and go over the Personal Water Audit: Direct Water Use handout with students. Explain that this worksheet should be completed over the next 24 hours.
3. Discuss how water is measured (gallons per minute) and mention that it is often possible to find the rate of water flow or amount of water used per activity (for example, gallons per flush) written on a faucet or toilet.
   Option: If you have a sink in your classroom, you can also show how to determine the gallons per minute of a sink by collecting water in a bucket for 10 seconds and multiplying by 6.
4. Ask for a female and male volunteer to check the flow rate of the school toilets and sinks (or do this ahead of time) and have students record this on their worksheet.
5. Ask students to complete the rest of this water audit worksheet for homework.

Introduction—Day 2

Steps
1. Pass out and go over the Personal Water Audit: Virtual Water Use handout with students.
2. Allow students the rest of class to use the following websites to fill out this portion of the audit:
   • Water Footprint Product Gallery http://www.waterfootprint.org
     Have students use the product gallery (“Product Water Footprints” link in the lefthand menu) to find virtual water amounts. This is also the website students will use to calculate their entire water footprint.
   • National Geographic: The Hidden Water We Use http://environment.nationalgeographic.com/environment/freshwater/food/
     Have students explore the product details and the product comparisons to find virtual water use.

3. Ask students how water is used to produce each of these products. (For food, the answer is almost always to water crops, either for human consumption or to water and feed livestock. Water is also used during manufacture of processed or packaged food. For manufactured goods, the most common uses are sanitation, dilution, and cooling. In the case of a bed sheet, water is used to create the fabric dye.)
4. Share the following information with students and have them compare it with their guesses:\[1\]
   • 1 kg of wheat = 1,300 liters of water
   • cotton shirt = 4,100 liters
   • bed sheet = 9,750 liters
   • pair of jeans = 10,850 liters
   • 1 kg of beef = 15,000 liters

Introduction
1. Ask students to recall what the idea of virtual water means. (For example, the virtual water in an apple would include the amount of water required for the tree.)
2. Ask students to order the following products in terms of least to most virtual water used in their production, based on their best guess.
   • a cotton shirt
   • a pair of jeans
   • 1 kilogram of beef
   • 1 kilogram of wheat
   • a bed sheet

Activity 3: A Personal Water Audit  continued

• H2O Conserve: Calculator
https://www.conserveh2o.org
This calculator (link on the left) asks students a series of questions about home water use and lifestyle choices such as diet and goods they buy. The website also provides information about how to reduce their water use.

3. After students have completed the entire personal water audit (direct and virtual water use), give small groups a few minutes to share their results and reflections.

4. Reflect on the activity with the following questions.

Discussion Questions
1. What surprised you most about your water footprint?
2. How does your direct water use compare to the embodied water used to create the foods you eat and the products you buy and use?
3. How aware do you think people in your region are about how much water they use? How do you think this level of awareness compares to people around the world who collect their water by hand?
4. Do you think the amount of virtual water embedded in a product should be included on product labels? Whose responsibility is it to monitor the amount of water used to produce goods: manufacturers, consumers, or governments?
5. Why does the amount of virtual water in foods differ?
6. How could today’s water consumption affect the water consumption of future generations?

Additional Resources
• Website: Freshwater
http://environment.nationalgeographic.com/environment/freshwater
National Geographic’s freshwater initiative works to inspire and empower individuals and communities to conserve freshwater. There are a number of featured articles, videos, and tips on how to do so. The website also provides a water footprint calculator to gauge the impact of both direct and indirect water consumption.

• Website: POV Borders/Environment: Water
POV creates a number of documentaries for public television. This section of their website is dedicated to helping people take notice of the environment around them, so that they can be more engaged to act as its stewards. A number of features look at how we use water every day.
To begin conserving water, it helps to know how much we use on a regular basis. Over the next day or two, you will estimate the amount of water you consume directly using the following process.

**Step 1:** Identify and record the flow rate for each of the activities listed in the table that applies to your home. If you cannot locate the information on each appliance in your home (such as the gallons per minute (GPM) for your faucets), then use the averages listed below:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Flow Rate 1</th>
<th>Flow Rate 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faucets</td>
<td>Low-flow Model: 1.5</td>
<td>Standard Model: 2.2</td>
</tr>
<tr>
<td></td>
<td>gallons/minute</td>
<td>gallons/minute</td>
</tr>
<tr>
<td>Toilet</td>
<td>Water-efficient Model: 1.2</td>
<td>Pre-1994 Model: 5.2</td>
</tr>
<tr>
<td></td>
<td>gallons/flush</td>
<td>gallons/flush</td>
</tr>
<tr>
<td>Shower</td>
<td>Low-flow Model: 2.5</td>
<td>Pre-1994 Model: 4</td>
</tr>
<tr>
<td></td>
<td>gallons/minute</td>
<td>gallons/minute</td>
</tr>
<tr>
<td>Bath</td>
<td>1/3 Full: 15</td>
<td>2/3 Full: 30</td>
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<tr>
<td></td>
<td>gallons</td>
<td>gallons</td>
</tr>
<tr>
<td>Automatic Dishwasher</td>
<td>Post-2009 ENERGY STAR Automatic Dishwasher: 5.8</td>
<td>Pre-1994 Automatic Dishwasher: 9 gallons/</td>
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<tr>
<td></td>
<td>gallons/load (or less)</td>
<td>load for short cycle</td>
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<td></td>
<td></td>
<td>14 gallons/load for pots &amp; pans cycle</td>
</tr>
<tr>
<td>Laundry</td>
<td>Energy Star Model: 15</td>
<td>Standard Model: 23</td>
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<tr>
<td></td>
<td>gallons/load</td>
<td>gallons/load</td>
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<tr>
<td>Watering Yard</td>
<td>Water-efficient Landscaping: 118</td>
<td>Traditional Landscaping/Turf: 500</td>
</tr>
<tr>
<td></td>
<td>gallons</td>
<td>gallons</td>
</tr>
<tr>
<td></td>
<td>(3 days/week)</td>
<td>(3 days/week)</td>
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<tr>
<td>Car Washing</td>
<td>Bucket/hose with shutoff nozzle: 20</td>
<td>Open hose with no shutoff nozzle: 180</td>
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<td></td>
<td>gallons/wash</td>
<td>gallons/wash</td>
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</table>

**Step 2:** Monitor your water use. Use a timer or clock to monitor the time you use appliances whose water use is measured in gallons per time (i.e., showers and faucets). Also, record the number of times you use appliances whose water is measured per use (i.e., toilet, bath, automatic dishwasher, laundry machine, etc.). Note: If you rinse your dishes before placing them in the dishwasher, then record this water use under “Kitchen Faucet.” You can start a tally and then total this at the end of 24 hours.

**Step 3:** Factor in drips and leaks. Use the drip calculator from USGS [http://ga.water.usgs.gov/edu/sc4.html](http://ga.water.usgs.gov/edu/sc4.html) or the American Water Works Association [http://www.awwa.org/awwa/waterwiser/dripcalc.cfm](http://www.awwa.org/awwa/waterwiser/dripcalc.cfm) to calculate how much water is wasted by leaks and drips.

**Step 4:** Calculate your total. For all activities (except for “outdoor water use” and possibly “other”) simply multiply the rate of water flow with the total time used. For example:

\[
1.5 \text{ gallons/minute} \times 15 \text{ minutes} = 22.5 \text{ gallons}
\]

\[
5.2 \text{ gallons/flush} \times 6 \text{ flushes} = 31.2 \text{ gallons}
\]

# Personal Water Audit: Direct Water Use

<table>
<thead>
<tr>
<th>Activity</th>
<th>Flow Rate or Gallons per Use</th>
<th>Total Time(s) Used</th>
<th>Total Amount of Water Used (Gallons)</th>
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</thead>
<tbody>
<tr>
<td>Home Bathroom Faucet</td>
<td>gallons/minute</td>
<td>minutes</td>
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<tr>
<td>School Bathroom Faucet</td>
<td>gallons/minute</td>
<td>minutes</td>
<td>gallons</td>
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<tr>
<td>Home Toilet</td>
<td>gallons/flush</td>
<td>flushes</td>
<td>gallons</td>
</tr>
<tr>
<td>School Toilet</td>
<td>gallons/flush</td>
<td>flushes</td>
<td>gallons</td>
</tr>
<tr>
<td>Shower</td>
<td>gallons/minute</td>
<td>minutes</td>
<td>gallons</td>
</tr>
<tr>
<td>Bath</td>
<td>gallons/bath</td>
<td>baths</td>
<td>gallons</td>
</tr>
<tr>
<td>Kitchen Faucet</td>
<td>gallons/minute</td>
<td>minutes</td>
<td>gallons</td>
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<tr>
<td>Dishwasher</td>
<td>gallons/load</td>
<td>loads</td>
<td>gallons</td>
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<tr>
<td>Laundry</td>
<td>gallons/load</td>
<td>loads</td>
<td>gallons</td>
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<tr>
<td>Outdoor Water Use</td>
<td>gallons</td>
<td></td>
<td>gallons</td>
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<tr>
<td>Leaks/Drips</td>
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<td>gallons</td>
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<tr>
<td>Other (list activities):</td>
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<td></td>
<td>gallons</td>
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<tr>
<td><strong>Total Gallons of Water Used per Day:</strong></td>
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</table>
Use the results from your personal water audit (direct water use) to answer the questions below.

1. What most surprised you about your water use?

2. What activity do you do that uses the most water? The least water?

3. Which activities do you consider necessary to meet your basic needs? Which activities do you consider beyond your basic needs?

4. What are 3 specific steps you could take to reduce the amount of water you consume?

5. How did conducting this audit increase your awareness of water consumption?

6. What will your next step be with respect to water conservation?
**Personal Water Audit: Virtual Water Use**

**Directions:** In the table below, list the basic items or goods you use in a typical day for each of the categories. Using either National Geographic’s *The Hidden Water We Use* or Water Footprint’s *Product Water Footprints*, write down the amount of water that goes into producing that product. In the last column, explain how or why water was needed to produce this good. If you are unable to locate the exact product, try to substitute something similar. For example, if you cannot find turkey, use chicken.

<table>
<thead>
<tr>
<th>Product/Good</th>
<th>Why Water is Used</th>
<th>Amount of Water Used</th>
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<tbody>
<tr>
<td><strong>Diet:</strong> Write down the ingredients used for a typical meal.</td>
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<td><strong>Energy:</strong> Write down the types of fuel you use to heat your home and water, and fuel your transportation.</td>
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<td><strong>Clothing:</strong> Write down the materials used to create the clothing (including shoes) you wear.</td>
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</table>

**Total Virtual Water Used:**

Water
Now use Water Footprint’s Extended Calculator (under “Your Water Footprint” in the lefthand menu) to determine your total water footprint.

Total Water Consumed: _________________

Use the results from your personal water audit (virtual water use) to answer the questions below.

1. What most surprised you about your virtual water consumption?

2. What goods or products do you use that require the greatest amount of water?

3. How did your water consumption compare for each of the categories (food, domestic use, industrial) summarized by the Water Footprint’s Extended Calculator?
   a. Create a bar graph to compare these categories. Include a bar to represent your total water use.

   b. Summarize and analyze this bar graph in words.

4. How did this activity change your understanding of water consumption?
Activity 4: Water, Water Everywhere?

Overview
Students take on the perspectives of different stakeholder groups involved in determining how to deal with increasing demands on a waterway. Stakeholder groups are encouraged to form alliances in order to reach consensus on the plan that will be best for everyone involved.

Objectives
Students will:
• understand economic, social, and environmental factors connected to water use
• take on various perspectives in a negotiation
• explore how water allocation agreements take into consideration sometimes conflicting demands for water withdrawals
• negotiate terms of resource use with multiple stakeholders

Inquiry/Critical Thinking Questions
• What are different options for dealing with increased demand on a waterway?
• What are pros and cons of different methods for allocating water?
• How does water waste affect people, environments, and local economies?
• What are sustainable solutions for water management?

Time Required
Two 60-minute classes

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
5. Individuals, Groups, and Institutions
6. Power, Authority, and Governance
7. Production, Distribution, and Consumption
8. Science, Technology, and Society
10. Civic Ideals and Practices

National Science Education Standards
E. Science and Technology
F. Science in Personal and Social Perspectives

National EfS Standards
2.2 Ecological Systems: Respect for Nature
2.3 Economic Systems: Ecosystem Services
3.2 Collective Action: Public Discourse and Policy

Materials and Preparation
Handout: Water in Context, 1 per group of 4-5 students
Handout: Stakeholder worksheets, 1 per group

Activity—Day 1
Introduction
1. Ask students to think about a group situation they were in that required the group to make a decision (for example, a group project for a class or a sports game that required a change in strategy) and how this group made the decision. Have a few volunteers share answers.
2. Explain that there are many different methods of group decision-making and display the following:
   • Decision by Authority: the group may generate and share ideas, but final decision is made by one person
   • Decision by Majority: the group holds a vote and the most popular decision wins
   • Decision by Negative Minority: the group votes on the most unpopular ideas and eliminates them; this process continues until only one idea remains
   • Decision by Ranking: each member ranks several ideas (1 to 5, 5 is the best) and the idea with the largest score wins
   • Decision by Unanimity: each group member agrees that one idea is best
   • Decision by Consensus: discussion and negotiation take place until all members understand
Activity 4: Water, Water Everywhere? continued

and find the final idea acceptable. Each group member communicates how he or she feels about the proposed idea. For example:

- Yes, I definitely agree with this decision.
- This decision is acceptable.
- I will accept this decision, but I am not really excited about it.
- I do not fully agree, but I also do not intend to block this decision.
- I do not agree with this decision, and feel we should find another option.
- Combining Ideas: the group combines several ideas into one

Note: For more information about the pros and cons of each type of decision-making, see the Centre for Teaching Excellence’s website (http://cte.uwaterloo.ca/teaching_resources/tips/group_decision_making.html).

3. Let students know that, in groups, they will identify pros and cons of each type of decision-making and suggest a situation in which this type of decision-making would be beneficial. Encourage students to think of a range of group situations: from a group of friends deciding on what movie to watch to a country deciding whether or not to go to war.

4. Divide the class into groups of 4-5 students and give groups about 10 minutes to complete the activity.

5. Bring the class back together to share their ideas.

6. When time is up, give each group 2 minutes to propose how the river should be managed. Because each group must identify at least one other group to find common ground with, students should take notes on each group’s presentation.

Steps

1. Explain that the class will now be making some decisions about a hypothetical river basin. Each group will take on the role of a particular stakeholder in a river basin that is coming up against the limits of its infrastructure.

2. Distribute the Water in Context handout to each group of students. Read through this scenario with the class.

3. Tell students that the combination of climactic changes and population growth has made it necessary to design a new plan for the management of the river. Share the plan for the next few days:

   - You will act as Minister of Water and have the authority to approve the new plan.
   - Student groups will act represent different stakeholders (those who live in the river basin and/or use its water).
   - Each stakeholder group will create a river management plan that benefits their group.
   - Groups will present their plans to the class and negotiate with other groups to come up with a plan that is approved by several groups.
   - You are most likely to approve of a river management plan that has the support of several stakeholder groups.

4. Distribute 1 Stakeholder worksheet to each group so that each group represents a different stakeholder. (There are 6 different stakeholders.)

5. Give students 10 minutes to read through the worksheet and respond to the questions with their group members. Let students know that you will be asking them to make a short explanation of their position.

6. Explain to students that they will participate in an activity in which they will practice different kinds of decision-making methods.

7. Explain that the students will now participate in discussions and negotiations with other stakeholders in order to determine how they could gain approval from other groups for their proposal. (Remind students that the plans that have approval by several stakeholder groups will be most likely to pass.) This will be the first of two meetings; no final decisions will be made until tomorrow when students have had a chance to check in with their original groups. During
Activity 4: Water, Water Everywhere? continued

this discussion, each student should take notes on the specific needs/wants of each stakeholder. This will help them to identify common ground with other stakeholder groups.

8. Have students gather into groups with stakeholders from the other groups. This means that each group will have 6 different stakeholders.

9. With about 10 minutes left in class, tell the whole class that negotiations have ended for the day, and students should reconvene with their fellow stakeholders for a 5-minute meeting.
   a. Students should share their ideas for how to revise their proposal so that other groups will support it.
   b. Ask groups to record their revised proposal.

10. Explain that negotiations will reopen the next day with a statement of revised positions/proposals, and will then advance to the stage of full proposals to be submitted to your office.

Activity—Day 2

Steps

1. Open the class by asking students to gather into their stakeholder groups. Tell them to take a moment to review their materials (Stakeholder handout, Water in Context handout, position statements).

2. Invite them to present their revised positions, again in 2 minutes or less. Remind them that, as Minister of Water, you need groups to state their position clearly and succinctly.

3. When the last group finishes, explain that the goal of this final stage of negotiations is to develop a full proposal for the management of the river that has the approval of as many groups as possible.

4. After each group has presented, give students 10-15 minutes to form an alliance with at least one other group. As a result of their alliance, they must reach agreement on a plan to deal with management of the river and create a new proposal. This likely means one or both groups will compromise.

5. Ask each allied group to present its revised proposal. Each group should choose a representative to present its plan. Remind them that you will choose the plan proposed by the largest alliance.

6. When 10-15 minutes is up, invite each coalition that submitted a proposal to present their water management plan.

7. After each presentation, ask the groups that were not in this alliance (if there are any) what it would take from to get them on board with this plan. You can offer subsidies, tax breaks, good press, and your support. See if the class can agree to one proposal for river management.

8. Once all proposals have been shared, you will make the final decision on river management proposals. Share with the class why you have decided upon one particular proposal.

9. Move into discussion using the questions below.

Discussion Questions

1. What types of decision-making were involved in this process? Did all stakeholders have an equal weight in the final decision?

2. Do you think other stakeholders were missing from the table?

3. Who do you think should be responsible for paying for infrastructure needed to supply water for new demands?

4. How could the river basin have saved water before new demands overtaxed the river?

5. If there is a growing demand for water, would water conservation be the easiest or cheapest solution to this demand? Why or why not?

6. How did this activity demonstrate the complexities of managing a water resource?

7. What are the skills necessary to negotiate with a group of different stakeholders?
You live in a river basin, a huge geographic area that drains into the largest river in your country. Eighty percent of the river’s water comes from snowmelt from mountains to the north, which is home to an indigenous community. After leaving the peaks, the river meanders through a deep valley, home to a historic village and a large and very prestigious private school that houses several hundred students. At the southern end of the valley is a national park, which includes a deep gorge that the river crashes through before smoothing out into the lowlands.

On its way across the flatlands to the sea, much of the river is diverted into canals that irrigate a fertile but arid region whose agricultural production has boomed over the past 20 years, making it the heart of the country’s economy. The success of this irrigation program has made for a large budget surplus. Part of this money has paid for subsidies to indigenous groups, environmental preservation, and to promote tourism.

However, the river’s flow is highly seasonal; its flow swells during the spring melt but slows to a trickle late in summer. This limits the growing season. The country’s population has grown quickly during the last several decades, putting greater demand on water for agriculture. The country’s agricultural production cannot continue to increase without more water. National food prices, especially for staple grains, have risen dramatically—which has led to political unrest in places where unemployment is high. The country’s government (a semi-constitutional monarchy) is urgently seeking a way to increase the amount of water available for agriculture, in order to keep its people satisfied and quiet. The government is fearful of a true rebellion if people get too hungry.

The idea that is mentioned most often is a major dam project funded by international development lenders, which would catch floodwaters and store them for slower release during dry spells. Because of its size, the dam will have enormous consequences for people living near it. Once the dam is in place, further diversions would be less disruptive socially.

Any means of water diversion—dam or otherwise—will run up against the water rights of people living in the river basin. Your country uses the principle of “first use” to sort out who gets water first in times of shortage: once someone has established use of an amount of water, they have the right to use that same amount of water every year. This means that those people who have the oldest water rights get first dibs in a time of shortage. However, like all rights in your country, water rights are sometimes “overlooked” by the monarchy. The legislature and ministries, on the other hand, are more bound by the rule of law.

You can already see this isn’t going to be an easy decision. There are lots of things to consider—jobs, environmental health, and cost, just to name a few. The Ministry of Water has organized a meeting with various stakeholder groups with the hope that a good plan for dealing with fluctuations in the river’s flow will emerge. Your stakeholder group must present a well-articulated, compelling plan for managing the river basin. You must gather support for your plan to gain the ear of the Minister of Water.

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1 The 2010-2012 uprisings of the “Arab Spring” all began as bread riots. In Syria, at least, these were tied directly to a reduction in the flow of the Euphrates River caused by new Turkish dams. See the Food Chapter in the main text.

2 The principle of first use is the basis of all water law in the western United States.
Stakeholder 1
Historic Village Council

Your town, which has been known for its high-quality pork and honeywine for over five centuries, has successfully transitioned into the 21st century by transforming itself into a tourist destination that still exports high-value agricultural products. With the help of a stunning natural setting and subsidies from the national government, your community has retained much of its “magical” feel. Preserving the old ways is not just a tourist trick—it really is your way of life, and that of the 3,000 residents you represent.

The fluctuations in the river’s flow don’t directly affect you much. Your village learned a long time ago to keep buildings and livestock away from the flood plain. As for droughts, you’ve been using the river’s water longer than anyone except the indigenous community upriver, and so you are practically guaranteed water unless the river runs completely dry. Still, food prices have been rising here, as they have everywhere. You’ve mostly been depending on the nearby private school to keep the community afloat. In short, an increase in food production would help you.

The river is the centerpiece of the landscape that makes you a tourist destination, and damming it could radically change that landscape. There are two locations for a dam that you’ve heard being discussed. The first, higher in the mountains, wouldn’t hurt you at all. However, if the dam failed a flood would wash your village away. This seems unlikely, but you never know.

The second possible location is at the mouth of the gorge in the national park closer to your village. This would create a reservoir that would swallow most of the park, the school (which sits on the river), and hundreds of acres of your farmland.\(^1\)

The immediate impact on tourism would be tremendously bad, and you’d have to find work for several dozen farmers, some of whose families have been on their land for centuries. On the other hand, the construction of the dam would provide a huge number of jobs in the next 10 years or so, and very cheap hydroelectric power for decades after that. In theory it would also allow the agricultural regions downstream to revive and start generating the money that brought tourists to visit you in the first place. Water and alpine sports are also booming in your country right now, so it’s possible you could attract some big investors to build hotels and reinvent your village as a resort location, making it a much more diverse tourist draw in the long term.

Questions for Your Group:
1. How do you propose the river should be managed?
2. What are the social, environmental, and economic benefits of your proposed plan?
3. What are the social, environmental, and economic costs, or trade-offs, of your proposed plan?
4. How do you suggest dealing with the costs or trade-offs of your plan?
5. Would all of the stakeholder groups be likely to agree with these benefits and costs? Why or why not?
6. Which stakeholder groups might you partner with to make your voice louder? What do your stakeholders and their stakeholders have in common?

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\(^1\) The idea of drowning historic sites or natural wonders when a dam is built is actually pretty common—Syria, Iraq, the United States, Turkey, and China (among others) have all done it.
Stakeholder 2
Private School Board of Governors

Your school, located in the river valley, is an institution that has been vital to the functioning of your country for four centuries. The elite in every sector of society—business, government, the press, the military—are drawn mainly from the alumni of your school. Your alumni (who are also the main source of the donations that fund the school) are thus intimately threatened by the food crisis and the political unrest it has created. Some, who are part of the old aristocracy, fear a popular movement for democratic reforms, for fear that they would lose their status and privilege. The big agribusinessmen, some of whom attended your school, are currently raking in record profits, but that cannot continue if adequate water for irrigation is not available.

Something must be done, and a dam is clearly the best option. While it will cost a great deal, nothing else can deliver as much water to the fields on which the country has come to depend. Unfortunately, the ideal placement for the dam, as everyone knows, is in the gorge in the national park. Placing a dam there would create a reservoir that would place the gates of your campus under 500 feet of water.

There are other options, though. A smaller dam could be built farther upriver for a similar cost, on the lands where an indigenous tribe was resettled after your predecessors pushed them out of the river valley in order to build the school. They have resisted large-scale projects in the past, but desperate times call for exploring all possible solutions. Additional diversions from the river could also be made downstream, to irrigate more lands and increase food production.

This would cost slightly less than a dam, but the resulting increase in the nation's agricultural production would be only about one-eighth of that provided by the larger dam in the gorge, and one-fourth of that provided by the smaller dam in the mountains.

Any of these projects could be funded by international lenders. However, the development lenders require environmental and social impact studies before they will release funding. If the projects do not pass these evaluations, the school’s alumni have the financial power to fund the project. It is not clear how their investment could be repaid.

Questions for Your Group:
1. How do you propose the river should be managed?
2. What are the social, environmental, and economic benefits of your proposed plan?
3. What are the social, environmental, and economic costs, or trade-offs, of your proposed plan?
4. How do you suggest dealing with the costs or trade-offs of your plan?
5. Would all of the stakeholder groups be likely to agree with these benefits and costs? Why or why not?
6. Which stakeholder groups might you partner with to make your voice louder? What do your stakeholders and their stakeholders have in common?
Stakeholder 3
Indigenous Tribe of the Northern Highlands

History has not been kind to your people. Originally inhabitants of a beautiful river valley, you were long ago displaced higher into the mountains by invaders who now control the government. The summers are pleasant higher in the mountains, but the growing season is short and winters are brutal.

You have remained strongly unified as a tribe and connected to your cultural heritage. Your new country has also made apologies. In return for your displacement, the government gives you money, food, and some health care. These payments and services have been late in recent years, and they are smaller than promised.

You now hear that the river, which is the center of your tribe's heritage, will be dammed by the national government to feed the population they seemingly intend to increase forever. The details aren't yet clear, but it seems obvious that the best place to put a dam would be in the gorge downstream, where the river valley is deepest and narrowest.

Some in your tribe have always spoken of continuing to fight the invading government, and these men are more vocal lately with new talk of the dam and smaller payments. They claim to have contacts with foreigners who can provide weapons and training, and they recall the difficulty with which you were pushed off your ancestral lands. You must admit that the national government, despite its superior weapons, was never able to fully defeat your people, and you wonder what could be done if the fight resumed. Judging from the success that indigenous movements in other countries have had in disrupting such huge construction projects, it seems that if you disagree with the damming of the river, you could stop construction if a few of your people were willing to sacrifice their lives.1

In any case, you mostly want to be left to your own. The government has assured you that you have first rights to use the river water, up to a certain amount; they claim this is enough to survive. You have seen how they keep promises in the past, though.

Questions for Your Group:
1. How do you propose the river should be managed?
2. What are the social, environmental, and economic benefits of your proposed plan?
3. What are the social, environmental, and economic costs, or trade-offs, of your proposed plan?
4. How do you suggest dealing with the costs or trade-offs of your plan?
5. Would all of the stakeholder groups be likely to agree with these benefits and costs? Why or why not?
6. Which stakeholder groups might you partner with to make your voice louder? What do your stakeholders and their stakeholders have in common?

1 The Zapatistas in Mexico, for example, or the tribes of Baluchistan province in Pakistan.
Stakeholder 4
Friends of the National Park

Your country’s environmental record is questionable, to put it mildly. The economically successful development of the lowlands has eradicated dozens of species and reduced the numbers of many more down to a tiny fraction of their once mighty numbers. The huge agrobusinesses that dominate the lowlands plant a single crop for hundreds of miles. To keep these monocultures afloat, farmers use pesticides and chemical fertilizers that build up in the soil and wash downstream. There are some shining examples of environmental conservation, though. Among them is a national park in this mountainous river valley, which the government has promised to retain in its natural condition forever. The park is home to many species that survive nowhere else in the world, making it a treasure trove of biodiversity.

The government granted legal protection of the park only after your group and your allies campaigned long and hard to demonstrate the region’s importance and beauty. Among your main arguments was that the park could be a major tourist draw. Since the founding of the park, ecotourism has exceeded even your expectations, placing your country among the most sought-out ecotourist destinations.

The proposed damming of the river directly threatens the park, regardless of where the dam is placed. Any regulation of the river’s flow would disrupt its annual cycle of flooding, which is essential to the ecosystem of the banks of the river. Specifically, the fast-flowing floodwaters wash built-up debris downriver every spring; if this debris accumulated year after year, it would eventually slow the river to a crawl and change its ecology entirely.

As for the food price crisis, it is clear to you that the current amount of water that flows into the agricultural regions of your country could be used far more efficiently. Smaller farms, better irrigation techniques, and low-water crops could all increase food production without any additional infrastructure. Furthermore, the people of your nation could eat far less meat and dairy, as the crops used to feed livestock need much more water than crops that can be consumed directly by humans. These changes would require funding, but that would amount to just a fraction of the cost of a major construction project. It is also likely that you could find international donors who care about the park willing to pay for these changes.

Questions for Your Group:

1. How do you propose the river should be managed?
2. What are the social, environmental, and economic benefits of your proposed plan?
3. What are the social, environmental, and economic costs, or trade-offs, of your proposed plan?
4. How do you suggest dealing with the costs or trade-offs of your plan?
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1 This technique, called monocropping, is common among the almond fields of Southern California.
2 This exact process is a serious concern in the Black Canyon of the Gunnison National Park in Colorado.
Over the past two decades, Agro-Industries, Inc. has emerged as the industry leader in agribusiness. Along with the rest of the country’s farmers, your company has provided both the economic engine to drive development and the food resources to provide for a growing population. You have gained unprecedented access to political leaders through your campaign donations; you even have the ear of the King himself. Your connections with big business throughout the world allows you to access huge amounts of money for major projects and to swing deals that even the government cannot.

You feel that the current “crisis” in food prices is nothing that cannot be handled. The water resources to increase grain production by 70-80% are already flowing through the countryside every spring. All the country needs is to harness those waters, and you intend to do just that to lead your country into a new era of growth and prosperity.

According to your studies, damming the river at the mouth of the gorge in order to store spring runoff for use later in the year could lead to a 20-30% increase in food production nationally over the next 30 years. Your company, of course, would also see its profits rise by a similar number. A smaller dam, higher up the river, would store only about a third as much water, enough to increase grain production in the short term and bring prices down but not enough to dramatically increase agricultural output long-term. Building two dams as the United States did on the Colorado River would truly bring your country into the 21st century of water management.

Any major dam project, though, will take at least 15 years to plan, fund, and build. Your country lacks expertise in the field of major water engineering, so international talent would have to be brought in.

You estimate that the construction of the gorge dam would cost upwards of $5 billion, and the smaller dam would cost nearly as much because of its remote location. These funds would have to be brought in from an international development lender, like the World Bank. You and other powerful businesspeople in your country could loan the money to the government, but you’ve seen how difficult it can be for nations to repay these kinds of loans.

If a plan for a dam (or two) can be put together, you’d be willing to drop food prices temporarily in order to relieve the immediate political pressure on the government. You would also be willing to fund another diversion canal, which would lose money but would keep grain production high enough to keep prices down until the dam was completed.

Questions for Your Group:

1. How do you propose the river should be managed?
2. What are the social, environmental, and economic benefits of your proposed plan?
3. What are the social, environmental, and economic costs, or trade-offs, of your proposed plan?
4. How do you suggest dealing with the costs or trade-offs of your plan?
5. Would all of the stakeholder groups be likely to agree with these benefits and costs? Why or why not?
6. Which stakeholder groups might you partner with to make your voice louder? What do your stakeholders and their stakeholders have in common?
You are an international financial institution and you provide loans to developing countries to help them finance improvements in infrastructure. Your ultimate goal is to bring people out of poverty and to promote well-being worldwide. The government of a developing, autocratic country has approached you about funding a dam project on their largest river, a major waterway that the country depends on for much of its agricultural production. Over the past 20 years, this agricultural production has made the country wealthy in comparison with its neighbors. It has also supported a population boom that has driven many people to the country’s major cities. While food was once plentiful and prices were low, increased water stress has led to higher food prices. The large population of city-dwellers is now angry about rising food prices.

The country lacks any major natural resource deposits and has little manufacturing. The government, in other words, doesn’t have the money to lower food prices through subsidies financed from other industries. They simply do not see any way out of their food crisis long term, other than building a large dam for irrigation, which they are asking you to fund.

In principle, you are willing to bankroll the project. Most of your funding comes from the United States, and the developing country has been a useful ally to the U.S. for years. Seeing the country’s government overthrown could result in a civil war, and many people would suffer for years, far worse than they are suffering now.

However, you also want to avoid long-term environmental damage and the displacement of indigenous populations without their consent. In the past, projects funded by the World Bank were heavily critiqued for destroying whole ecosystems and driving poor and indigenous people off their land. The scandals are mostly behind you now, but it would not take much of an outcry from an environmental or indigenous group to ruin your reputation again.¹

In short, you’re interested in the project, but you need assurances that no one will raise an outcry over it.

**Questions for Your Group:**

1. How do you propose the river should be managed?
2. What are the social, environmental, and economic benefits of your proposed plan?
3. What are the social, environmental, and economic costs, or trade-offs, of your proposed plan?
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CHAPTER BIG IDEAS

- Air is a common resource—used by all, owned by none, but someone’s actions may hinder another’s use.
- There are natural forms of air pollution such as volcano ash, dust storms, and fires. However, these sources pose a limited threat to human health.
- Human-generated air pollution poses a serious threat to human health.
- Air pollution can be difficult to remove once produced; while forests and oceans offer natural filtration and absorption of air pollutants, these ecosystem services are not limitless.
Guiding Questions
• Why is air considered a common resource?
• How do people influence the quality of our air?

Key Concepts
• atmosphere
• ozone layer
• air pollution
• fossil fuels
• common resource
• acidification
• bioaccumulation
• environmental justice

Supporting Vocabulary
• carbon monoxide (CO)
• photochemical smog
• volatile organic compounds (VOCs)
• off-gas
• dioxins
• chlorofluorocarbons (CFCs)

Service Learning Component
Service Learning Project Idea #1
• Question: How can we reduce pollution from our vehicles?
• Hook Resource: Idling Myths
  http://epa.gov/cleanschoolbus/antiidling.htm#myths
  Use this series of myths about idling to structure a true/false quiz establishing what students know about idling.
  Project: Start an anti-idling campaign at your school. You can educate drivers about pollution from idling, as well as when it makes sense to turn a vehicle off rather than allow it to idle. You could involve anyone who drives, from students to bus drivers. Place signs in strategic locations around the school asking drivers to turn off their engines while waiting, especially in locations nearest the school and locations where students will be most affected by the exhaust.
• Additional Resources:
  • Website: U.S. EPA's National Idle-Reduction Campaign
    http://epa.gov/cleanschoolbus/antiidling.htm
    The EPA has tools, such as an online idling calculator, an idle-reduction Toolkit, and other helpful information.
• Website: Turn Your Engine Off
http://www.turnyourengineoff.org/
This is a campaign to reduce idling in the Washington D.C. metropolitan area. The website provides information about the impact of idling, alternatives, and a driver recognition program.

• Website: Airwatch NW Anti-Idling Program
http://www.airwatchnw.org/anti-idling-programs/
Northwest air quality agencies have teamed up to provide a wealth of tools to conduct an anti-idling program at school.

Service Learning Project Idea #2
• Question: How can youth support a natural ecosystem’s ability to improve global air quality?
• Hook resource: I will be a hummingbird
http://www.yesmagazine.org/people-power/i-will-be-a-hummingbird
2-minute film clip of Wangari Maathai speaking about the ability of each individual to do their part for the forests, no matter how small. Professor Maathai, a Nobel Peace Prize recipient, founded the Green Belt Movement, which enlists the help of women to combat deforestation in Africa.

• Project: Have students find organizations, both near your home and internationally, that are working to restore forestland. Raise funds to support them or volunteer to help directly. Research what trees can thrive in your area and how to plant them, then get out and plant them. You can coordinate your efforts with a national initiative like Arbor Day (http://www.arborday.org/arborday/) or the United Nations Environment Programme’s The Billion Tree Campaign (http://www.unep.org/billiontree_campaign).

• Additional Resources:
  • Website: Conservation Northwest, Forest Restoration
Please visit http://www.conservationnw.org/old for further information. Pacific Northwest nonprofit organization seeking to implement a region-wide plan for forest protection and restoration.
  • Website: Plant-a-Tree
U.S. Forest Service’s program for restoring forests damaged by logging and fire.
  • Website: The Green Belt Movement
http://greenbeltmovement.org
International effort originating in Kenya with a mission to empower communities worldwide to protect the environment as well as promote good governance and cultures of peace.
Project Based Learning Component

Project Based Learning Idea

- **Overview:** Students will learn about city-wide air pollution concerns and some of the most polluted cities in the world.

- **Driving Question:** Why is air quality different from one place to the next?

- **Hook Resource:** *Air pollution: Silent killer in the city*
  

  Short clip from CNN medical correspondent, Dr. Sanjay Gupta, reporting from Kobe, Japan on the hazards of outdoor and indoor air pollution in urban environments and what you can do to avoid health hazards posed by both kinds of air pollution.

- **Individual Project:** Have individual students research the air quality in their local community. Students should investigate primary air pollutants in their community, sources of these pollutants, any concerning hot spots of poor air quality, what air quality regulations apply to the area, geographic consideration that may help or hinder air quality, and any other information they find relevant. Students will use this information to draft a report assessing the local air quality and conclude with recommendations on how their local air quality could be improved.

- **Group Project:** In small groups, students develop and present a multimedia report on air quality in two major cities with significant air pollution issues—making use of maps, graphs, video, and photos. Divide up the following research on each city and have each student brainstorm recommendations for improving the air quality:

  - Location of the city on a map
  - Average weather of the region and relevant geographic elements
  - Government efforts to report daily air quality, it may help to compare these reports to U.S. EPA practices and the U.S.’s Air Quality Index
  - Government regulation and enforcement of air quality
  - Levels of air pollution in the city
  - Primary air pollutants for the city
  - Sources of energy around the city: electricity, coal, gasoline, solar, wind, water
  - Other potential sources of air pollution
  - Any current, relevant news stories

  The presentation will compare the two cities, making an assertion as to whether one city is worse off than the other; conclude with suggestions for improving or maintaining the air quality of both those particular regions. Cities to suggest may include New Delhi, Katmandu, Beijing, Lima, Cairo.
Creating new habits or breaking old ones takes time and can be challenging. Having a plan in place and anticipating potential obstacles can help you be more successful with this habit change. Complete the worksheet below and return to this each week as you evaluate your progress and when you need some motivation!

**Challenge start date:** ______________________

**Challenge end date:** ______________________

**Habit I would like to change:** ____________________________________________________________

**Cues (environmental and emotional factors and situations that trigger this behavior):** ____________________________________________________________

**Habitual routine:** ____________________________________________________________

**Reward (what you gain from this habit):** ____________________________________________________________

**How does this habit relate to sustainability?** ____________________________________________________________

**Habit I would like to create:** ____________________________________________________________

**Cues (environmental and emotional factors and situations that you can use to remind you of your new routine):** ____________________________________________________________

**New routine:** ____________________________________________________________

**Reward (what you will gain from this new habit):** ____________________________________________________________

**How does this new habit relate to sustainability?** ____________________________________________________________

**Additional Resources:**
- **Website:** CIA World Factbook  
  This website provides information about different countries around the world.
- **Article:** Global Air Pollution: what is the most polluted country and city in the world?  
  This article uses data released by the WHO and an interactive to compare air pollution around the world.
- **Article:** The 10 most Air Polluted Cities in the World  
  This article discusses characteristics shared by the 10 most air-polluted countries in the world.

**Connections**

**World History connections:**  
Middle Ages; Industrial Revolution; international environmental regimes; transboundary pollution

**Economics connections:**  
Cap-and-trade markets; externalities; consumer-driven product improvements

**Geography connections:**  
Urban life; air quality; public planning

**Civics connections:**  
Personal and structural solutions to air pollution

**Summative Assessment:**
Chapter Test
## Activities in Teacher’s Guide: Suggested Sequence

### Day 1

**Reading:** *Introduction to Air*

**Activity 1:** *Valuing Clean Air*—Students consider the economic benefits of clean air alongside the costs of pollution control. In small groups, students will perform a cost-benefit analysis of implementing congestion pricing to reduce vehicle traffic, bearing in mind monetary costs alongside environmental and social externalities.

### Days 2 and 3

**Reading:** *Background on Air; Air Today: Indoor Air Pollution*

**Activity 2:** *What’s Your IAQ*—Students research 1 type of indoor air pollution, later investigating whether this source is present in their home or school. Students will create a public service announcement (in poster form) about the potentially harmful health effects of this particular pollutant and ways we can safeguard ourselves and our family and friends from exposure.

### Day 4

**Reading:** *Air Today: Outdoor Air Pollution*

**Activity 3:** *Taking Air Pollution to Court*—Students learn about common sources of outdoor air pollutants and their effects on human health through a mock trial, whereby a group of citizens is suing a local steel mill over air pollution concerns. Taking on the roles of plaintiffs, defendants, lawyers, and jurors, students will grapple with the difficulty of connecting air pollution to a single source.

### Day 5

**Reading:** *Pathways to Progress: Air*

**Activity 4:** *Capping Pollution*—In a cap-and-trade exercise, students take on the roles of electric utility companies tasked with making a profit while remaining below a government-mandated cap on air pollutants. The exercise concludes with a discussion of the effects—good, bad, intended, and unintended—of this market-based approach to pollution control.
Discussion Questions from the Chapter Reading

Introduction to Air

1. Aside from air, what could be considered a common resource? What is it about air that makes it unique to other common resources?

2. If air pollution is “a concentration of gases or dust in amounts that can harm the health of humans, animals, or plants,” how would you define clean air?

Background on Air

3. How has industrialization impacted our air quality? Think beyond just the use of fossil fuels—consider how urbanization, population growth, and other aspects of industrialization relate to air quality?

4. Is air pollution necessary for progress and development? Why or why not?

Air Today

5. What are common signs of indoor air pollution—such as smells, symptoms, and substances?

6. How might indoor air pollution in a modern 3-bedroom home in an urban area differ from indoor air pollution in a small 1-room home in a rural village?

7. How do you think outdoor air pollution might affect your life, either now or in the future?

Pathways to Progress: Air

8. What mechanisms would you suggest to encourage polluters to pay for their pollution?

9. There are many actions that can be taken, both large and small, to limit air pollution. What is 1 action your government has taken to address air pollution where you live? What is 1 action you can do to address air pollution?
Recall

Match the following words on the left with their definitions on the right.

1. Air Pollution  
   a blanket of air that surrounds Earth, composed of nitrogen, oxygen, argon, carbon dioxide and trace amounts of other greenhouse gases

2. Atmosphere  
   fair treatment and involvement of all community members in environmental governance

3. Environmental Justice  
   reaction between air pollutants and sunlight resulting in a haze

4. Photochemical Smog  
   concentrations of gases, dust, fumes, or odors in amounts that can harm the health of humans, animals, or plants

Reasoning/Explanation

Complete the following multiple choice questions by choosing 1 correct answer.

5. Which of these statements best describes why the management of air can be difficult?
   a. Air flows freely, irrespective of political borders, and air pollution generated in one location with one set of air quality regulations can impact the health of people in another location with a different, perhaps stricter, set of air quality regulations.
   b. Air is something we cannot recreate in a laboratory, therefore it is a non-renewable resource and it is difficult to limit people’s consumption.
   c. Air is free for everyone so no one feels responsible for its management, just as no one feels responsible for the quality of our tap water.
   d. Air is a common resource, freely available to all; history has demonstrated that management is unnecessary because everyone does their part to preserve such common resources.

6. Air pollution is:
   a. uniform, regardless of source or location
   b. diverse in its effects and chemical composition
   c. a human-generated contribution to the atmosphere
   d. responsible for creating ozone in the atmosphere
7. Based on the pie chart below, what would be the best solution for addressing the largest contributor to air pollution in the state of California?1

Sources of Air Pollutants Measured in California

- Industrial processes and petroleum production
- Water disposal
- Fuel combustion from stationary sources, solvent evaporation, and surface coatings
- Aircraft, trains, commercial equipment, and other mobile sources
- Miscellaneous processes
- Natural resources
- Gasoline powered cars and trucks

a. develop alternatives to current water disposal practices including grey water collection systems
b. reduce dependence on coal-fired power plants, opting to rely on more sustainable energy resources such as wind, solar, or water
c. encourage the use of alternative forms of transportation such as riding a bike, riding the train or bus, or walking
d. limit the amount of diesel trucks and motorcycles that can be sold within the state of California

8. What is one of the leading contributors to indoor air pollution in the developing world?
   a. volatile organic compounds
   b. car exhaust
   c. cooking fires
   d. dioxins

9. What statement best describes the air quality of Mexico City today?
   a. The air in Mexico City is typical of any urban area, detrimentally impacted by airport traffic and industrial practices.
   b. The air in Mexico City is so pristine it has been said to possess therapeutic powers for people with respiratory issues.
   c. The air in Mexico City is cleaner than most urban areas because of the city’s growing use of renewable energy.
   d. The air in Mexico City is notoriously poor because of automobile exhaust, population growth, and geographical circumstance.

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10. Use the flow chart to help answer the multiple choice question below.

Asia's fossil fuel consumption has been on the rise as they seek to develop. → Mining for fossil fuels like coal has been linked to higher concentrations of lead in the air. → X → California has discovered that 30% of lead found in their air is from Asia.

Which statement best replaces the X in the flow chart?

a. Asia started shipping their toxic waste, such as leaded paint and leaded gasoline, to the United States.

b. Global weather patterns circulate air throughout Earth and carry air pollution across the ocean from Asia to California.

c. Tourists from Asia visiting California have unintentionally brought along lead particles attached to their clothes and belongings.

d. Air pollution moves predictably from inland toward the ocean; once air pollution reaches the ocean, it typically follows currents east.

11. Which statement below best explains why indoor air pollution should be of concern in the developed countries?

a. Indoor air pollution in developed countries is often colorless.

b. Indoor air pollution can build up in well-ventilated houses.

c. People living in developed countries often spend more time indoors than outside.

d. Indoor air pollution sickens and eventually kills indoor plants.

12. The following economic costs are associated with air pollution except:

a. reduced crop growth

b. lost work days and school days

c. closures of airports

d. traffic congestion
13. Use the flow chart to help answer the multiple choice question below.

Which statement best replaces the X in the flow chart?

a. Asthma  
b. Food allergies  
c. Skin cancer  
d. Malaria

14. What air pollution solution would best apply to a developing country seeking to industrialize?

a. cap-and-trade system  
b. development of renewable energy resources  
c. ban on fossil fuels  
d. limit government oversight on environmental regulations

Application/Complex Reasoning

Answer the following short answer questions below.

15. Humans in both developing countries and developed countries are exposed to indoor air pollution every day

Part A. Describe 1 form of indoor air pollution a person in a developing country is likely exposed to on a daily basis, the source of this air pollutant, and why this exposure may pose a threat to their health.

Part B. Describe 1 form of indoor air pollution a person in a developed country is likely exposed to on a daily basis, the source of this air pollutant, and why this exposure may pose a threat to their health.

16. The progress of human civilizations has been linked to a rise in air pollution.

Part A. Name 1 historical development linked to the dramatic increase in human-generated air pollution.

Part B. Describe the costs and the benefits associated with this development.

Part C. Weighing the costs and benefits, do you believe this development was an overall benefit to humanity?
Recall (4 points total)

1. Air Pollution—concentrations of gases, dust, fumes, or odors in amounts that can harm the health of humans, animals, or plants
2. Atmosphere—a blanket of air that surrounds Earth, composed of nitrogen, oxygen, argon, carbon dioxide trace amounts of other greenhouse gases
3. Environmental Justice—fair treatment and involvement of all community members in environmental governance
4. Photochemical Smog—reaction between air pollutants and sunlight resulting in a haze

Reasoning/Explanation (10 points total)

5. a 10. b
6. b 11. c
7. c 12. d
8. c 13. a
9. d 14. b

Application/Complex Reasoning (6 points total)

15. Part A: Answers will vary. (1 point)
   • Carbon monoxide from indoor cooking fires—leading to lung cancer, pneumonia, chronic bronchitis
   • Smoke—leading to damage of the brain, liver, kidneys or nerves
   • Radon—leading to lung cancer

   Part B: Answers will vary. (1 point)
   • Carbon monoxide from furnaces and cars inside car ports—leading to lung cancer, pneumonia, chronic bronchitis
   • Radon—leading to lung cancer
   • VOCs from off-gassing—kidney and liver damage, cancer, and possibly developmental disorders

16. Part A: Answers will vary. (1 point)
   • Coal as a heat source for artisans
   • Industrial revolution
   • Dependence on fossil fuels
   • Invention of new air pollutants
   • Destruction of air pollution neutralizers such as forests

   Part B: Answers will vary. (1 point)
   • Costs: Air pollution, health problems, lost resources, unnecessary consumption
   • Benefits: Large-scale manufacturing, world trade, technological innovation, more options for food, goods, housing, and medicine

   Part C: Answers will vary. (2 points)
   • Yes, our technological innovation with offset the health risks associated with air pollution
   • No, the health risks are too great
   • No, it is nearly impossible to undo the damage that has been done
Activity 1: Valuing Clean Air

Overview
Students consider the economic benefits of clean air alongside the costs of pollution control. In small groups, students will perform a cost-benefit analysis of implementing congestion pricing to reduce vehicle traffic, bearing in mind monetary costs alongside environmental and social externalities.

Objectives
Students will:
• determine externalities associated with driving a car
• perform a cost-benefit analysis weighing economic, social, and environmental costs and benefits of pollution abatement
• make a recommendation about whether or not to charge drivers a fee for using congested roadways in an attempt to reduce air pollution

Inquiry/Critical Thinking Questions
• What costs associated with driving are not paid for directly by drivers?
• How can those who cause air pollution be held accountable for related externalities?
• How can we place a price on our social and environmental health?

Time Required
One 45-minute class

Key Concepts
• externalities
• cost-benefit analysis
• outdoor air pollution

National Standards Addressed

National Science Education Standards
F. Science in Personal and Social Perspectives

National Council for the Social Studies
3. People, Places, and Environments
5. Individuals, Groups, and Institutions
6. Power, Authority, and Governance
7. Production, Distribution, and Consumption
10. Civil Ideals and Practices

National EFS Standards
2.3 Economic Systems: True (or Full) Cost Accounting
3.2 Collective Action: Public Discourse and Policy

Materials/Preparation
Agree / Disagree Signs: In large letters, print “Agree” on 1 piece of paper and “Disagree” on another piece of paper. Tape the “Agree” sign to 1 wall in your classroom and the “Disagree” sign to the opposite wall.

Handout: Cost-benefit Calculations, 1 per student
Activity 1: Valuing Clean Air continued

Activity

Introduction

1. Write the following statement on the board: “When I pay for something, I use it more carefully than when I get something for free.”

2. Place the “Agree” and “Disagree” signs on opposite sides of the classroom and ask students to the stand by the sentiment they agree with most based on the statement that is written on the board. Each student must choose a side and be ready to explain their reasoning.

3. Ask for volunteers from each group to explain their agreement or disagreement with the statement. Let students know they are welcome to switch sides if another student’s explanation persuades them to do so—be sure to ask the student switching sides what about the other student’s statement made them change their minds.

4. After this side debate, ask students to return to their seats.

Steps

1. Review with students the term externality. (A cost that is neither paid by the producer of a good or service nor by the consumer. It is external to any balance sheets.)

2. Ask students to think-pair-share with a partner how air pollution would be considered an externality.

3. Tell students that air pollution from vehicle emissions is a major source of pollutants worldwide. Share the following information with them:
   - 90% of air pollution in urban areas within developing nations is attributed to vehicle emissions.
   - Transportation is the largest source of air pollution in the U.S., responsible for over half of the carbon monoxide emissions and more than one-third of nitrogen oxide emissions.

4. Ask students to put themselves in the driver’s seat and think about what sorts of things would encourage them to drive less.

5. Review the terms public goods (non-consumptive, non-rival resource) and common resources (non-consumptive, but rival in consumption) as well. Explain how uncongested nontoll roads may be considered a public good, while congested nontoll roads may be considered a common resource.

6. Ask the students why they think only nontoll roads can be described as public goods or common resources. What about toll roads?

7. Have the students brainstorm a list of public goods and common resources.
   - Examples of Public Goods: tornado siren, national defense
   - Example of Common Resources: fish in the ocean, public park

8. Let students know that 1 tactic some cities are taking to limit air pollution (along with a variety of other tactics such as increased revenue) is to charge cars that drive in the most congested areas of the city during peak driving times.


10. Allow students to work together in groups of 2 to 3 to complete the handout. Allow for about 10 minutes of discussion.

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1 UNEP. Please visit https://www.unenvironment.org for further more information.

Activity 1: Valuing Clean Air  continued

11. Bring the class back together and have each group review their chart with the class. Compare and contrast among groups and ask for reasoning if it would prove helpful.

12. Finally, reflect on the discussion questions below with the class.

Discussion Questions
1. Do you think charging drivers in congested areas is an effective way to reduce air pollution?
2. Is it fair to charge a fee for driving in congested areas? Who might be disproportionally burdened by this fee?
3. What other measures could be more effective at reducing air pollution?
4. What costs and benefits are difficult to put a dollar value on?
5. Costs like pollution and traffic congestion, which are not paid for by car manufacturers or by consumers when they purchase a car, are often called externalities because their true cost is external to the price of purchasing and using a vehicle. Charging drivers to reduce traffic congestion or taxing gasoline to reduce pollution emissions are ways to internalize those costs. Does congestion pricing adequately deal with the externality of heavy traffic in urban areas?

Additional Resources

• Blog: Revenue increases should also internalize environmental externalities
  http://greatergreaterwashington.org/post/3047/revenue-increases-should-also-internalize-environmental-externalities/
  A 2009 post by David Alpert for the blog: “Greater Greater Washington: Washington D.C. is great. But could be better.” He offers 13 examples of how to internalize environmental externalities in the D.C. area.

• Article: San Francisco considers user fee for drivers
  This New York Times article by Jim Motivalli reports on a controversial idea San Francisco’s Metropolitan Transit Committee has been circulating to tax drivers for the amount of miles they drive.

• Article: The most sensible tax of all
  http://www.nytimes.com/2012/07/05/opinion/a-carbon-tax-sensible-for-all.html?_r=1
  This New York Times article by Yoram Bauman and Shi-Ling Hsu discusses British Columbia’s new carbon tax on the carbon content of all fossil fuels burned in the Canadian province and whether the United States may want to consider a similar tax on pollution.
Background: In 2003, the city of London instituted a system of charging drivers within a central zone during daytime hours. The primary reason was to reduce road congestion. By reducing vehicular traffic, a secondary benefit is reduced air pollution, though officials in London point out that they are not able to detect changes in air quality associated with congestion charging.¹

Vehicles that drive in London’s congestion charging zone (the shaded red area) are required to pay a daily fee.

Directions: Your team will consider whether to implement a similar congestion pricing system in a different city, Urbania. Use the information provided to analyze the costs and benefits of such a pricing system and make a determination as to whether recommend this system of Urbania.²

Anticipated Costs of Implementing a Congestion Pricing System in Urbania
- Cost to start program: $340 million, one-time investment
- Cost to maintain program: $84 million/year
- Cost to drivers: $3.75/day
- Anticipated fines: $879,000/year

Anticipated Outcomes of Congestion Pricing in Urbania
- Number of vehicles per day that will drive within the zone and pay the fee: 57,000
- Reduction in number of vehicles per day within the zone: 20,000

<table>
<thead>
<tr>
<th></th>
<th>Car</th>
<th>Truck</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon monoxide emissions</td>
<td>20.9</td>
<td>27.7</td>
</tr>
<tr>
<td>(grams/mile)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbon dioxide emissions</td>
<td>0.916</td>
<td>1.15</td>
</tr>
<tr>
<td>(pounds/mile)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gasoline consumption</td>
<td>0.0465</td>
<td>0.0581</td>
</tr>
<tr>
<td>(gallons/mile)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

³ U.S. EPA, “Emission Facts: Average Annual Emissions and Fuel Consumption for Passenger Cars and Light Trucks,” April 2000. Numbers “assume an average, properly maintained vehicle on the road in July 2000, operating on typical gasoline on a warm summer day (72–96°F).” The average annual mileage is 12,500 for a passenger car and 14,000 for a light truck. The average fuel economy is 21.5 miles per gallon for passenger cars and 17.2 mpg for light trucks.
Using the following chart, list the anticipated costs and benefits of implementing a congestion pricing system. Identify and explain at least 1 cost and 1 benefit for each of the 5 stakeholders. Then, answer the questions that follow.

<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Costs</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. City government</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Drivers/commuters within congestion pricing zone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Residents within congestion pricing zone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Business owners within congestion pricing zone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Environment Organizations</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6. Who in the community do you believe would benefit the most from the congestion fee system? Why?

_______________________________________________________________________________________

7. Who or what do you believe would experience the greatest burden from the congestion fee system? Why?

_______________________________________________________________________________________

8. Based on your team’s cost-benefit analysis, would you recommend the congestion pricing system for Urbania? Why or why not?

_______________________________________________________________________________________

9. In your cost-benefit analysis, how did you value the reduction air pollution? Or did you not place a value on it at all and why?

_______________________________________________________________________________________


Activity 2: What’s Your IAQ?

Overview
Students research 1 type of indoor air pollution, later investigating whether this source is present in their home or school. Students will create a public service announcement (in poster form) about the potentially harmful health effects of this particular pollutant and ways we can safeguard ourselves and our family and friends from exposure.

Objectives
Students will:
• learn about several types of indoor air pollution and their effects
• become aware of where the sources of these pollutants may be in their own home or school
• think critically about how to communicate information about air pollutants, their sources, and their effects

Inquiry/Critical Thinking Questions
• Why are some pollutants—including their sources and effects—not commonly known?
• When creating a public service announcement, how do you convey the right information in the right tone and format to a given audience?

Time Required
Two 60-minute classes

Key Concepts
• indoor air pollution
• public service announcement

National Standards Addressed
National Science Education Standards
F. Science in Personal and Social Perspectives

National Council for the Social Studies
1. Culture
3. People, Places, and Environments
6. Power, Authority, and Governance
10. Civic Ideals and Practices

National EfS Standards
2.3 Ecological Systems: Tragedy of the Commons
3.2 Collective Action: Organizational and Societal Change Skills and Strategies

Materials/Preparation
Internet access for each student
Handout: Indoor Air Pollution Research, 1 per student
Posters or large sheets of paper, 1 for each pair of students

Activity—Day 1
Introduction
1. Ask students what types of indoor air pollution might be present in their home and school. As students respond, ask them how they knew this or how they might try and figure this out. (Possible answers include: researching construction materials used to build and maintain the school building/house, contacting local health authorities to find out what molds grow in their region, personal observation using smell and sight, taking an inventory of health issues of inhabitants)

2. Ask further about what types of evidence would convince them of an air pollution problem inside their home or school that needs to be solved. What about that evidence would be convincing? (Chemical evidence, for example, might be very sound scientifically, but may lack emotional punch. A teenager developing asthma from indoor air pollution, on the other hand, might provoke more immediate action.)

Steps
1. Tell the class that today they will be researching common indoor air pollutants, their sources, and health effects. Divide the class into pairs and distribute the Indoor Air Pollution Research sheet.
Activity 2: What’s Your IAQ? continued

2. As students begin their research, circulate through the room to see what websites students have found. Make sure that they are using information from a trusted source.

3. With 5 minutes left in the period, call the class back together for discussion of what they found during their research. You may want to go through the handout together, to ensure that everyone located sufficient information.

Activity—Day 2

Introduction

1. Let students know that today they will be turning their research into a public service announcement to be displayed in their school.

Steps

1. Have students get back together with their research partner from Day 1.

2. In pairs, students will spend a few minutes determining which pollutant to zero in on. Ask them to consider what type of message or visual image would be most effective in grabbing people’s attention. In other words, what should they include on the poster that is most likely to change people’s behaviors?

3. Allow them the remaining class period to construct the poster with their partners.

Option: You can go beyond hand-made posters by using photos or constructing images in a software program such as Microsoft Publisher or Power Point.

Discussion Questions

1. Why did you pick the air pollutant you chose for your PSA? What do you think makes your poster effective?

2. Did any website you used motivate you to investigate the air quality inside your home? What about that website inspired you to action?

3. Which of the sources of indoor pollution do you think could be present here at school? In your home?

Additional Resources

- **Video: How to grow your own fresh air**
  [http://greenspaces.in/blog/ted09/](http://greenspaces.in/blog/ted09/)
  A public lecture from an Indian researcher on using specific houseplants to improve indoor air quality at a large office building in Delhi.

- **Video: Green your indoor air quality**
  A short video on 5 plants that can deal well with specific toxins in a home/workplace/school.

- **Website: EPA Publications**
  [http://www.epa.gov/iaq/schools/pubs.html](http://www.epa.gov/iaq/schools/pubs.html)
  The U.S. Environmental Protection Agency presents “IAQ Tools for Schools,” including reading materials, videos, a framework for effective school indoor air quality management, and a tool kit to start testing and improving indoor air quality at your school.

- **Website: Take a Tour of the IAQ House**
  [http://www.epa.gov/iaq/iaqhouse.html](http://www.epa.gov/iaq/iaqhouse.html)
  The Environmental Protection Agency takes a look at how to protect air quality within the home.
Indoor Air Pollution Research

Part 1: In this exercise, you will be researching some of the most common indoor air pollutants. You will use your research to create a public service announcement designed to help people improve indoor air quality in their homes and workspaces.

The following websites may provide a starting point for your research:


<table>
<thead>
<tr>
<th>Pollutant</th>
<th>How It Affects Human Health</th>
<th>Where It Is Found</th>
<th>Ways to Prevent Pollution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cigarette smoke</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Mold/mildew</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Carbon monoxide</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Radon</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Volatile organic chemicals (VOCs)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Remember to keep track of where you found this information so you are able to cite to it later if necessary.

Part 2: Think about how you might present this information to the public. What would be an effective way to warn people of the dangers of indoor air pollution and to help them improve air quality in the places where they live and work? Your task is to create a poster or other visual public service announcement, highlighting at least 1 source of indoor air pollution and a solution.
Activity 3: Taking Air Pollution to Court

Overview
Students learn about common sources of outdoor air pollutants and their effects on human health through a mock trial, whereby a group of citizens is suing a local steel mill over air pollution concerns. Taking on the roles of plaintiffs, defendants, lawyers, and jurors, students will grapple with the difficulty of connecting air pollution to a single source.

Objectives
Students will:
• take on various roles involved in a mock trial
• identify sources for common outdoor air pollutants
• understand how air pollution can affect human health
• debate the difficulty of tracing air pollution to a single source

Inquiry/Critical Thinking Questions
• What activities expose us to toxic pollutants in our everyday lives?
• How can air pollution be traced to its source?
• What can industry do to limit their emissions and improve air quality in surrounding community?
• How can a court of law provide a remedy for citizens who suffer from the effects of environmental pollution?

Time Required
One 90-minute class

Key Concepts
• outdoor air pollution
• traceability
• accountability
• civil litigation
• legal remedies

National Standards Addressed
National Science Education Standards
F. Science in Personal and Social Perspectives

National Council for the Social Studies
3. Places, People, and Environments
5. Individuals, Groups, and Institutions
6. Power, Authority, and Governance
10. Civic Ideals and Practices

National Efs Standards
2.1 Interconnectedness: Systems Thinking
2.2 Ecological Systems: Tragedy of the Commons
2.4 Social and Cultural Systems: Governance
3.2 Collective Action: Community-Based and Societal Level Decision-Making
3.2 Collective Action: Public Discourse and Policy

Materials/Preparation
Handout: Outdoor Air Pollutants, 1 per student
Handout: Plaintiff Cards, 2 sets of 6 cards (printed and cut out)—1 card per plaintiff and 1 shared set for the plaintiffs’ attorneys
Handout: Defense, 3 copies—1 for the defendant and 1 for each defense attorney
Handout: Jurors, distribute to remaining students—1 per student
Activity 3: Taking Air Pollution to Court  continued

Activity

Introduction

1. Write on the board the following 4 terms: plaintiff, defendant, attorney, and juror. Ask students to describe what these 4 words mean. You may ask them to recall how popular TV shows portray these roles.

- Plaintiff—a person who brings a suit or action in court; this is the person who is suing
- Defendant—a person or party (company, government, etc.) against whom a suit or action has been brought in a court of law; this person has been accused of wrongdoing
- Juror—a group of your peers whose job is to deliver a verdict in a court case
- Attorney—a legal representative, licensed by the state, who helps parties present their case in court

2. Let students know that today they will be participating in a mock trial. Some students will play the plaintiffs who are bringing the lawsuit; 1 student will play the defendant who is being charged in the lawsuit; some will play lawyers representing either the plaintiffs or the defendant; and some students will play jurors who will determine the verdict in the case. In this case, community members are suing a family-owned company operating a local steel mill in their town.

- Note: A steel mill is an industrial plant that manufactures steel by smelting ore and then alloying 2 or more metals.

3. Ask students to brainstorm obstacles citizens may encounter if they tried to sue someone for polluting the air we all breathe. What, if anything, is unique about air pollution that could make it challenging to prosecute? How might this challenge be overcome?

Steps

1. Pass out 1 copy of the handout, Outdoor Air Pollutants, to each student. The handout will be a reference page for everyone involved in the trial.

2. Read the following scenario aloud, to set the stage for the trial:

You are all residents of the town, Brownsville. One of the major employers in your town is a steel mill, which provides more than 2,000 jobs. The Lowell family, who has operated the plant since 1917, owns the steel mill. The Lowell family is heavily involved in the community: sponsoring a little league team, setting up a college scholarship for local disadvantaged youth, and encouraging their employees to volunteer at the local food banks around the holidays.

At the mill, ore is processed (or smelted) to obtain the metal within. Multiple types of metals are then combined (or alloyed) to create steel, a substance that is much stronger than the individual metals it is made of. Steel made at the Lowell plant in Brownsville is used in construction projects all over the region.

Several people in the community have become ill within the past year. All believe that the Lowell mill is to blame for their illnesses. As a byproduct of steel manufacturing process, Lowell mill releases air pollution from the smokestacks at its industrial plant. By law, they are allowed to emit a certain amount of pollution; the plant is within its legally allowable limit. Six of the people who are affected by these pollution-related illnesses have decided to sue the Lowell family as representatives of the mill, seeking compensation for the health care expenses, pain and suffering, and emotional distress associated with their illness as well as a court order to shut down the mill’s operation permanently to prevent anyone else in the community from getting sick.
3. Let students know that you will act as the judge during the trial. You can ask questions of the plaintiffs, defendant, or lawyers when it is their turn to speak. You can also provide specialized instructions or clarifications to the jury, if you choose.

4. Choose 6 students to be the plaintiffs in the case. Distribute 1 Plaintiff Card to each of these students. Let them know that at trial they will be called to testify, where they will clarify or explain any of the information on their card—especially their reasons for bringing a case against the Lowell family.

5. Choose 2 students to act as the plaintiffs’ attorney. They will have access to all of the Plaintiff Cards and will call each plaintiff to the stand. Let them know that they will be guiding each plaintiff’s testimony with open-ended questions. The plaintiffs’ attorneys will also be responsible for cross examining the defendant and making a short closing statement at the end.

6. Choose 1 student to be the defendant in the case, representing the Lowell family. Distribute 1 copy of the handout, Defense to the student. Let each of them know they may be called to testify, allowing them the opportunity to defend themselves against the claims (i.e., denying the accusations and reminding the jurors of their commitment to the local community).

7. Choose 2 students to act as defendant’s attorneys. Distribute 1 copy of the handout, Defense, to each of these students. The defense attorneys will guide the defendant’s testimony with open-ended questions, as well as cross-examine the plaintiffs, and make a short closing statement.

8. You may let the attorneys know that they should divide up who will examine, cross-examine, and provide closing statements ahead of time. The attorneys do not have to cross-examine the opposing party, this is a strategic decision. Closing statements will only last 1 to 2 minutes, simply recapping the evidence presented in their clients favor and requesting a specific verdict (i.e., liable versus not liable) from the jury. Encourage the attorneys to use persuasive language.

9. The remaining students will be jurors. Distribute 1 copy of the handout, Jurors, to each of the remaining students.

10. Give students 10 to 15 minutes to work with others in their groups (plaintiffs and their attorneys, defendant and their attorneys, and jurors) to complete the handout specific to their role. All students should review the Outdoor Air Pollutants Handout in preparation for trial—to see which pollutants seem to be the most difficult to trace, either due to vague health symptoms elicited or because there are many sources of a single pollutant.

11. Stage the classroom to resemble a typical courtroom so that each of the 3 groups is sitting in a different area and witness box next to where you will be sitting as judge.

12. Ask the plaintiffs to present their case first. Have the plaintiffs’ attorneys call on each of the 6 plaintiffs, 1 at a time, to sit in the witness box and present the information found on their cards to the court. As they testify, a plaintiffs’ attorney may guide their testimony with helpful questions while the defense attorneys, defendant, and jurors should be taking notes. A defense attorney will then be offered the chance to cross-examine the plaintiffs, though they may chose not to.
Activity 3: Taking Air Pollution to Court  continued

13. Next ask the defense to present their case. The defense attorney will call the defendant to the witness box where the defendant will have the opportunity to defend themselves. A defense attorney may guide the defendant’s testimony with helpful questions and a plaintiff’s attorneys may cross examine the defendant, if they choose. As the defense presents their case, the plaintiffs, plaintiffs’ attorneys and jurors should take notes.

14. Finally, have 1 of the plaintiffs’ attorneys and 1 of the defense attorneys offer a short closing statement as to why the jury should favor them. You should provide them with a few minutes to prepare once testimony has wrapped up.

15. Once the closing arguments are through, the jury will be brought into a small circle in the middle of the classroom. The plaintiffs, defendant, and attorneys will form an outer circle around the jury to create a fish bowl effect. The jury will have about 10 minutes to decide whether the Lowell family is liable for the injuries suffered by the plaintiffs, or not. The outer circle is not allowed to say anything during this process. At least ¾ of the jury must reach a consensus before they offer their final decision.

16. Conclude with a discussion using the following questions.

Discussion Questions
1. Who presented the most convincing evidence? Why was it so convincing?
2. What could the plaintiffs have done to minimize their exposure to outdoor air pollution?
3. If a person is predisposed to be especially susceptible to pollution, should a single polluter be held liable for their injuries? Why, or why not?
4. Could the defendant have done anything to minimize their contribution to town’s air pollution? What do you think could motivate them to undertake these measures?
5. In addition to effects on human health, what other damages from air pollution might motivate a person or group to seek justice in a court of law?

Additional Resources
• Lesson Plans: Mock Trial Resources for the Classroom
Available here.
The Constitutional Rights Foundation Chicago has made available various resources for teaching mock trials.

• Website: Classroom Law Project
http://www.classroomlaw.org/
Classroom Law Project, a nonprofit organization based in Oregon, provides a variety of resources to assist teaching about the legal system.

Sources for Outdoor Air Pollutants Handout
https://www.epa.gov/pm-pollution

https://www.epa.gov/ozone-pollution

Nitrogen Dioxide: U.S. EPA, “Nitrogen Dioxide(NO2),”
https://www.epa.gov/no2-pollution

https://www.epa.gov/so2-pollution

https://www.epa.gov/lead-air-pollution
# Outdoor Air Pollutants

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>What Is It?</th>
<th>Sources</th>
<th>Health Effects</th>
<th>Who It Affects Most</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Particulate Matter (PM)</strong></td>
<td>Tiny particles suspended in gas or liquid; these particles can include organic materials, metals, and soils</td>
<td>Vehicle exhaust; fires; power plants; industry/factories; construction sites; dust, soil, pollen, etc.</td>
<td>Airway irritation; coughing; difficulty breathing; decreased lung function; irregular heartbeat; lung cancer</td>
<td>People with pre-existing heart or lung conditions are most at risk; children and older adults are also vulnerable</td>
</tr>
<tr>
<td><strong>Ground-level Ozone (O₃)</strong></td>
<td>A gaseous mix of pollutants (nitrogen oxides, VOCs) and sunlight; a major component of photochemical smog</td>
<td>Vehicle exhaust; industrial emissions; gasoline vapors; chemical solvents; sunlight and hot weather combined with pollution sources lead to ozone formation</td>
<td>Chest pain; coughing; wheezing; throat irritation; reduced lung function</td>
<td>People with existing respiratory conditions, such as asthma</td>
</tr>
<tr>
<td><strong>Nitrogen Dioxide (NO₂)</strong></td>
<td>A toxic gas; in the presence of sunlight, it can contribute to photochemical smog</td>
<td>Combustion of fuels, such as occurs in gas stoves and heaters, motor vehicles, and power plants; welding (fusing metals together); tobacco smoke; lightning</td>
<td>Irritation of eyes, nose, and throat; lowered resistance to respiratory infections; continued exposure can lead to chronic bronchitis</td>
<td>People with asthma are especially affected; children exposed to high levels may have higher incidence of respiratory infection</td>
</tr>
<tr>
<td><strong>Sulfur Dioxide (SO₂)</strong></td>
<td>A toxic gas; can also form very small particles that can be inhaled</td>
<td>Combustion of fossil fuels at power plants and industrial facilities; smelting (extracting metal from ore); burning of sulfurous fuels by trains and ships; volcanic eruptions</td>
<td>Airway constriction; increased asthma symptoms</td>
<td>People with asthma; children and the elderly; those with existing heart and lung conditions</td>
</tr>
<tr>
<td><strong>Lead</strong></td>
<td>A metal found in nature and in manufactured products; it can be airborne and can also settle into soil</td>
<td>Processing (or smelting) ore and metals; transportation fuels with lead (such as some aviation fuels); incineration of waste; manufacturing lead-acid batteries; lead-based paints (found in older homes but no longer manufactured); contaminated soil</td>
<td>Nervous system is affected, causing behavioral problems, learning disabilities, seizures, and even death; slowed growth, hearing difficulty, and more severe problems in children; miscarriage and premature birth among pregnant women; reproductive problems; memory problems; muscle and joint pain</td>
<td>Children's bodies absorb more lead than adults, and their brains and nervous systems are more susceptible to lead damage</td>
</tr>
</tbody>
</table>
Name: Bob Jones
Occupation: As a welder, you work on a lot of construction sites. You have also worked as a welder in the automotive industry. In general, a welder fuses together metals, such as steel and aluminum.

Proximity of Home to Lowell Plant: You live just 1 mile from the plant. Sometimes you can smell an unnatural smell, and you know it’s coming from the factory’s smokestacks.

Complaints against Lowell: You started having a lot of abdominal pain last year. When you went to the doctor, you learned that exposure to lead (a toxic heavy metal) had damaged your kidneys. Lead can be released from factories that smelt and process metals.

Personal Health Factors: You are a middle-aged man. You do not exercise regularly outside. For one thing, you don’t want to be exposed to the pollution from the Lowell plant. For another thing, you usually don’t get home from work until after dark. By that time, you are tired from work. Most nights, you eat dinner with your family and watch TV for 1 or 2 hours.

Why do you believe Lowell Industries is to blame for your injuries?

Name: Sharon Silvester
Occupation: You are a stay-at-home mother. You care for your 2 young children: Brian, age 6, and Breana, age 3.

Proximity of Home to Lowell Plant: You live less than half a mile from the plant. From your backyard, you can see the front gates of the factory.

Complaints against Lowell: Your son, Brian, has moderate asthma. Your daughter, Breana, has severe asthma. Last year Breana had to be hospitalized twice for her asthma. None of the other children in Breana’s class has asthma as severe as hers, but then again, none of them live so close to the factory. Your doctor suggested that the particulate matter could be coming from an industrial source, like the Lowell plant.

Personal Health Factors: Other than asthma, no one in your household has serious health conditions. You all spend a lot of time outdoors, playing in the yard, riding bikes around the neighborhood, and sometimes camping in the summer.

Why do you believe Lowell Industries is to blame for your injuries?
Name: Jamie Vasquez  

**Occupation:** You are a pediatric nurse. You work at the community hospital, caring for children who are sick and injured.  

**Proximity of Home to Lowell Plant:** You live less than half a mile from the Lowell plant. Your house is just down the street from the Silvesters' house.  

**Complaints against Lowell:** Your son James, age 4, has a number of health problems. You started noticing these problems when he was a toddler. He was the last one in his daycare center to crawl, to walk, and to talk. Last year you realized that James could not see very well. When you took him to the optometrist, she gave James glasses. Now, just 1 year later, he needs must stronger glasses. Your optometrist said she's never witnessed eyesight deteriorate so quickly in a child James' age.  

**Personal Health Factors:** You wish that you could spend more time with James, especially since he needs extra help to catch up to his peers developmentally before he enters kindergarten. You cannot afford not to work full-time, so James spends his time in a daycare center. You know they are trying their best, but they really have too many children to give James the extra attention he needs.  

**Why do you believe Lowell Industries is to blame for your injuries?**

Name: Jamie Vasquez  

**Occupation:** You are a third grade teacher. You love your job, but unfortunately, you have had to miss a lot of work lately.  

**Proximity of Home to Lowell Plant:** You live in an apartment building that is approximately a mile from the Lowell plant.  

**Complaints against Lowell:** Before moving to Brownsville a couple of years ago, you were the picture of health. It wasn't long after you moved here that you started having trouble breathing when you exercised. Your shortness of breath turned out to be the result of lung damage. When you and your doctor tried to figure out what could be the cause of the lung damage, the only thing that seemed possible was an environmental factor, like pollution from the Lowell plant. Your shortness of breath has become such a burden that you have had to take a leave of absence from teaching until you can regain your health. You do not receive your full salary while you are on leave, which makes it difficult to pay all your bills.  

**Personal Health Factors:** Physical fitness is really important to you. You have never smoked cigarettes. Before you started having trouble breathing, you typically ran 2 to 3 miles every day. You do not have any history of lung problems, nor does anyone else in your immediate family.  

**Why do you believe Lowell Industries is to blame for your injuries?**
Name: Julius Vandiver
Occupation: You are a painter. You mostly do exterior painting of homes and office buildings.

Proximity of Home to Lowell Plant: Your family's home is about a mile and a half from the plant. You drive by it every day on your way home from work.

Complaints against Lowell: You have lung cancer, for which you are currently undergoing chemotherapy. Last year you underwent surgery to remove a cancerous growth from your lungs. You know 2 other people in the neighborhood with lung cancer and several others who have other lung conditions. It seems unlikely that so many people with similar health problems would live near each other by chance. It seems more likely that something in your local environment is the cause. Because there are no other factories around, the Lowell plant is the most obvious source of the problem.

Personal Health Factors: You have never smoked a day in your life, but your wife is a smoker. She used to smoke inside the house, but you’ve finally convinced her to step outside when she smokes. You don’t want your children exposed to the second-hand smoke. Your company requires you to get a physical every year. Aside from your lungs, you are generally in good health. You spend a good deal of time outside, due to the nature of your job.

Why do you believe Lowell Industries is to blame for your injuries?

Name: Alex Hill
Occupation: You are currently unemployed, due to your medical disability. Your last job was as a mechanic at the Lowell plant.

Proximity of Home to Lowell Plant: You live about 5 miles away from the plant. When you worked there, you carpooled with another employee who lived near you.

Complaints against Lowell: Your poor health prevents you from working, and you blame Lowell for your problems. You have chest pains throughout the day that are debilitating. In addition to those agonizing episodes of pain, you start wheezing whenever you are physically active. Because your job as a mechanic was very physically demanding, you are not able to work until your health problems subside.

Personal Health Factors: You have a family history of heart disease, and your doctor has warned you to watch what you eat and take care of yourself. You have never worried about your health too much, so you never took great pains to exercise and eat well. You chalk it up to your laid-back nature. When you are not working, you just want to relax.

Why do you believe Lowell Industries is to blame for your injuries?
Defense

Directions: The 6 plaintiffs will testify that your (or your client’s) family-owned company is responsible for their pain and suffering. Your job is to counter their claims, either by discrediting their testimony or by casting doubt on the link between their problems and your company’s operations. Use this page to take notes during trial. Your team will use these notes to support your defense during the examination, cross-examination, and closing arguments.

1. What information from the Outdoor Air Pollutants handout could help your case?

2. Will you deny any contribution to their illness?

3. How you will present the Lowell Family in a favorable light?

4. For each of the plaintiffs, identify possible factors causing their symptoms that are unrelated to your family’s steel mill.

<table>
<thead>
<tr>
<th>Bob Jones:</th>
<th>Jamie Vasquez:</th>
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<th>Sharon Silvester:</th>
<th>Julius Vandiver:</th>
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<tr>
<th>Lydia Sullivan:</th>
<th>Alex Hill:</th>
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Jurors

Directions: Use this page to take notes as each plaintiff presents their stories. Ultimately, you will determine whether, based on the **preponderance of evidence**, it is more likely than not that the Lowell family’s mill is to blame for the plaintiff’s pain and suffering.

**Plaintiffs**

a. Bob Jones

b. Sharon Silvester

c. Lydia Sullivan

d. Jamie Vasquez

e. Julius Vandiver

f. Alex Hill

**Defendants**

g. The Lowell family

**Your Verdict**

1. Does the evidence way more heavily on 1 side than another? Explain your answer.

2. Should the Lowell family be liable for the plaintiffs’ injuries?
Activity 4: Capping Pollution

Overview
In a cap-and-trade exercise, students take on the roles of electric utility companies tasked with making a profit while remaining below a government-mandated cap on sulfur dioxide emissions. The exercise concludes with a discussion of the effects—good, bad, intended, and unintended—of this market-based approach to pollution control.

Objectives
Students will:
• learn how a market-based approach to pollution control can “internalize” externalities associated with air pollution
• evaluate different options in making financially sound decisions for a business
• critically think about cap-and-trade systems in comparison with other solutions to air pollution

Inquiry/Critical Thinking Questions
• How can the costs of pollution be “internalized”?  
• What is required for a cap-and-trade system to function?  
• What are the shortcomings or unintended consequences of market-based solutions?

Time Required
One 60-minute class

Key Concepts
• externalities  
• market-based solutions  
• cap-and-trade system  
• pollution regulation

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments  
7. Production, Distribution, and Consumption  
10. Civic Ideals and Practices

National EFS Standards
2.3 Economic Systems: True (or Full) Cost Accounting  
3.2 Collective Action: Organizational and Societal Change Skills and Strategies

Materials/Preparation
Handout: Capped and Trading, 1 per pair of students  
Handout: Balance Sheet, 1 per pair of students  
Dice, 1 per pair of students  
(Optional:) Play money, $1,000 per pair of students

Activity
Introduction
1. Write on the board the following question: “Who pays for pollution?” Have students volunteer answers, either in a free-write or a class discussion.

2. Ask students to think-pair-share with a partner, imagining what it would be like to own a wood furniture manufacturing business together. Share the following information:
   • As part of their manufacturing process (stripping, polishing, finishing, etc.), their factories release quite a bit of air pollution.  
   • In the past, there has been no financial incentive to reduce their air pollution. They did not pay a price for the amount of air pollution emitted.

3. Have the student pairs brainstorm 1 or 2 financial incentives that may convince them to reduce their air pollution emissions.

4. Remind the students that even if they aren’t paying for it, there are costs to air pollution—such as health effects or environmental damage. Because their business does not pay for these costs, they are considered externalities.
Activity 4: Capping Pollution  continued

5. Ask student pairs to share their ideas for holding companies financially accountable for their pollution.

6. Explain to students that this discussion represents the idea of finding ways to “internalize” externalities previously neglected in the cost-benefit analysis for a business or individuals.

7. Let them know that 1 way to get businesses to reduce pollution emissions is to set a limit on the total amount of pollution that will be allowed. Beyond that limit, polluters would have to pay a fine or receive some other penalty. In a cap-and-trade system, a government can set an overall limit on pollution for the industry as a whole. Each major polluter within that industry will be allowed to emit a certain amount of pollution without penalty (often considered a pollution allowance). For a polluter to go beyond their allowance, they will either have to pay a fine, incur some other penalty, or trade another polluter, who is under their limit, for part of their unused allowances.

8. Explain to students that they will learn more about a cap-and-trade system through a game they are about to play.

Steps

1. Distribute the worksheet Capped and Trading to student pairs and go over the instructions as a class. Each pair of students will represent an electrical utility company that burns coal to generate electricity. Their company then sells this electricity for private, commercial, and government consumption. This process also generates sulfur dioxide as a byproduct, 1 form of air pollution.

Option: If students are not familiar with electric utility companies, explain to the students that while their utility burns coal to generate electricity, not all electric utilities work this way. Some may use other fossil fuels, like natural gas, which can produce various air pollutants. Others might utilize non-fossil fuel sources, such as uranium (nuclear fission) or water (hydropower).

2. Distribute a copy of the Balance Sheet to each student pair, along with a die.

Option: Give each group $1,000 in play money so that they can actually gain or lose dollars during each transaction.

3. Run through the 2 example years with the students to make sure they understand the activity. You could also act out Example Year 3 with them on the board, using the information from the 2 previous years, rolling the die yourself, and coming up with a mock transaction to further demonstrate the activity.

4. The exercise consists of a series of 5-minute rounds. Before starting, each pair of students will use their die to determine their company’s annual sulfur dioxide emissions and the cost to their utility for reducing emissions by 1 ton.

5. Tell students that they now have 5 minutes to complete transactions for Year 1. They must somehow reduce their emissions to the allowable amount (65 tons) by the end of the round.

6. At the end of the first round (Year 1), make sure that everyone now understands how the game is played. Everyone should also have reduced their emissions to 65 tons or less.

7. Play a second 5-minute round (Year 2). The only difference in this round is that students may have carried over pollution allowances from the previous year.
Activity 4: Capping Pollution  continued

8. At the end of Year 2, announce that the government is lowering the pollution cap to reduce acid rain even further. Now every utility’s emissions will be capped at 60 tons of sulfur dioxide per year.

9. Continue with 2 more rounds (Year 3 and Year 4) until there are 10 minutes left in class. At that point, move into discussion.

Discussion Questions

1. How did you, as an electric utility owner, decide to buy, sell, reduce, or save pollution allowances?

2. Which utility made the most money? Did that utility mostly make its own emissions reductions or purchase allowances from other utilities?

3. Did you know the cost of reducing emissions by investing in new technology decreased over time? Do you think this would occur in the real world? Why or why not?

4. Does a cap-and-trade system truly “internalize” the costs of pollution and ensure that companies who do pollute pay for that pollution? What externalities may still exist?

5. A cap-and-trade system sets a cap on pollution for an industry as a whole then divides the cap among polluters, giving each pollution allowances they can then choose to use or trade. An alternative to a cap-and-trade system is pollution taxes, which automatically fines those who pollute above allowable limits. Do you think pollution taxes would be more or less effective at reducing air pollution than a cap-and-trade system?

6. What other solutions could reduce air pollution from businesses more than pollution taxes or cap-and-trade systems? What solutions do you think would appeal most to businesses, and why?

Additional Resources

- Website: EPA’s Cap and Trade
  http://www.epa.gov/captrade/
  The Environmental Protection Agency’s webpage offers an overview of cap-and-trade systems with quick fact sheets and examples of successful cap-and-trade systems already in place, including the nationwide Acid Rain Program.

- Video: The Story of Cap & Trade
  http://www.youtube.com/watch?v=pA6FSy6EKrM
  A 10-minute video taking a critical look at using a cap-and-trade system to help address climate change, highlighting that the devil may in the details. The film is created by the nonprofit organization behind the Story of Stuff Project.

- Website: MSNBC Going Green
  MSNBC’s visual and interactive demonstration of how a cap-and-trade system works.

- Article: The Political History of Cap and Trade
  This Smithsonian article discusses the history of the cap-and-trade system and the political motivations and political limitations behind such a system.

- Article: California Adopts Limits on Greenhouse Gases
  This New York Times article by Felicity Barringer looks at California’s adoption of a cap-and-trade system for greenhouse gas emissions in an effort to combat climate change. The article describes the stakeholders and the skeptics.
Capped and Trading

In this exercise, you and a partner will represent an electrical utility company that emits sulfur dioxide (SO$_2$) as a byproduct of burning coal to generate electricity. Sulfur dioxide is a major air pollutant that has been found to contribute to acid rain. **You want to maximize your utility’s profits, while adhering to pollution laws.**

The government has decided to institute a cap-and-trade system to reduce SO$_2$ emissions, in which each utility will get a certain number of pollution allowances each year (i.e. each round). One pollution allowance represents 1 ton of SO$_2$. You can only remain in business if you have enough allowances to cover the resulting emissions.

**If You Pollute More Than You’re Allowed:**

If you do not have enough allowances to stay within your limit, you must reduce your emissions by investing in new technology or buy extra allowances from other utilities. Failure to do this will result in your utility being shut down.

New technology might include:

- Smokestack scrubber, which prevents pollution from escaping beyond the utility by adding other particles or water vapor able attach to the to the finer toxic particles in the gas stream as it enters the smokestack. A filter at the end of the smokestack is able to trap the toxic particles now attached to larger particles or water vapor before it can be released.

- High-efficiency heating system, which uses fuel more efficiently and pollutes less.

**If You Pollute Less Than You’re Allowed:**

If you have extra pollution allowances that you do not need, you may save them for future years or sell them to other utilities that need them, for whatever price you can get.

**Instructions, Rounds 1 and 2:**

1. In the 1st round, every utility company will start with the same number of pollution allowances: 65.
2. You will roll the die to determine how much pollution your utility emits each year.
3. You will have the remainder of the 5 minutes to buy or sell allowances or to pay for new technology to reduce your emissions.
4. Record your all data on your Balance Sheet.

**Instructions, Rounds 3 and 4:**

5. After the first 2 years, the government lowers the overall pollution cap to 60.
6. Repeat Steps 2 through 4 from the Instructions for Rounds 3 and 4.

**Note:** Keep your costs in mind when you consider trading emissions allowances with other utilities; sometimes it might be cheaper for you to reduce emissions on your own. Other times, it might be more cost effective to purchase allowances that will cover your excess pollution.
# Balance Sheet

Team members: 

Date: _______ Period: _______ Name of Your Electric Utility: ________________________

<table>
<thead>
<tr>
<th></th>
<th>Example Year 1</th>
<th>Example Year 2</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allowances (tons of SO2 you can emit by law)</td>
<td>65</td>
<td>65</td>
<td>65</td>
<td>65</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>$ to reduce by 1 ton (using new technology)</td>
<td>$45</td>
<td>$35</td>
<td>$45</td>
<td>$35</td>
<td>$25</td>
<td>$15</td>
</tr>
<tr>
<td>Starting $</td>
<td>$1000</td>
<td>$1450</td>
<td>$1000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SO2 Emissions (roll die twice; add #s and multiple by 10)</td>
<td>(1 + 4) x 10 = 50</td>
<td>(6 + 5) x 10 = 110</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtract any allowances remaining from previous round from yearly emissions</td>
<td>50 – 0 = 50</td>
<td>110 – 5 = 105</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transaction Choice (buy, sell, reduce, save)</td>
<td>Sell</td>
<td>Reduce</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of Allowances Bought, Sold, or Reduced</td>
<td>10</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$ per Allowance Bought, Sold, or Reduced</td>
<td>$45</td>
<td>$35*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Profit/Loss</td>
<td>+ 450</td>
<td>- 1400</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$ Remaining</td>
<td>$1450</td>
<td>$50</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td># of Allowances (tons of SO2) Remaining</td>
<td>5</td>
<td>0</td>
<td></td>
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</tbody>
</table>

*As mandated by the market price listed at the top of the chart.
CHAPTER BIG IDEAS

- Energy is required for life processes.
- The types of energy resources that we use and the rates at which we use them impact global sustainability.
- Energy use is intrinsically connected to environmental, economic, and sociocultural factors.
Guiding Questions
- What are the social, economic, and environmental consequences of using different sources of energy?
- How can all humans meet their basic energy needs while ensuring that future generations will be able to do the same?

Key Concepts
- energy
- fossil fuels
- renewable
- nonrenewable
- electricity
- reserves
- energy conservation
- energy efficiency

Supporting Vocabulary
- potential energy
- kinetic energy
- greenhouse gas
- calories
- fission
- radiation
- energy density
- peak oil

Service Learning Component

Service Learning Project Idea
- Question: How can we reduce our community’s energy use?
- Hook Resource: Personal Energy Meter
  This is an interactive tool that calculates one’s personal energy use and compares it to others around the world.
- Project: Have students conduct an energy audit for their school or local businesses. Students can analyze the data collected and come up with practical ways for the school/businesses to save more energy and money. They can formally present via an in-person meeting or a written paper their ideas to school/business leaders. Encourage students to think of ways to incentivize these leaders to adopt energy-saving behaviors. For example, students could calculate how much money could be saved in utility costs or the amount of carbon dioxide that would not be released. Students could also hold a community workshop to teach individuals how to save energy and money on their utilities at home.
• Additional Resources:
  • Website: Energy Walkabout
    http://www1.eere.energy.gov/education/pdfs/efficiency_energyauditchecklist.pdf
    Students can use the checklist to do a school energy audit.
  • Website: ECOaudit USA
    http://ecoauditusa.org/
    This site has educational tools and programs to help prepare youth to perform audits in their communities.

Project Based Learning Component

Project Based Learning Idea
• Overview: Students will individually research one particular country’s energy profile and consumption. In small groups, students will compare their countries’ energy consumption and create an international agreement that outlines how these countries can support each other in the development of sustainable energy solutions.
• Driving Question: How can countries work together to use energy more sustainably?
• Hook Resource: Four Ways to Look at Global Carbon Footprints
  This is an interactive map comparing greenhouse gas emissions of different countries.

• Individual Project: Students choose a country to research. They can use Four Ways to Look at Global Carbon Footprints to learn about the fuel mix used to produce that country’s electricity and the main energy issues affecting that country. Students can use some of the websites listed below to determine the country’s natural resources and capabilities for renewable resources. Students can create a fact sheet displaying their country’s data.
• Group Project: In small groups, students can share the results of their research and work together as a group to determine how each country is connected to the others with respect to energy. The students can then create an international agreement that outlines how these countries can support the others in the development of sustainable energy production and consumption.
• Additional Resources:
  • Website: Central Intelligence Agency: The World Factbook
    Students can use The World Factbook to learn more about the country they research and their energy use.
  • Website: The World Bank: Data
    http://data.worldbank.org/
    Students can use this website to learn about their country’s energy use and natural resources.
• **Website:** National Geographic’s Global Electricity Outlook
  
  
  This online interactive shows the fuel mix for different regions around the world and allows students to manipulate the types of fuel used.

• **Website:** Reegle
  
  [http://www.reegle.info/countries](http://www.reegle.info/countries)
  
  This website has “Country Energy Profiles” which students could use to inform their research.

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**Summative Assessment**

Chapter Test

**Connections**

**World History Connections:**
History of Energy Use; Industrial Revolution

**Economics Connections:**
Interconnections between energy and economics

**Geography Connections:**
The sustainability of an energy source is related to geography; different energy sources are found in different regions

**Civics Connections:**
Personal and structural solutions to energy issues
Activities in Teacher’s Guide: Suggested Sequence

**Days 1 and 2**

**Reading:** *Introduction to Energy*

**Activity 1:** *Energy Access for All*—Students categorize the different uses of energy into 3 different levels of necessity. Students then receive an energy profile for different youth around the world and identify their most pressing energy needs. After, they will learn about the UN Sustainable Energy for All initiative and work together in small groups to create a public service announcement that encourages people and governments around the world to work toward these goals.

**Days 3 and 4**

**Reading:** *Background on Energy*

**Activity 2:** *A Personal History of Energy*—Students will analyze a graph of crude oil prices from 1861 to 2011 and then suggest factors that could impact the price of oil. Students will conduct an interview outside of class with a member of an older generation to learn how changes in energy prices or availability have personal impacts.

**Day 5**

**Reading:** *Energy Today*

**Activity 3:** *Power to the People!*—Students identify an activity they do that requires electricity. Working backwards from this activity, they diagram the path this electricity travels as far as they can. Small groups then research a primary energy source used to generate electricity and identify its benefits and trade-offs.

**Days 6 and 7**

**Reading:** *Pathways to Progress: Energy*

**Activity 4:** *Powerful Arguments*—Students begin by participating in a sides debate in which each person either agrees or disagrees with a statement about energy use and then supports their opinion with reasoning. Small groups then research the main arguments for and against different energy debates to prepare for a class debate.
Discussion Questions from the Chapter Reading

**Introduction to Energy**
1. How do you use energy to meet some of your basic needs? How do you use energy beyond your basic needs?
2. What might be some of the environmental, social, and economic consequences of relying mostly on nonrenewable energy sources?
3. How is energy use connected to poverty and economics?

**Background on Energy**
4. How has consumption of energy by humans changed over time?
5. What are some recurring themes in the history of energy use?
6. What are some factors that influenced a group of people to transition from 1 main energy source to another?

**Energy Today**
7. In general, what are some of the benefits and trade-offs of using nonrenewable energy sources? What about renewable energy sources?
8. How could a nation benefit from increasing their fuel diversity? Might there be any disadvantages to increasing a nation's fuel diversity?
9. How might geography or location affect the sustainability of a particular energy source?

**Pathways to Progress: Energy**
10. Do you think that individuals have a responsibility to conserve energy? How could government play a role in energy conservation?
11. What are some things that individuals and families can do to save energy? What are things that you already do to save energy?
12. Where do you see opportunities for energy to play a role in environmental, social, and economic development?
Recall
Match the following words on the left with their definitions on the right.

1. Energy Efficiency  
   energy sources created by the decay of ancient organisms

2. Energy  
   stores of energy supplies that can be extracted economically using current technology

3. Fossil Fuels  
   the ability to do work or cause change

4. Reserves  
   completing a specific task with less energy input than usual

Reasoning/Explanation
Complete the following multiple choice questions by choosing 1 correct answer.

5. Which of the following statements would best replace X in the above graphic?
   a. Discovery of Petroleum
   b. Flooding of Coal Mines
   c. Increased Price of Wood
   d. Regrowth of British Forests

6. Which of the following factors are most likely to contribute to the world’s growing use of energy resources?
   a. the use of technology has declined
   b. the efficiency of household appliances has increased
   c. the gas mileage of cars in the U.S. has decreased
   d. the global population has increased
7. What can be inferred from the graphic to the right about the sustainability of U.S. electricity generation?
   a. The amount of electricity that the U.S. is generating is increasing.
   b. The current use of geothermal energy will limit the amount available for future generations.
   c. Generating electricity from renewable sources does not provide jobs.
   d. The majority of electricity is generated from limited resources.

8. Which of the following is one possible benefit of using biofuel (fuel from biomass) instead of petroleum?
   a. Biofuel does not produce carbon dioxide.
   b. Biomass is a nonrenewable resource.
   c. Carbon dioxide is absorbed from the atmosphere when biomass is grown.
   d. Producing biofuels domestically does not contribute to global conflict.

9. Why did Arab members of OPEC ban trading oil with the U.S. in 1973?
   a. The U.S. developed and used the first atomic bomb.
   b. The U.S. provided military support for Israel during the Yom Kippur War.
   c. The U.S. sold oil to the other members of OPEC at a cheaper cost.
   d. The U.S. was subsidizing oil prices for its citizens in the 1960s.

10. Which of the following statements describes one of the main costs of using hydropower to generate electricity?
    a. Building large dams for hydropower plants can displace people from their land.
    b. Building dams for hydropower plants creates noise pollution.
    c. Hydropower is a nonrenewable source of energy.
    d. Hydropower can only generate a small amount of electricity.

11. Which of the following statements best describes why using biomass such as firewood as a primary source of energy is not economically sustainable?
    a. Biomass is the leading contributor to global climate change.
    b. Collecting firewood takes time away from a job or school.
    c. Firewood is less expensive than electricity.
    d. When burned, biomass releases carbon dioxide.
Chapter Assessment: Energy, page 3

12. What is the main reason natural gas is considered a nonrenewable resource?
   a. Natural gas can be regenerated relatively quickly.
   b. Natural gas is not equally distributed around the Earth.
   c. Natural gas produces carbon dioxide.
   d. Natural gas takes millions of years to form.

13. Which of the following statements best describes why the world’s current energy use could be considered environmentally unsustainable?
   a. Energy use is the largest contributor to human-generated carbon dioxide emissions.
   b. Not all people around the globe have equal access to electricity.
   c. The use of non-renewable energy sources can encourage international conflict.
   d. The use of renewable energy sources contributes to the greenhouse effect.

14. Which of the following activities is the best example of energy efficiency?
   a. Turning off the lights when you leave a room.
   b. Driving a car with high gas mileage.
   c. Putting on a sweater before turning up the heat.
   d. Taking a shorter shower.

Application/Complex Reasoning
Answer the following short answer questions below.

15. Part A. Describe a historical example of an energy transition in which the people of Britain transitioned from primarily using one source of energy to another.

   Part B. Explain the factors that influenced this transition.

16. Use the quote below and what you learned from the chapter to answer the questions that follow:

   “Energy is the golden thread that connects economic growth, social equity, and environmental sustainability.”

   —UN Secretary-General Ban Ki-moon

   Part A. Describe how energy is related to economic growth.
   Part B. Describe how energy is related to social equity.
   Part C. Describe how energy is related to environmental sustainability.

---

1 UN Secretary-General, “Secretary-General to Global Development Center: ‘Energy is the Golden Thread’ connecting economic growth, social equity, environmental sustainability,” press release, April 20, 2012.
Recall (4 points total)

1. Energy Efficiency—completing a specific task with less energy input than usual
2. Energy—the ability to do work or cause change
3. Fossil fuels—energy sources created by the decay of ancient organisms
4. Reserves—stores of energy supplies that can be extracted economically using current technology

Reasoning/Explanation (10 points total)

5. B
6. D
7. D
8. C
9. B
10. A
11. B
12. D
13. A
14. B

Application/Complex Reasoning (6 points total)

15. Part A. Answers will vary. (1 point)
   - Britain transitioned from primarily using wood to coal.

   Part B. Answers will vary. (2 points)
   - Due to a wood shortage, known as the Timber Famine, and rising wood prices, people in Britain transitioned from wood to coal.

16. Part A. Answers will vary. (1 point)
   - Energy is required for manufacturing products, running businesses, and other economic endeavors.
   - People who lack access to basic energy services may have to collect biomass for fuel. This can prevent them from attending school or a paid job.

   Part B. Answers will vary. (1 point)
   - People who lack access to basic energy services may have to collect biomass for fuel. Often this burden falls on women and children and prevents them from attending school or getting a paying job. This contributes to gender inequity.
   - Lack of light can prevent children from studying at home and making education as accessible as children that do have light at home.
   - Those that cook and heat their homes with biomass or coal can suffer health problems from indoor air pollution.

   Part C. Answers will vary. (1 point)
   - Energy is the largest contributor to human-produced carbon dioxide emissions.
   - Each energy source has some environmental costs. For example, wind turbines kill birds and bats.
Activity 1: Energy Access for All

Overview
Students categorize the different uses of energy into 3 different levels of necessity. Students then receive an energy profile for different youth around the world and identify their most pressing energy needs. Next, they will learn about the UN Sustainable Energy for All initiative and work together in small groups to create a public service announcement that encourages people and governments around the world to work toward these goals.

Objectives
Students will:
• categorize energy use into 3 different levels of necessity
• identify the most pressing energy needs in a scenario
• draw connections between energy use and social and economic development
• negotiate with other students to come up with a solution that would provide energy access for all

Inquiry/Critical Thinking Questions
• What are the social, economic, and environmental consequences of using different sources of energy?
• How can all humans meet their basic energy needs while ensuring that the energy needs of future generations will be met?

Time Required
Two 45-minute classes

Key Concepts
• energy access
• sustainability

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
7. Production, Distribution, and Consumption
8. Science, Technology, and Society
9. Global Connections

National Science Education Standards
E. Science and Technology
F. Science in Personal and Social Perspectives

National EFS Standards
2.2 Ecological Systems: Environmental Justice
2.3 Economic Systems: Poverty
2.4 Social and Cultural Systems: Global Health
2.4 Social and Cultural Systems: Appropriate Technology
3.2 Collective Action: Community-Based and Societal Decision-Making
3.2 Collective Action: Public Discourse and Policy

Materials/Preparation
Handouts: Energy Profile, country per student
Handout: Sustainable Energy for All, 1 per group

Online Videos:
• The United Nations Development Programme Energy PSA
  https://www.youtube.com/watch?v=tnXAAaNYErwg
  This 32-second video promotes clean energy for those without access to energy around the world.
• Power the World: The Story of Imani
  http://powertheworld.org/splash-video.html
  This animation was created to encourage people to sign pledge a to help people around the world gain access to sustainable energy sources.
Activity 1: Energy Access for All  continued

Activity—Day 1

Introduction

1. Ask students to brainstorm as many different uses of electricity and fuel (such as oil) as they can. Record these on the board. Encourage students to include nonobvious uses such as keeping food cold, running water pumps, cooking, etc.

2. On a piece of paper, have students categorize these uses into 3 different levels of need from most necessary to least necessary.

3. Share with students the 3 levels of energy access as described by the United Nation’s Secretary-General’s Advisory Group on Energy and Climate Change and have them compare these to the categories they created:

   - Level 1: “Basic human needs” (lighting, health, education, communication)
   - Level 2: “Productive uses” (agriculture: water pumps to irrigate land, machinery; commercial: processing, manufacturing; transport: fuel)
   - Level 3: “Modern society needs” (appliances, space heating and cooling, private transportation)

4. In think-pair-share format, ask students the following questions:

   - How might consuming energy at the most basic level impact your personal development? What if you consumed enough energy for “productive uses,” but did not have access to energy for “modern society needs?”
   - If you were only able to meet your basic human needs with respect to energy access, how would this impact you and your family’s economic development?
   - How might each level of energy use impact the environment?

Steps

1. Tell the class that they will now assume the role of different youth from around the world and learn about their energy use.

2. Have the class get into groups of 4 and provide each group with the 4 different Energy Profile handouts.

3. Give the class about 5 minutes to individually read a specific energy profile and answer the questions on their handout.

Option: Students can further research information about their particular country and their country’s energy profile. The following websites might be useful:

   - Central Intelligence Agency: The World Factbook
   Students can use The World Factbook to learn more about the country they research and their energy use.

   - The World Bank: Data
   http://data.worldbank.org/
   Students can use this website to learn about their country’s energy use and natural resources.

   - National Geographic’s Global Electricity Outlook
   This online interactive shows the fuel mix for different regions around the world and allows students to manipulate the types of fuel used.

   - Reegle
   http://www.reegle.info/countries
   This website has “Country Energy Profiles” which students could use to inform their research.

4. Have students share their answers to the Energy Profile questions with their small groups.

5. Bring the class back together for a discussion using the following questions.

6. After the discussion, have students either hold on to their worksheets or collect the worksheets and pass them out the next class period.

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Activity 1: Energy Access for All continued

Discussion Questions
1. How sustainable was your “country’s” energy use?
2. How is energy use related to sociocultural development?
3. How is energy use related to economic development?
4. Do you think that energy is a basic human right? Why or why not?
5. How would your own life be different if your access to electricity was intermittent or unreliable?
6. What surprised you about the statistics you learned about these three countries?

Activity—Day 2

Introduction
1. Show the class one or more of the following public service announcements about energy access:

   • United Nations Development Programme Energy Public Service Announcement
     This 32-second video promotes clean energy for those without access to energy around the world.

   • Power the World: The Story of Imani
     [http://powertheworld.org/splash-video.html](http://powertheworld.org/splash-video.html)
     This animation was created to encourage people to sign a pledge to help people around the world gain access to sustainable energy sources.

2. Ask the class the following questions:

   • What is the purpose of this public service announcement?
   • Who do you think the audience of this PSA is?
   • How effective do you think PSA is? Why?

3. Hand out Sustainable Energy for All to each student and allow students time to read it (or read it as a class)

Steps
1. Tell students that the UN Secretary-General Ban Ki-moon has invited youth from around the world to get involved in the Sustainable Energy for All global initiative. Today small groups will work together to create a public service announcement that will encourage governments and funders to start taking action to work toward 1 of the 3 goals of this initiative:

   • Make sure all people have access to modern energy services.
   • Double the efficiency power grids and systems.
   • Double the share of renewable energy in the global energy supply.

2. Explain that today small groups will work together to conduct further research on the above objectives in order to create a 60-second public service announcement that encourages governments around the world to take action to work toward achieving Sustainable Energy for All by 2030.

   Option: If desired, you can allow students more time to create a video of their PSA.

3. Have students return to their small groups from yesterday and provide the following resource for research:

   • Website: Sustainable Energy for All [http://www.sustainableenergyforall.org/](http://www.sustainableenergyforall.org/)
     This website describes the global initiative set forth by UN Secretary-General Ban Ki-moon and provides many resources for further research.

4. Bring the class back together and have small groups present their PSA to the class.

5. Conclude with the following discussion questions.

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Activity 1: Energy Access for All  

Discussion Questions

1. UN Secretary-General Ban Ki-moon made the Sustainable Energy for All initiative a global initiative. How is energy consumption a global issue?

2. Why do you think countries may not be taking action to work toward these sustainable energy goals?

3. Do you think there should be different requirements and responsibilities for different countries? Why or why not?

4. Sustainability means meeting current needs without compromising the ability of future generations to meet their needs. How can countries with fewer resources and lower GNI’s meet their energy needs in a sustainable way?

   Note: You could introduce and discuss the concept of leapfrog technology here. Leapfrog technology is sustainable technology designed in developed countries and transferred to developing countries, allowing them to raise their standards of living while “jumping over” unsustainable technology previously used by developed countries.

5. How could today’s youth take action to help achieve sustainable energy for all by 2030?
A young person living in a rural village in India may spend hours each day collecting firewood to cook and heat his or her home. This prevents some youth from going to school. In addition, burning firewood inside the home without enough ventilation can cause serious respiratory illnesses. Rural areas face other problems that stem from poor energy access. At night, families may use dim kerosene lamps for light. This may be the only light that young people can use to study or do homework. But kerosene fuel can be expensive for a family with a limited income and the fumes cause respiratory and vision health problems.

In contrast, a young person from a wealthy or middle class household living in an urban area likely uses other energy sources, like electricity. India is undergoing rapid urbanization, which increases the country’s demand for energy. The demand for electricity in cities across India has increased. For example, in the city of Hyderabad, in southern India, more people are using air-conditioning, refrigerators, televisions, and lighting. But as electricity use increases, blackouts become more common as demand for energy goes beyond what the electric grid is capable of providing the area. In 2012, a massive power outage affected nearly half of the 1.2 billion people living in India for several hours.

In 2011, India was the world’s fourth largest consumer of energy, after the United States, China, and Russia. The country’s economy is undergoing a shift from agriculture to industry. As a result, transportation and electricity needs are growing. Most of India’s electricity is produced by domestic sources of coal. India relies heavily on petroleum imports as well.

As India’s population and economy continue to grow, the demand for energy will increase as well. Even with India’s increased investment in renewable energy such as wind, demand could outpace the country’s domestic energy supply.

Directions: Use the above information to answer the following questions.

1. What most surprised you about this reading?

2. Does your country’s use of energy seem sustainable? Why or why not?

3. What do you see as your country’s most urgent energy need?

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A young person from a wealthy or middle class family living in Nairobi, the capital city of Kenya, probably has access to electricity. Approximately 25% of Kenyans are connected to the electric grid and most of those people live in cities. One of the energy issues in urban areas of Kenya is that the power frequently goes out. Nairobi’s electricity is mainly generated by hydropower. While hydropower creates less pollution than fossil fuels, a source of energy that is dependent on rainfall can be problematic in East Africa. Rainfall in the region can be infrequent and droughts cause electricity blackouts that may last for hours each day. Blackouts impact young peoples’ ability to study for school at night. Blackouts can also affect hospitals and restaurants that need to keep medicine and food refrigerated to prevent it from spoiling.

Many rural parts of the country are not connected to the electric grid. For young people living in rural villages, kerosene lamps have been the only option to provide lighting, even though kerosene lamps can cause vision and respiratory issues. Urban residents without access to electricity face a similar situation. Many poor rural Kenyans move to cities in search of jobs and end up living in slums because they can’t afford apartments or houses. In Nairobi, approximately 60% of people live in slums where they have little or no access to electricity. In recent years, people have developed LED lamps in response to these issues. LED lamps are very efficient at using electricity, either from an outlet or battery.

As Kenya’s economy develops and its population continues to grow, demand for electricity is rising. At the same time, climate change may impact the reliability of hydropower, because a changing climate can alter rainfall patterns and affect stream flow. In times of drought, the country must use imported petroleum to generate electricity. The Kenyan government, concerned about the high cost of oil imports and rising greenhouse gas emissions, has begun to promote and invest in alternative energy sources.

Due to Kenya’s geography, solar and wind power are possible renewable energy options. In 2012, development of the largest wind farm in sub-Saharan Africa began in Kenya. This wind farm is approximately 40,000 acres and will operate 365 wind turbines. Wind farms can be linked to the electric grid as well as provide energy to rural areas without access to the electrical grid.

Directions: Use the above information to answer the following questions.

1. What most surprised you about this reading?

2. Does your country’s use of energy seem sustainable? Why or why not?

3. What do you see as your country’s most urgent energy need?

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Energy Profile: Russia

A young person in an urban area of Russia, such as Novosibirsk or St. Petersburg, typically lives in a small apartment with many members of his or her family. These apartments are the most common form of housing in Russian cities because the Soviet Union developed large, uniform apartment complexes in an attempt to provide everyone access to housing. Russian winters can be frigid, although the temperature will vary in different parts of the country. While electricity is generally reliable, local governments may regulate energy use in winter, limiting when the heat can be turned on and how much heat can be used. Some families buy portable electric heaters to keep their homes a little warmer.

In contrast, a young person living in a rural area of Russia, such as parts of Siberia, may not have access to the electric grid. Rural families often heat their homes using coal or firewood. Siberia is home to one-fifth of the world’s forests, so firewood is one local resource that provides heat for many.

Russia is an energy-rich country—one of the biggest producers of natural gas, oil, and coal in the world. Russia’s economy relies heavily on energy exports. The country is also dependent on fossil fuels for its own energy needs. About half of the energy consumed in Russia comes from natural gas. Most of this energy is used to support Russia’s industrial sector.

Russia also uses nuclear power and hydropower to support its energy needs, but currently relies little on other renewable sources of energy. Nuclear power can have dangerous consequences if not well regulated. In 1986, a reactor exploded at the Chernobyl Nuclear Power Plant in the Ukraine, then part of the Soviet Union, releasing a large amount of radiation. Many people died and many more became sick. Radioactive contamination remains a problem in the area to this day.

Another energy issue facing the country is energy efficiency. Enough energy is wasted in Russia in 1 year to power all of France. Much of this inefficiency is due to Russia’s old and unreliable energy infrastructure. In 2008, former Russian President Dmitri Medvedev announced a national goal to cut energy waste by 40% by 2020.

Directions: Use the above information to answer the following questions.

1. What most surprised you about this reading?

______________________________________________________________

______________________________________________________________

______________________________________________________________

2. Does your country’s use of energy seem sustainable? Why or why not?

______________________________________________________________

______________________________________________________________

______________________________________________________________

3. What do you see as your country’s most urgent energy need?

______________________________________________________________

______________________________________________________________

______________________________________________________________

9 Ibid.
The amount of energy used by a young person in the United States can be different depending on the climate where she or he lives. Winters are longer and colder in the Northeast or Midwest compared to the Southwest or Southeast, and during cold winters people often use more energy to heat their homes. Most homes in the United States are heated by electricity or natural gas. Energy is also used in homes for lighting, air conditioning, hot water, electronics, and appliances. In the United States, the amount of electronics that young people have in their homes has increased in the last few decades—it is now common for households to have more than one TV or computer.10

Transportation is another way young people use energy in the United States. While some youth may walk or take public transportation, others ride to school in their family’s car. Families that live in rural areas may have to drive farther to get to work and school than families that live in cities. Over the last few years, rising gas prices have sometimes meant financial hardship for those families that have longer commutes or lower incomes. Often families with the lowest incomes end up spending a greater portion of their income on energy needs than others.11

Most young people live in places that are connected to the electrical grid. In other words, their homes are connected to wires that carry electricity from their local power plant. However, some young people living in rural areas may not be connected to the electrical grid. Instead of electricity or natural gas, they may use propane (another form of gas) to heat their homes or diesel to power electric generators.12 Other families may not be able to afford the cost of electricity or fuel.

The country’s current electric grid was built in 1890. It wastes a lot of electricity and is hard to control. As the aging system faces additional stress from growing demand for energy, blackouts and brownouts are increasing. For instance, on August 14, 2003, one power line problem coupled with high energy demand left around 45 million people in the United States and 10 million people in Canada without power.13 Power outages like this are not only inconvenient, but they have economic consequences, too. In this case, the economic loss in the affected area was $6 billion.14 One thing the United States could do to update its energy infrastructure is create a smart grid. New technologies such as a smart grid can monitor the amount of electricity people are using and sense problems with transmission lines. A smart grid can automatically fix problems or re-route electricity in the case of emergencies as well as monitor and save energy on a daily basis.15

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**Energy Profile: United States**

<table>
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<th>Fast Facts</th>
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<tbody>
<tr>
<td><strong>Access to Electricity</strong> (% of population in 2009)</td>
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<td><strong>Electric Power Consumption</strong> per capita (2010)</td>
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<tr>
<td><strong>Fossil Fuel Consumption</strong> (% of total energy consumed in 2010)</td>
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<td><strong>Average CO₂ Emissions</strong> per Capita (2009)</td>
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<tr>
<td><strong>Gross National Income</strong> per Capita (2011, Atlas model)</td>
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Directions: Use the above information to answer the following questions.

1. What most surprised you about this reading?

_______________________________________________________________________________________
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2. Does your country’s use of energy seem sustainable? Why or why not?

_______________________________________________________________________________________
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3. What do you see as your country’s most urgent energy need?

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References:
15 Ibid.
Recognizing that energy is necessary to help alleviate poverty, work toward social equity, and protect the environment, the United Nations Secretary-General Ban Ki-moon declared a global initiative to achieve Sustainable Energy for All by the year 2030. All sectors have been invited to help achieve the 3 main objectives:

• Make sure all have access to modern energy services.
• Double the efficiency of power grids and systems.
• Double the percent of renewable energy in the global energy supply.\(^1\)

Many people around the world do not have adequate access to energy. Around the world, there are about 1.4 billion people that have no access to electricity and about 1 billion more that have unreliable access to electricity.\(^2\) Additionally, there are about 3 billion people around the world that use traditional biomass to cook and heat their homes. Traditional biomass refers to fuel such as wood, charcoal, animal dung or coal. Overuse of wood in some areas has led to deforestation and other environmental degradation. Burning this type of fuel on inefficient cookstoves can lead to very poor indoor air quality and, therefore, serious health problems. In fact, almost 2 million people die prematurely from illnesses that are related to poor indoor air quality.\(^3\)

Access to electricity that is reliable and fuels or stoves that produce less indoor air pollution is important for human health, economic stability, and comfort. For example, electricity is used to power water pumps. Therefore, electricity is related to people’s access to clean water and the ability to irrigate land. It is also used to light schools and run health clinics. The poor are often most affected by lack of access to electricity. One of the biggest issues for the rural poor is that the electric power grid does not reach their homes. An electric grid refers to the infrastructure (such as power lines and transformers) needed to transmit and distribute electricity to consumers. For the urban poor, they cannot rely on constant access to electricity and often there might not be official connections to the electrical grid.\(^4\) There are a few different ways to provide people with access to electricity:\(^5\)

• Extend the current grid to connect more communities with power.
• Connect a local community to a mini-grid and generate electricity in or nearby the community.
• Provide off-grid access to single homes or buildings with technology such as solar panels.

On the other hand, there are many around the world with ready access to reliable electricity and clean cooking facilities. While this contributes positively to the social and economic well-being of these individuals and countries, using large amounts of fossil fuels such as coal to generate electricity or oil to fuel cars releases greenhouse gas emissions and contributes to climate change. Many countries are also faced with aging infrastructure (such as power lines, power plants, etc.) that is less efficient than newer technology. For the communities around the world with reliable access to electricity and aging infrastructure, sustainable energy solutions might be focused on increasing energy efficiency and the use of renewable energy sources.

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Activity 2: A Personal History of Energy

Overview
Students will analyze a graph showing crude oil prices and major world events from 1861 to 2011 and then suggest factors that might have impacted the price of oil. Students will consider the social, economic, and environmental consequences of changing oil prices. Individuals will conduct an interview outside of class with a member of an older generation to learn how changes in energy prices or availability have impacted their lives.

Objectives
Students will:
- interpret a graph showing oil prices and major world events from 1861 to 2011
- consider the social, economic, and environmental connections with changing oil prices
- interview a member of an older generation to learn personal experiences related to energy issues

Inquiry/Critical Thinking Questions
- What factors might affect the price of oil?
- How does the price of oil affect economy, society, and the environment?
- What are some personal stories of the effects of changing energy prices and availability?

Time Required
Two 45-minute classes, plus time outside of class

Key Concepts
- oil prices
- social, economic, and environmental connections

National Standards Addressed
National Council for the Social Studies
2. Time, Continuity, and Change
7. Production, distribution, and consumption

National Science Education Standards
F. Science in Personal and Social Perspectives
G. History and Nature of Science

National Efs Standards
1.1 Intergenerational Responsibility: Intergenerational Equity
2.1 Interconnectedness: Systems Thinking
2.3 Economic Systems: Triple Bottom Line
2.4 Social and Cultural Systems: Peace and Conflict

Materials/Preparation
Graph: Crude oil prices 1861–2011, 1 copy per class
You can also access the graph online. From the following website, click on oil prices to access the graph: https://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy/oil/oil-prices.html

Activity—Day 1
Introduction
1. Ask the class to name things that are made from crude oil, or petroleum products. (Some things produced from crude oil include: diesel, jet fuel, liquefied petroleum gases, ink, crayons, dishwashing liquids, deodorant, tires, and ammonia. Some more surprising products include vitamin capsules, lipstick, hair coloring, medicines, toothpaste, perfume, and pens.)
2. Project the Crude oil prices 1861–2011 graph on the board.
3. As a class, identify the title of the graph and discuss why there are 2 separate lines for prices.

Activity 2: A Personal History of Energy \textit{continued}

4. Write the following questions on the board and give individual students a few minutes to think and/or write about them:
   
   • What patterns do you notice?
   • What seem to be some of the factors that increase the price of oil? Decrease the price of oil?
   • How might an oil boom affect the prices and availability of oil/gas?
   • Why would an international war affect the price and availability of oil/gas?
   • How could changes in oil prices affect a family’s life?

Steps

1. In think-pair-share format, ask students to consider how oil and gas prices have affected their own lives.
2. Ask students if they have heard people from older generations discuss oil and gas prices or availability.
3. Explain that students will conduct an interview with a person from an older generation about changes in energy resources.
4. As a class, brainstorm some information that students would like to know about the history of oil/gas.
5. Give students time in class to write interview questions. Collect to proofread. Possible interview questions:
   
   • What types of energy were used to heat your home and cook your food when you were younger?
   • Are there any energy-based resources such as oil or gas that are less available now than they were when you were younger? What are some of these resources?
   • How has this affected you and your community?

   • How have the prices for these resources changed? Can you recall how much a gallon of gasoline cost when you were my age?
   • Do you ever think about future generations when you use resources? Do you think more people should think about this?

6. Give students 1 to 2 weeks to complete the interview.

Discussion Questions

1. How might world events be connected to oil prices or availability?
2. Might there be any benefits of rising oil prices? What about trade-offs?
3. Might there be any benefits of decreasing oil prices? What about trade-offs?
4. One of the main arguments for reducing a nation’s dependence on foreign oil is the volatility of oil prices. How do you think the changing price of oil affects communities that are primarily dependent on foreign oil for energy? What about communities that are not primarily dependent on foreign oil for energy?

Activity—Day 2

Steps

1. When all students have completed their interviews, divide the class into small groups of 3 to 4 and have students share the results of their interviews.
2. Bring the class back together for the following reflection.
Activity 2: A Personal History of Energy  continued

Discussion Questions
1. What were some similar outcomes from your interviews?
2. Did the interview change your views about energy supply at all? Why or why not?
3. What were some of the impacts of changing energy prices on people’s behavior?
4. What value is there in learning the personal stories from older generations?
5. Sustainability refers to meeting people’s current needs without jeopardizing the ability of people to meet future needs. After your interview, how sustainable do you feel our use of energy is? Why?

History Extension
Divide the class into small groups. Have each person in the group choose one of the historical events from the graph to research. Once research has been completed, students can teach the other members of their group about the historical event and why it had an impact on oil prices.

Additional Resource
• Presidential Speech: America’s Energy Security
  http://www.whitehouse.gov/photos-and-video/video/2011/03/30/america-s-energy-security#transcript
  A speech on America’s Energy Security by President Obama on Mar. 30, 2011 at Georgetown University, 47 minutes.
Activity 3: Power to the People!

Overview
Students identify an activity they do which requires electricity. Working backwards from this activity, they sketch the path electricity travels as far back as they can. Small groups then read about primary energy source used to generate electricity and identify its benefits and costs.

Objectives
Students will:
- sketch the path of electricity from one’s home or school to power plant
- research the benefits and trade-offs of primary energy source
- use this research to recommend whether or not to continue to use particular primary energy source

Inquiry/Critical Thinking Questions
- How is electricity generated?
- What are the environmental, economic, and social costs of the primary energy resources used to generate electricity?
- How sustainable are different primary energy sources?

Time Required
One 60-minute class

Key Concepts
- electricity
- primary energy source
- secondary energy source
- renewable
- nonrenewable

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
7. Production, Distribution, and Consumption
8. Science, Technology, and Society

National Science Education Standards
B. Physical Science
C. Life Science
D. Earth and Space Science
F. Science in Personal and Social Perspectives

National EFS Standards
2.1 Interconnectedness: Systems Thinking
2.2 Ecological Systems: Respect for Limits
2.3 Economic Systems: True (or Full) Cost Accounting
2.4 Social and Cultural Systems: Appropriate Technology

Materials/Preparation
Download Online Video: Energy 101: Electricity Generation
https://www.youtube.com/watch?v=20Vb6hLQ5g
This animation shows students in an amusing way how electricity gets to their homes.
Handout: Power to the People!, 1 copy per student (Optional: Internet access)
Activity

Introduction

1. Begin the class by asking students to identify one activity they do that requires electricity. (Things such as using a light to study or charging a cell phone in an electrical outlet would work.)

2. Working backwards from this activity, have each student sketch the path that electricity takes to get to their homes or schools on a blank piece of paper. Assure students that this initial sketch is a brainstorm and to sketch as far back as they can.

3. As students draw, circulate around the room to get a sense of student ideas and possible misconceptions about electricity.

4. In think-pair-share format, have students explain their sketches to one another and discuss which parts of this path were most difficult to draw or imagine.

5. Prep students to view a short animation on electricity generation. Encourage them to look for clarification on the concepts of electricity generation that are particularly confusing to them or they were unable to draw.


7. Give students 2 to 3 minutes to review and revise their initial sketches as needed.

Steps

1. Ask the class if electricity is considered a primary or secondary energy source? (Electricity is a secondary source of energy. Secondary energy sources, or energy carriers, are sources of energy that humans have produced by the conversion or transference of another source of energy. For example, electricity and hydrogen can both be produced by fossil fuels. Secondary energy sources are also called energy carriers because they move energy from one location to another in a useable form.)

2. Ask students to name some primary energy sources that are used to generate electricity. (Primary energy sources include: coal, natural gas, and wind power. Primary energy sources can be renewable or nonrenewable.)

3. Explain to the class that today small groups will research and evaluate the sustainability of a specific primary energy source used to generate electricity. Once finished with research, each group will state whether or not they recommend its use.

4. Divide the class into 8 equal-sized groups, and assign each group one of the following sources of energy: biomass, coal, geothermal, hydropower, natural gas, nuclear, solar, wind.

   **Option:** If desired, you could have a ninth group research petroleum. While petroleum can be used to produce electricity, only about 1 percent of the oil used in the United States is directed for this use.

5. Provide groups with 20 minutes to use the chapter and/or to conduct Internet research on their energy source and complete the worksheet.

**Additional Resources for Research:**

- **Website:** Energy Infobooks
  From the National Energy Education Development Project’s home page, students can click on the title of their energy source in the Secondary section. These “chapters” can also be printed out.

- **Website:** U.S. Energy Information Administration’s Energy Explained
  - [http://www.eia.gov/energyexplained/index.cfm](http://www.eia.gov/energyexplained/index.cfm)
  This site provides information about nonrenewable and renewable sources of energy. They also have an Energy Kids ([http://www.eia.gov/kids/index.cfm](http://www.eia.gov/kids/index.cfm)) version that is geared toward young people.

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1 Adapted with permission from *Power Source* by Steven Semken, Arizona State University.
6. Bring the class back together.
7. Give each group about 2 minutes to clearly state their group's position, explain their reasoning and the trade-offs of their position and suggest ways to make the use of this energy source more sustainable.
8. Allow other groups to ask questions after each group presents. Encourage an atmosphere of friendly debate, while monitoring the debate to ensure that all student voices are heard and respected.
9. After all groups have presented, begin a discussion of overall findings and conclusions using the following reflection questions.

Discussion Questions

1. When you take into account the benefits and trade-offs of each energy source, which one(s) seem to be the most sustainable? Why?
2. What could be some advantages and disadvantages of using many different energy sources (this is called fuel diversity) rather than just one to produce electricity?
3. Did you notice any patterns or similarities in the trade-offs presented by using each energy source?
4. Consider the renewable energy sources discussed today. Can you conclude anything about the relationship between renewability and sustainability?
5. How has your thinking about electricity changed after this lesson? How might this impact your behavior?
6. If you were hired to promote awareness about electricity generation, what is the single most important concept you would focus on?
7. Besides choosing sustainable energy sources to produce electricity, what are some other ways that individuals and communities can lessen some of the negative impacts of generating electricity?

Geography Extension

Investigate the percentages of different sources of energy that are used to produce electricity in your state or region and identify the major sector of the U.S. electrical grid that your state/region belongs to. Identify the major geographic characteristics of your region. Would you recommend a more sustainable energy mix or could you design a more effective electrical distribution system for your region? Use information about the geography of your region and your knowledge of the main energy sources used in your region to support your recommendation. The following resources could help your investigation:

- **Website:** Visualizing the U.S. Electric Grid
  This interactive U.S. map shows major transmission lines, the percentages of different sources of power used in different states, solar and wind power transmission lines, and the location of different power plants.

- **Online Interactive:** EPA’s Power Profiler
  Individuals can enter their Zip Code to learn the fuel mix used to generate electricity in their region and the resulting emissions.
Group Members:________________________________________________________________________

Primary Energy Source:___________________________________________________________________

Part I: Research

Directions: Use your research to sketch how this energy source can be used to generate electricity at a power plant.

Part II: Analysis

Directions: Use your research to identify the main pros and cons of your primary energy source. Be sure to address the environmental, economic, and social consequences of using this energy source. Then answer the questions that follow.

<table>
<thead>
<tr>
<th>pros</th>
<th>cons</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>
Part III: Recommendations

Directions: Read the questions below and then discuss the answers with your group. Once your group has reached a consensus, then record your answers below.

Position Statement
In one sentence, clearly state whether or not your group believes this type of energy source should be used to generate electricity. If you believe it should be used with limitations, then please make that clear.

Reasoning
Explain the 3 main reasons for your position. Be sure to address the economic, environmental, and social benefits of your position.

Trade-Offs
Explain at least 2 negative outcomes or compromises that must be made because of your position.

Improvements
Describe or sketch at least 2 ways that using this energy source could be made more sustainable than it is now.
Activity 4: Powerful Arguments

Overview
Students begin by participating in a sides debate in which each person either agrees or disagrees with a statement about energy use and then supports their opinion with reasoning. Small groups then research the main arguments for and against different energy debates to prepare for a class debate.

Objectives
Students will:
• research and identify the main arguments for and against a controversial energy issue
• propose arguments supported with evidence
• refute arguments with counter-arguments that are supported with reasoning and evidence

Inquiry/Critical Thinking Questions
• What are the main arguments for and against a controversial energy issue?
• What are the skills necessary to hold a respectful and productive debate?
• What are the opposing views of an argument?

Time Required
Two 60-minute classes, plus additional time if students write a paper

Key Concepts
• nuclear power
• sustainability

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
7. Production, Distribution, and Consumption
8. Science, Technology, and Society

National Science Education Standards
B. Physical Science
C. Life Science
E. Science and Technology
F. Science in Personal and Social Perspectives

National Efs Standards
2.1 Interconnectedness: Systems Thinking
2.2 Ecological Systems: Respect for Limits
2.3 Economic Systems: True (or Full) Cost Accounting
2.3 Economic Systems: Triple Bottom Line
2.4 Social and Cultural Systems: Appropriate Technology
3.2 Collective Action: Public Discourse and Policy

Materials/Preparation
Post an “Agree” sign and a “Disagree” sign on opposite sides of the room
Handout: Powerful Arguments, 1 per student
(Optional: Class set of large note cards, 1 per student)
Stopwatch
Internet access

Activity—Day 1

Introduction
1. Tell students that they will participate in a short debate. Point out the “Agree” and “Disagree” signs that have been posted and explain that each student will share their opinions with the class by standing under the appropriate sign.

2. Share with students the following rules:
   • Everyone must take a stance on the issue presented.
   • Everyone should be prepared to state their reason(s) for agreeing or disagreeing with the statement.
Activity 4: Powerful Arguments  

- Anyone can change their opinion if they have been convinced by the opposing side.
- No one can speak a second time until everyone has spoken once.
- Each person should be convincing and respectful when making your arguments.

3. Before reading the statement, you may wish to review the definition of energy subsidy with students.

- **energy subsidy** *(an economic benefit provided by a government that reduces the prices of production of an energy resource, or increases the price received for an energy resource, or reduces the cost of energy-related goods.)*

4. Read the following controversial statement *(Note: You could practice first with a non-controversial statement such as “I would rather live in the city than the country.”)*:

- The federal government should subsidize oil prices to keep the price of gasoline low.

5. Have students move to one of the posted signs.

6. Select one student to share their reasoning and then have a student from the other side respond or share their reasoning. If everyone takes the same side, ask a few students to try to argue for the other side.

7. After everyone has spoken once (and/or the debate has been exhausted) and students have finished changing their positions, bring the class back to their seats for a quick reflection.

8. In think-pair-share format, ask students the following:
   - Did you consider social, economic, and environmental benefits and costs?
   - What arguments caused some of you to change your opinions?
   - Why is it important to know both sides of an argument in a debate?
   - How can specific examples strengthen an argument? How could specific examples weaken an argument?

Steps

1. Share with students that they will now prepare for a more formal classroom debate on one of the following arguments:
   - Debate 1: Our nation should significantly increase the amount of electricity generated by nuclear power plants.
   - Debate 2: Humans have the right to extract as much oil as we want to meet our daily energy needs and strengthen our economies.
   - Debate 3: Our nation should stop mining for and using coal as an energy source.

2. Explain that students will participate in one of the above debates.

3. Each debate will have a proposition team and an opposition team. However, students will not know until the day of the debate whether they will act as the proposition or opposition. Therefore, students will need to prepare for both sides of the issue.

4. Divide the class into groups of 4. Assign each group a debate. Then have each group member partner up with another group member: one of these pairs will represent the proposition. However, they will not know until tomorrow which side of the debate their will argue.

5. Share the following guidelines for tomorrow’s debate:
   - The class will be given 5 minutes to prepare for the debate.
   - They may use their handouts during the debate.
   - Two teams will be called to the front of the class to debate.
Activity 4: Powerful Arguments  continued

• Each debate will proceed as follows:
  1. The proposition will have 1 minute to assert
     their position.
  2. The opposition will have 1 minute to make
     a statement against this position.
  3. The proposition will have 1 minute to
     respond.
  4. The opposition will have 1 minute to
     respond.
  5. The proposition will have 1 minute to make
     their final case.
  6. The opposition will have 1 minute to make
     their final case.

6. Explain that the class will be given 1 day
   (today) to further research the topic and prepare
   arguments (for both sides).

Resources for Student Research:
• Website: Energy Explained
  http://www.eia.gov/
  From the U.S. Energy Information Administration’s
  homepage, students can pull down the menu from
  Learn About Energy and then select relevant
  topics under the Energy Explained section.

• Online resource: National Energy
  Development Project
  www.need.org
  From the National Energy Development
  Project’s homepage, students can click on the
  Students tab to access the Energy Infobooks. It
  is also possible to download and print these
  resources for students.

7. Give each student the Powerful Arguments
   handout and discuss how to use the worksheet
   for research.

8. Suggest that teams begin by creating a specific
   plan for how to use their class time effectively
   today. Encourage students to leave time after
   their research to practice debating both sides.

9. As students are working, circulate around the
   room to check in on student progress.

Activity—Day 2

1. Welcome the class to today’s debate!

2. Have students sit near their groups and take
   out their Powerful Arguments handout from
   yesterday.

3. Have one person from each group roll a dice
   to determine which pair will represent the
   proposition and opposition. Evens—proposition,
   Odds—opposition.

4. Share the following guidelines for today’s debate
   and review good debate techniques.
   • The class will be given 5 minutes to prepare
     for the debate.
   • They may use their handouts during the
     debate.
   • Two teams will be called to the front of the
     class to debate.
   • Each debate will proceed as follows:
     1. The proposition will have 1 minute to assert
        their position.
     2. The opposition will have 1 minute to make
        a statement against this position.
     3. The proposition will have 1 minute to
        respond.
     4. The opposition will have 1 minute to
        respond.
     5. The proposition will have 1 minute to make
        their final case.
     6. The opposition will have 1 minute to make
        their final case.
Option: If desired, hand out 1 large notecard to each student and have them write Agree on one side and Disagree on the other. During the debate, audience members can use these cards to silently show their opinion on arguments during the debate. Remind students this is to be done silently and respectfully.

5. After all teams have finished their debate, use the following questions to guide a class discussion.

**Discussion Questions**

1. How did preparing and participating in today’s debate affect your views on these different energy issues?
2. How did the debates for each energy source relate to the others?
3. What factors might affect someone’s opinion about a specific energy source?
4. Why is it important to be able to see the “other side” of energy related issues?
5. What are some unintended consequences of energy-related technology?
6. What are some other examples of “energy debates” that are going on in the world right now? How could dialogue be useful in this debate? Who should be invited to dialogue about these issues?

**Language Arts Extension**

Give students the opportunity to take a personal stance on the nuclear power argument and demonstrate understanding of energy use concepts by assigning a position paper on whether an increased amount of nuclear power should be used to reduce carbon dioxide emissions. Students should accurately compare and contrast nuclear power with other forms of energy.

**Current Events Extension**

Have students search for newspaper articles for current events related to energy and analyze the article for bias. Ask students to prepare a 3-minute class presentation in which they summarize the article and provide evidence for whether or not the article is biased.

**Additional Resource**

- **Website:** The High School Public Debate Program
  
  [https://highschooldebate.org](https://highschooldebate.org)
  
  This site has several resources for teachers to help students prepare for debate. Tips for teaching refutation, effective debate body language, logical reasoning, and how to fill out flow charts are included in this resource.
## Powerful Arguments

Name: ___________________________________  Partner: ___________________________________

Debate: ________________________________________________________________________________

**Directions:** Use the graphic below to record evidence that supports the argument above and evidence that opposes the argument above.

<table>
<thead>
<tr>
<th>Evidence Supporting this Argument</th>
<th>Evidence Opposing this Argument</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social</td>
<td></td>
</tr>
<tr>
<td>Environmental</td>
<td></td>
</tr>
<tr>
<td>Economic</td>
<td></td>
</tr>
</tbody>
</table>

Energy
**Performance-based Assessment 1**

**Essential Question**
How can the basic human needs of a country be met now and in the future?

**Time Required**
7-10 days

**Materials**
Packet: Essential Human Needs  
The packet includes the following:  
- **Product 1: Research Paper (Individual)**,  
  1 copy per student  
- **Product 2: Task Force Action Plan (Group)**,  
  1 copy per student  
- **Product 3: Class Presentation (Group)**,  
  1 copy per student  
- **Student Reflection Sheet**, 1 copy per student  
- **Performance-based Assessment Holistic Scoring Rubric**, 1 copy per student  
- **Student Reference Sheet for the Holistic Scoring Rubric**, 1 copy per student  
(Optional: Overhead: Sample Performance-based Assessment)

**Ways to Introduce this Assessment**

1. Write the names of the chapters in the unit Essential Human Needs (Food, Water, Air, and Energy) somewhere students can see.

2. In think-pair-share format, have students create a concept map demonstrating the interconnections between these 4 topics.

**Option:** If you haven't already completed the following activities from the Teachers’ Guides, then consider beginning with one of the following:

- **Food Teacher's Guide, Activity 3: What the World Eats**—Working to piece together the interactions among geography, political stability, and economic factors, students learn about how people eat in different parts of the world and the factors that drive these patterns.

- **Food Teacher's Guide, Activity 5 Quiz: Sustainable Agriculture**—In pairs, students work their way through a quiz that reveals environmental consequences associated with various aspects of industrial farming.

- **Air Teacher's Guide, Activity 1: Valuing Clean Air**—Students consider the economic benefits of clean air alongside the costs of pollution control. In small groups, students perform a cost-benefit analysis of implementing congestion pricing to reduce vehicle traffic, bearing in mind monetary costs alongside environmental and social externalities.

- **Air Teacher’s Guide, Activity 4 Introduction: Capping Pollution**—In this introduction, students consider who pays for air pollution and are introduced to the idea of cap and trade.
• **Energy Teacher's Guide, Activity 1: Energy Access for All**—Students categorize the different uses of energy into 3 different levels of necessity. Students then receive an energy profile for different youth around the world and identify their most pressing energy needs. After, they will learn about the UN Sustainable Energy for All initiative and work together in small groups to create a public service announcement that encourages people and governments around the world to work toward these goals.

• **Energy Teacher's Guide, Activity 3: Power to the People!**—Students identify an activity they do that requires electricity. Working backward from this activity, they diagram the path this electricity travels as far as they can. Small groups then research a primary energy source used to generate electricity and identify its benefits and trade-offs.

• **Water Teacher's Guide, Activity 1 Introduction: A Personal Water Audit**—Students learn about the UN suggestions for how much water people need per day and then they imagine how they would use only 5 gallons of water per day for a week.

• **Water Teacher's Guide, Activity 2 Introduction: River to Sea?**—Students debate whether water is a commodity or a right and consider the pros and cons of each stance.

3. Explain to students that they will be completing a performance-based assessment for the unit Essential Human Needs from the textbook. This unit includes the chapters on food, water, air, and energy. This is an opportunity for them to both show their content knowledge and apply other skills like critical thinking, global awareness, and problem-solving.

4. Explain to students that by the completion of the assessment, they will have used research and group collaboration to determine how a country can adequately meet the basic human needs of its current citizens as well as future generations while protecting the natural resources of the region from pollution and depletion.

5. Hand students the Essential Human Needs Packet.

6. Organize students into groups. Each group should have 3-4 students.

7. Review the driving question with students.

8. Have each group decide which country it would like to research and determine which topic (i.e., food, water, air, energy) each member of the group will research. Each group should take 15 minutes to discuss and decide.

9. Review each product students are expected to create to see what questions they have. Explain to them that they will be assessed on these products based on the Performance-based Holistic Scoring Rubric in the back of their packets.

   **Note:** The skills being assessed are 21st Century Skills and Common Core Standards. You can also assess students on content knowledge through the National Council for the Social Studies Standards.

10. Have them review the Student Reference Sheet for the Holistic Scoring Rubric so they can comprehend the types of skills they will be assessed on.

11. Explain to students that after they hand in their 3 products, they will need to complete a Student Reflection Sheet.

   **Option:** Share the Sample Performance-based Assessment Rubric so students can understand how holistic scoring works.
Driving Question:

How can a country meet the essential human needs of all its citizens as well as future generations of citizens while protecting its natural resources?

A new international law has just been created that states each nation has an obligation to meet the basic needs of all its current and future citizens as well as to preserve and keep clean Earth’s natural resources—especially those resources that cross national boundaries.

Working in groups of 3-4 students, you will participate on an Essential Human Needs Task Force for a particular country. The mission of your task force will be to determine how this country can adequately meet the basic human needs of its current citizens as well as future generations while protecting the natural resources of the region from pollution and depletion.
Product 1: Research Paper (Individual)

Based on the country your group chooses, the first product you create will be a paper in which you will:

- Research one of the following topics related to the country:
  a. food
  b. water
  c. energy

- Create a map of the country that shows where resources related to your topic are located. Sample questions you might answer with this map include:
  a. Where are the bodies of water that are used for human consumption?
  b. What types of food are grown in the country and where?
  c. Where are the major sources of energy located in your country?

- Compile a 1-2 page report that provides the following information regarding your topic:
  a. country statistics
  b. natural resources
  c. pollution and emissions
  d. related issues or challenges

- Include a bibliography that provides sources for the information you found.

Additional Resources

- Website: CIA World Factbook
  This website provides information on history, geography, economy, people, etc., for countries around the world.

- Website: UNICEF
  http://www.unicef.org/
  The United Nations Children's Fund website provides statistics on countries around the world.

- Website: World Health Organization
  http://www.who.int/en/
  The WHO website provides data and statistics about health-related topics around the world as well as publications and other resources.

- Website: Millennium Development Goals Monitor
  http://www.mdgmonitor.org/index.cfm
  This website tracks how countries around the world are progressing with respect to the Millennium Development Goals.

- Website: UN–Water
  http://www.unwater.org/statistics.html
  This website provides statistics as well as documents about water-related issues.

- Website: International Energy Agency: Statistics
  http://www.iea.org/
  The IEA website provides energy-related information about countries around the world.

- Website: U.S. Energy Information Administration: Countries
  http://www.eia.gov/countries/
  The U.S. EIA website provides information about U.S. energy issues as well as data about different countries around the world.

- Website: Food and Agriculture Organization of the United Nations
  http://www.fao.org
  The FAO website provides information and statistics about land, natural resources, economics, food, etc.

- Website: Gapminder
  http://www.gapminder.org/
  This website uses maps to show information and compare this data in different parts of the world.

- Website: FAO Water: Water At A Glance
  This website provides information about the connections between water, agriculture, food security, and poverty.
Product 2: Task Force Action Plan (Group)

Each member of your group will share their individual research with the group. You will then create a large group map that shows the natural resources necessary for your country to meet the basic needs of current citizens and future generations. Because you must make sure these resources are available for future generations, plans for renewing these resources and protection from pollution (therefore, waste disposal) must be considered. You will then create a national action plan that will provide an overall recommendation and specific strategies for how to sustainably meet the basic needs of current and future citizens. You will present this action plan to other nations (your classmates) involved in this international agreement.

You will create an action plan that includes the following:

- **Cover letter:** The cover letter should introduce the members of your task force, the reasons why this Essential Human Needs Task Force was needed, and your group’s overall recommendations to the government for how to fulfill the obligations of this new international agreement. This section should be no longer than 1 page.

- **Background on essential human needs:** This background should explain the current situation in your country with respect to the sustainability of food, water, and energy. It should be well supported with facts and evidence and should address how preservation of natural resources is related to meeting the basic human needs of current and future generations in your country. This section should also address how these 3 topics are interconnected as well as how they impact air quality. It should be at least 1 page.

- **Country map:** This map should visually support your recommendation. It should show the country’s general geography, major cities, natural resources, and infrastructure related to food, water, air, and energy. Since many bodies of water and infrastructure such as roads often extend beyond the boundaries of a country, the map should also show neighboring countries and bodies of water.

- **Overall recommendation:** This section should include a clear description of your task force’s overall recommendation for how this country can adequately meet the basic human needs of its current citizens as well as future generations while protecting the natural resources of the region from pollution and depletion. It should also include 3 specific strategies for how the citizens of your country (current and future) will have their basic food, water, and energy needs met. Each strategy should include justification of its economic, environmental, and social sustainability.
Performance-based Assessment 1

Product 3: Presentation (Group)

At the International Convention for Essential Human Needs, your country’s task force will present your action plan to the other nations that have signed this agreement. Therefore, your task force will also prepare a presentation using one of the following media:

• **Fact sheet:** Each member will contribute to creating an informative 2-page fact sheet that describes your nation’s action plan (the overall recommendation and 3 specific strategies) for meeting the obligations of this international agreement. This should include a map of your country and its natural resources. You should also include 2 ways that you might like to partner with other nations in order to carry out this action plan.

• **PowerPoint presentation:** Each member is responsible for at least 2 slides. The presentation may begin with an explanation of why this issue was chosen. The slides should have a map of the country and its natural resources as well as other graphics (e.g., tables, charts, photographs) to support the plan. You should also include 2 ways that you might like to partner with other nations in order to carry out this action plan.

• **Poster board presentation:** Each member will contribute to the creation of a poster which includes tables, charts, maps, and photos. You will also deliver an oral argument for why this solution will address basic needs within your country. You should also include 2 ways that you might like to partner with other nations in order to carry out this action plan.

**Additional Resources**

- **Website:** Microsoft Office: Create your first presentation
  This website provides information on how to create a PowerPoint presentation.

- **Website:** Statistics for Action Facilitator Instructions: Design a Fact Sheet
  [http://sfa.terc.edu/materials/pdfs/design_a_fact_sheet.pdf](http://sfa.terc.edu/materials/pdfs/design_a_fact_sheet.pdf)
  This website explains how people can make a fact sheet for a cause.
Student Reflection Sheet, page 1

Student name: ________________________________________________________________

Instructions to Students: Prior to completing this Student Reflection Sheet, review the Performance-based Assessment Holistic Scoring Rubric and the Student Reference Sheet for the Holistic Scoring Rubric (which provides a detailed description of each skill included on the rubric). These documents will help you understand how to reflect on the quality of your work for this performance-based assessment.

Content Knowledge, Critical Thinking, and Problem-solving

1. Identify 2 skills you developed when you created the 3 products for this assessment.

__________________________________________________________________________

__________________________________________________________________________

2. Were there any challenges you encountered when creating any of the products?

__________________________________________________________________________

__________________________________________________________________________

3. Evaluate the quality of your research findings from the sources you used for your performance-based assessment. Explain how your findings contributed to any conclusions you reached in your performance-based assessment.

__________________________________________________________________________

__________________________________________________________________________

Awareness of Broader Sustainability Relationships

4. Explain how your products relate to one of the broader global issues connected to essential human needs.

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________
5. Explain how any of your products could be used to inform or develop broader civic or government sustainability policies at the local, state, federal, or global levels.

_____________________________________________________________________________________

Self-evaluation and Collaboration

6. Based on the scoring rubric, how do you rate the quality of your products?

_____________________________________________________________________________________

7. List specific products you created. Explain ways in which you could improve the quality of each one.

_____________________________________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________

8. Evaluate your role in your team and describe how you contributed to the completion of the assessment.

_____________________________________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________

9. Describe how you improved the collaboration between group members to successfully complete the assessment.

_____________________________________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________

Information Technology and Communication

10. What types of technology (such as computers and software packages, the Internet, and digital video and audio equipment) did you use in the development of your products? How did these types of technology help you research and present the products effectively?

_____________________________________________________________________________________

_____________________________________________________________________________________

_____________________________________________________________________________________

Performance-based Assessment 1
<table>
<thead>
<tr>
<th>Skill Section</th>
<th>Exceeds Expectations (4)</th>
<th>Meets Expectations (3)</th>
<th>Performs Below Expectations (2)</th>
<th>Performs Well Below Expectations (1)</th>
<th>There Is Insufficient Evidence (0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Content Knowledge and Skills</td>
<td>Demonstrates clear understanding of the major ideas, concepts, and skills covered in all of the targeted standards.</td>
<td>Demonstrates general understanding of the major ideas, concepts, and skills covered in the targeted standards, with minor gaps in breadth, depth, and/or accuracy of understanding.</td>
<td>Demonstrates limited understanding of major ideas, concepts, and skills covered in the targeted standards, with substantial gaps in breadth, depth, and/or accuracy of understanding.</td>
<td>Demonstrates minimal or no understanding of major ideas, concepts, and skills covered in the targeted standards, with complete gaps in breadth, depth, and/or accuracy of understanding.</td>
<td>There is insufficient evidence to assess an understanding of major ideas, concepts, and skills covered in the targeted standards.</td>
</tr>
<tr>
<td>(2) Application of Content Knowledge and Skills</td>
<td>Demonstrates clear application of the major ideas, concepts, and skills covered in all of the targeted standards.</td>
<td>Demonstrates general application of the major ideas, concepts, and skills covered in the targeted standards, with minor gaps in breadth, depth, and/or accuracy of application.</td>
<td>Demonstrates limited application of the major ideas, concepts, and skills covered in the targeted standards, with substantial gaps in breadth, depth, and/or accuracy of application.</td>
<td>Demonstrates minimal or no application of the major ideas, concepts, and skills covered in the targeted standards, with complete gaps in breadth, depth, and/or accuracy of application.</td>
<td>There is insufficient evidence to assess the application of major ideas, concepts, and skills covered in the targeted standards.</td>
</tr>
<tr>
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## Student Reference Sheet for the Holistic Scoring Rubric

<table>
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<th>Skill</th>
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| **1. Content Knowledge and Skills**        | The intent of Content Knowledge and Skills is to determine whether:  
• You have learned the concepts and ideas of the course  
• You demonstrate an understanding of the ideas and concepts of the targeted learning standards of the performance-based assessment |
| **2. Application of Content Knowledge and Skills** | The intent of Application of Content Knowledge and Skills is to determine whether the performance-based assessment products and the Student Reflection Sheet submitted by you demonstrate that:  
• You have properly applied the ideas and concepts of the targeted learning standards of the performance-based assessment to the performance-based assessment products |
| **3. Critical Thinking and Problem-solving** | The intent of Critical Thinking and Problem-solving is to determine whether the performance-based assessment products and the Student Reflection Sheet submitted by you demonstrate:  
• The use of reasoning to analyze and evaluate evidence, arguments, and alternative points of view  
• The understanding of a problem  
• The application of strategies or solutions for resolving the problem  
• The application of evidence to support your conclusions  
• The application of your understanding of an issue to a novel situation to resolve a problem |
| **4. Evaluation of Research Findings from Sources** | The intent of Evaluation of Research Findings from Sources is to determine whether the performance-based assessment products and the Student Reflection Sheet submitted by you demonstrate:  
• The skill to analyze and to determine the usefulness of findings and sources in answering the research topic  
• The understanding of how to integrate information into a report, without plagiarism, to support arguments about the research topic |
| 5. Global Awareness | The intent of Global Awareness is to determine whether the performance-based assessment products and the Student Reflection Sheet submitted by you demonstrate:
- The understanding of how your performance-based assessment fits within broader global issues
- The understanding that this issue is related not only to your community or country, but to the world as a whole
- The understanding that there is a diversity of cultures, religions, and lifestyles around the globe
- The understanding that problems can be solved a variety of ways and that solutions must fit the needs of unique cultures and countries around the globe |
| 6. Civic Literacy | The intent of Civic Literacy is to determine whether the performance-based assessment products and the Student Reflection Sheet submitted by you demonstrate:
- The understanding of how your performance-based assessment reflects broader civic or government policies regarding sustainability issues at the local, state, federal, and global levels
- The recognition of your role as a citizen toward sustainability issues |
| 7. Self-evaluation | The intent of Self-evaluation is to determine whether you take responsibility for your own learning by:
- Articulating the quality of your performance-based assessment in relation to the ideas and concepts in the targeted learning standards of the performance-based assessment
- Using the Student Reflection Sheet to identify the strengths and weaknesses of your work
- Suggesting ways to improve your work in the Student Reflection Sheet
- Suggesting ways to improve your work beyond the Student Reflection Sheet |
| 8. Collaboration and Contribution | The intent of Collaboration and Contribution is to determine how much you collaborated with other students in the development and completion of the performance-based assessment, by:
- Working collaboratively with other students
- Designating work assignments among group members
- Sharing responsibility for the completion of the performance-based assessment
- Using listening and leadership skills
- Being flexible and able to compromise to complete the performance-based assessment |
| 9. Information, Media, and Technology Skills | The intent of Information, Media, and Technology Skills is to determine whether the performance-based assessment products and the Student Reflection Sheet submitted by you demonstrate:
- The proficiency to effectively use 21st century media and technology (e.g., computers and software packages, the Internet, digital video and audio equipment)
- The skill to research and analyze information
- The skill to develop reports and make presentations |
| --- | --- |
| 10. Communication and Presentation | The intent of Communication and Presentation is to determine whether the performance-based assessment products and the Student Reflection Sheet submitted by you demonstrate:
- The skill to clearly and effectively express your ideas and thoughts through oral, written, and nonverbal forms of communication (e.g., eye contact, facing the audience)
- The use of communication for a variety of purposes (e.g., to inform, instruct, motivate, persuade)
- The use of a variety of multimedia and technology (e.g., written reports, poster boards, video presentations, PowerPoint presentations) for presentations |
| 11. Overall Score | The overall score for the performance-based assessment is a holistic determination rather than an accumulation of points from the previous sections. The teacher should use the ratings given in the individual skill sections to determine the overall score that the teacher believes is appropriate for your work. |
**Sample Performance-based Assessment**

Student Name: Jane Doe  
Unit Title: Raising the Quality of Life of a Country  
Project Title: Improving the Quality of Life in Nicaragua

<table>
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<tr>
<th>Skill Section</th>
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Comments on Scoring Holistically

A student turned in a research report on gender equality in Nicaragua. The research report was well organized and provided a number of sources. The student also turned in, with the other students in her group, the final draft of a grant application and a PowerPoint presentation about the grant application. The grant application was well written. The students developed a plausible plan to improve the quality of life in Nicaragua, applying the concepts they learned in the unit. The student gave thoughtful responses to the questions on the Student Reflection Sheet, demonstrating an understanding of how the grant application related to the targeted learning standards and broader global sustainability issues. The student was also critical of her work and suggested ways that she could improve it. During her group presentation, the student discussed two slides of the PowerPoint. The student had difficulty using the projector and advancing the slides. The student also was noticeably uncomfortable discussing the slides and did not make much eye contact with the audience.

The teacher awarded the student a 4 for Content Knowledge and Skills, but awarded a 3 for Application of Content Knowledge and Skills. The teacher also awarded a 4 for Critical Thinking and Problem-solving, but only a 3 for Evaluation of Research Findings from Sources. For the skills Civic Literacy, Global Awareness, and Self-evaluation, the teacher awarded 4s. For Collaboration and Contribution, the teacher awarded a 3. During the presentation of the grant, the teacher noticed that the student had difficulty giving the PowerPoint presentation and was not an effective communicator. Nevertheless, based on the ratings for Content Knowledge and Skills, Critical Thinking and Problem-Solving, Global Awareness, Civic Literacy, and Self-evaluation, the teacher awarded a 3 for Overall Score.
Chapter 7

Population

CHAPTER BIG IDEAS

- Human population has experienced exponential growth since forming agrarian societies.
- Each nation’s population size may reflect trends in fertility rates, life expectancy, migration, as well as access to education and family planning services.
- The size of our global population can impact human health and well-being, peace and security, and natural ecosystems.
- Achieving sustainable population growth may support many other issues relating to sustainability.
Guiding Questions
• What causes populations to rise or fall?
• How does global population growth affect our lives and the planet?

Key Concepts
• population growth rate
• mortality rate
• carrying capacity
• population density
• fertility rate
• base population
• replacement rate
• family planning services

Supporting Vocabulary
• demographers
• immigration
• emigration
• exponential growth
• doubling time
• megacities

Service Learning Component

Service Learning Project Idea
• Question: How can we meaningfully engage with the local senior population and learn from one another?
• Hook Resource: Amazing Seniors LipDub Video
  http://elderkind.com/amazing-seniors-lipdub-video/
  This 6-minute “LipDub” video shows what fun things can emerge from a partnership between young and old.
• Project: Students partner with a local senior center, nursing home, or retirement community to exchange knowledge and build relationships between younger and older communities. They survey the elder population to see what sorts of knowledge and skills they have that they would be willing to teach students. Then, have students vote on potential “classes” they would like to take from the seniors. Finally, arrange a time when students can meet the seniors and learn from them. Turn the tables to see what seniors might like to learn from students, such as computer skills. Challenge students to lead their own classes based on seniors’ needs.
  Option: Instead of approaching this as a teaching exercise, students and seniors can deepen understanding among the two groups by simply discussing their personal histories or sharing examples of music and art that inspire their generation.
Creating new habits or breaking old ones takes time and can be challenging. Having a plan in place and anticipating potential obstacles can help you be more successful with this habit.

**Project Based Learning Component**

**Project Based Learning Idea**

- **Overview:** Students investigate 2 megacities and determine which is better able to support their population of 10 million+

- **Driving Question:** How can city officials best ensure they are able to support a growing population as the world’s population continues to rise and more people move to cities?

**Additional Resources:**

- **Article:** *A Student Led Community Day at the Information Technology Academy*
  
  This article by Karen Baron describes a community day held by a high school in Vermont, where students taught adults from the local community the basics of using a computer and email.

- **Website:** *Generations United*
  - [http://www2.gu.org/OURWORK/SharedSpaces.aspx](http://www2.gu.org/OURWORK/SharedSpaces.aspx)

  Learn about how youth and older generations can collaborate alongside one another through the Shared Spaces program.

**Hook Resource:** *Megacities: Mumbai*

- [http://www.youtube.com/watch?v=RlqZsBBlHkk](http://www.youtube.com/watch?v=RlqZsBBlHkk)

  One 50-minute episode of the National Geographic Megacities series explores Mumbai, India’s largest city, discussing the infrastructure that supports its massive population.

  **Optional:** *Megacities: Sao Paulo*

  Students could also watch a 3-minute preview of Sao Paulo.

**Individual Project:** Students identify 2 megacities and research their failures and successes in supporting a population of over 10 million. They investigate the following elements:

- common modes of transportation, access to public transportation, and any traffic congestion problems
- available food sources and whether food is produced locally or shipped in
- access to affordable health care and family planning services
- available housing, the conditions of low-income housing and whether subsidized or public housing is available
- predominant economic activities in the city and unemployment rates
- other social services or infrastructure elements (such as community hubs, parks, civil institutions) that stand out

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Students then draft a report summarizing their research and offering a conclusion as to which city appears more sustainable and why, as well as what lessons could be learned from each city (good or bad).

• **Group Project:** Students identify 2 megacities and research their failures and successes in supporting a population of over 10 million. They investigate all elements listed above. Student groups create a presentation with visuals summarizing their research and offering conclusions on which city appears more sustainable and why, which city appears the least sustainable and why, and what lessons could be learned from each city (good or bad). They close with a group assessment on the fate of megacities.

• **Additional Resources:**
  - **Website:** Megacities: Exploring a Sustainable Future
    [http://megacities.nl/](http://megacities.nl/)
    A foundation originating under a UNESCO initiative to explore the current and future trends of megacities and exchange knowledge on sustainable practices within these megacities.
  - **Website:** The Mega-Cities Project: Innovations for Urban Life
    A transnational nonprofit sharing innovative solutions to problems associated with urban life.

• **Article:** *How the rise of the megacity is changing the way we live*
  [http://www.guardian.co.uk/society/2012/jan/21/rise-megacity-live](http://www.guardian.co.uk/society/2012/jan/21/rise-megacity-live)
  Guardian article by Paul Webster and Jason Burke focusing on the city of Chengdu in southwest China as an example of a megacity addressing the issues associated with a growing population.

**Summative Assessment:**
Chapter Test

**Connections**

**World History connections:**
Historical population trends; human migration; transition to agrarian lifestyles; emergence of city-states

**Economics connections:**
Relationship between population growth and resource consumption; population growth and access to necessities; population growth and poverty

**Geography connections:**
Population growth rates and family planning policies around the world

**Civics connections:**
Personal and structural solutions to population issues
## Activities in Teacher’s Guide: Suggested Sequence

### Day 1

**Reading:** *Introduction to Population*

**Activity 1:** *Dividing the Pie*—A pie or cake is used to represent the world’s resources. As the population of a group of students clustered in the middle of the classroom grows, similar to the pattern of global population growth, each student is able to contemplate how his or her slice of the pie may be shrinking.

### Day 2

**Reading:** *Background on Population*

**Activity 2:** *Modeling Growth*—Students consider different patterns of population growth by graphing multiple scenarios. Graphing the patterns, students are able to visualize how a population is affected when it exceeds the carrying capacity of its environment.

### Day 3

**Reading:** *Population Today*

**Activity 3:** *Reading the Pyramids*—Students learn how to read and interpret population pyramids. While investigating age-sex structures of several national populations, students use this skill to determine what might cause different age distributions and what challenges might arise from each age distribution.

### Day 4

**Reading:** *Population Today, continued*

**Activity 4:** *Room for More?*—Each student uses an online calculator to estimate his or her individual ecological footprint. Students then investigate the interconnections between population size and the collective ecological footprint of a region.

### Day 5

**Reading:** *Pathways to Progress: Population*

**Activity 5:** *Population Connections*—Students are introduced to the relationship between increased life expectancy and reduced fertility rates. Students investigate 10 additional factors that correlate with fertility rates, either positively or negatively, and contemplate which factors could be focused on to slow global population growth.
Discussion Questions from the Chapter Reading

Introduction to Population
1. Our population has reached 7 billion people. How do you imagine your life changing as more people are added to Earth?
2. As the text mentions, many have theorized that the world would one day have too many people and starvation, violence, and epidemics would result. Do you think their fears are justified? Why or why not?
3. What impact do you predict population growth will have the global economy?

Background on Population
4. Why do you believe more people live in cities today than in the past?
5. If a city is not able to provide necessary infrastructure for its growing population, what consequences could result?

Population Today
6. What are some factors that could be stimulating higher population growth in developing countries than in developed countries?
7. Why does the United States have a higher population growth rate than other developed nations?
8. Several social and economic consequences of having a large elderly population to support are offered in the text. What are the benefits of seniors in a society?

Pathways to Progress: Population
9. Can you think of any other solutions that could address the detrimental impacts of population growth?
10. What do you think the role of men is in family planning or other solutions to population challenges?
Chapter Assessment: Population,  page 1

Recall
Match the following words on the left with their definitions on the right.

1. Base population  
   number of people living in a given area

2. Replacement rate  
   number of deaths per unit of population

3. Population density  
   number of people in a given area to which a growth rate or other vital rate is applied

4. Mortality rate  
   average number of children born to each woman that would result in a stable population

Reasoning/Explanation
Complete the following multiple choice questions by choosing 1 correct answer.

5. Which of the following is an example of a population?
   a. the number of people that live in a city
   b. the number of people who are unemployed
   c. the number of people who speak two or more languages
   d. the number of people who are literate

6. Use the flow chart to help answer the question below.

Which statement best replaces the X in the flow chart?
   a. Humans formed into nomadic tribes, developing extensive trade routes across the continents.
   b. Human population remained stable until women no longer traveled with the men in search for food, choosing to remain stationary in order to raise more children.
   c. Humans continued to expand their presence across the globe, ensuring there was enough room to build an empire.
   d. Humans began to organize into small communities and villages as they developed more efficient agricultural methods.
7. The average ecological footprint of a person in Africa is 1.4 hectares per person. Why might the combined footprint of Africa’s population be larger than the combined footprint of people in the Middle East, where the average footprint is 2.5 hectares per person?
   a. People in Africa are generating more waste than people in the Middle East.
   b. Energy use is growing among African residents.
   c. Africa has a larger population than the Middle East.
   d. People in Africa tend to be poorer than Middle East residents.

8. Why are populations continuing to increase in some developing nations, despite having slower growth rates than in the past?
   a. Developing nations are receiving a lot of immigrants.
   b. Each year there is a larger base population than the year before.
   c. Better agricultural techniques have led to higher fertility rates.
   d. Most developing nations are now encouraging women to have more children.

9. Use the graphic organizer below to help answer the question.

   [Diagram showing Population Growth with Fertility Rates, Mortality Rates, Median Age, Sex Ratio, and Net Migration as factors]

   What example could best replace the X as another factor in a country’s negative or positive population growth rate?
   a. form of government
   b. employment opportunities
   c. access to the internet
   d. average level of education reached among girls

10. What is 1 benefit of reducing population growth rates?
   a. more money available to support retirees and elderly people
   b. less pressure on environmental resources
   c. more employed persons to support growing economies
   d. fewer jobs to support the national economy
11. Why is “living lightly” (or using fewer resources) a strategy for meeting the challenges of global population growth?
   a. People who use fewer resources tend to have fewer children.
   b. If each person uses fewer resources, Earth’s carrying capacity could increase.
   c. Reducing a nation’s ecological footprint is one way to lower fertility rates.
   d. Using fewer resources has been shown to make people more likely to seek out family planning services.

12. What phenomenon is currently occurring in the majority of the world’s developed nations?
   a. People are having many more children than in the past.
   b. Infant mortality is increasing.
   c. Fertility rates are decreasing.
   d. The tax base to support elderly people is increasing.

13. Which of the following population structures is most likely from a country plagued by violent conflicts?

![Population Structures]

14. Which of the following graphs best represents exponential growth over time?

![Exponential Growth Graphs]
Application/Complex Reasoning

Answer the following short answer questions.

15. Many people point to educating women and girls as a strategy for reducing population growth. Explain how education could result in reduced growth rates by each of the following mechanisms:

   Part A. Increased family planning
   Part B. Reduced infant mortality
   Part C. Delayed age at marriage

16. Global population growth has been referred to as a “tale of two trends.”

   Part A. Explain the two separate trends in population growth happening today.
   Part B. For each trend, indicate where it is occurring, what is driving it, and what effects it is producing.
Teacher Master
Chapter Assessment: Population

Recall (4 points)

1. Base population—number of people in a given area to which a growth rate or other vital rate is applied
2. Replacement rate—average number of children born to each woman that would result in a stable population
3. Population density—number of people living in a given area
4. Mortality rate—number of deaths per unit of population

Reasoning/Explanation (10 points)

5. a 10. b
6. d 11. b
7. c 12. c
8. b 13. a
9. d 14. a

Application/Complex Reasoning (6 points)

15. Answers will vary. (3 points)
   Part A. Education about family planning could lead to women spacing their children’s births out and having only as many children as they want.
   Part B. Education about infant care and maternal health could result in families taking measures to prevent disease and death among their children, which may lead a family to have fewer children in the future.
   Part C. Pursuit of educational goals may result in women marrying at older ages, which may delay childbearing among those women.

16. Answers will vary. (3 points)
   Part A. While population is increasing rapidly in some places, population growth is slowing dramatically in other places. Overall global population growth may be on the rise but overall fertility rates are in decline.
   Part B. The places where population growth rates are increasing most dramatically are in a handful of countries in Africa, the Middle East, and Asia. The slowest growth rates are typically in developed countries. It appears that growth rates everywhere are beginning to slow. As nations develop, fertility rates tend to fall.
Activity 1: Dividing the Pie

Overview
A pie or cake is used to represent the world’s resources. As the population of a group of students clustered in the middle of the classroom grows, similar to the pattern of global population growth, each student is able to contemplate how his or her slice of the pie may be shrinking.

Objectives
Students will:
• simulate global population growth over the last 200 years
• experience how population growth affects resource availability

Inquiry/Critical Thinking Questions
• How does population growth affect an individual’s access to resources?
• Is there a limit to the number of people Earth can support?

Time Required
One 30-minute class

Key Concepts
• global population growth
• resource scarcity
• limits to growth

National Standards Addressed
National Council for the Social Studies
2. Time, Continuity, and Change
7. Production, Distribution, and Consumption

National Science Education Standards
F. Science in Personal and Social Perspectives

National EfS Standards
2.2 Ecological Systems: Respect for Limits

Materials/Preparation
Food: A pie, cake, or other desirable baked item that can be cut into wedges; keep the cake hidden until the activity has begun
Utensils: Plates, napkins, and forks, 1 set per student
Utensils: Spatula/knife to cut and serve the pie
Use the following table to divide the class into groups as the activity progresses:

<table>
<thead>
<tr>
<th>Year</th>
<th>Class of 15 students</th>
<th>Class of 20 students</th>
<th>Class of 25 students</th>
<th>Class of 30 students</th>
<th>% of class participating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1800</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>16%</td>
</tr>
<tr>
<td>1900</td>
<td>4</td>
<td>5</td>
<td>7</td>
<td>8</td>
<td>27%</td>
</tr>
<tr>
<td>2000</td>
<td>15</td>
<td>20</td>
<td>25</td>
<td>30</td>
<td>100%</td>
</tr>
</tbody>
</table>
Activity 1: Dividing the Pie  continued

Activity

Introduction

1. Start the class by requesting volunteers. Use the previous table and your class size to determine the appropriate number of volunteers needed to represent the year 1800. (For example, if you have a class of 20 students, ask for 3 volunteers.)
2. Call them up to the front of the room, or into a cleared space.
3. Read the following statement to them: “It is the year 1800, and you represent the world’s population at that time.”

Steps

1. Now show the class the pie and let the volunteers know that they will each receive a portion of the pie. Keep it at a distance for the time being.
2. Ask the 3 volunteers if they would like to share the pie with the rest of the class. If they say no, ask them why not.
3. Call up additional students until you have the number needed for year 1900, according to the table.
4. Read the following statement to the newly enlarged group: “It is the year 1900, and you represent the world’s population at that time.”
5. Ask the original volunteers how they feel about having to share with more people. Ask if they think there is still enough pie for everyone.
6. Ask everyone to stand up, and read the following statement: “It is the year 2000, and you represent the world’s population at that time.”
7. Ask students how many people they will have to share the pie with. Is there enough pie for everyone to enjoy?
8. Explain that this represents the concept of resource scarcity, in which there is not enough of a particular resource for everyone who wants or needs it.
9. Use the following questions to facilitate a class discussion.
10. Slice the pie into equivalently sized pieces and serve to students.

Discussion Questions

1. What would happen if our class doubled in size? Would there be enough pie for everyone?
2. Are there limits to how many people this pie can feed? If yes, how many people do you think it could feed?
3. How does this activity relate to the real world?
4. What are possible solutions to ensure everyone receives a “piece of the pie”?
Activity 2: Modeling Growth

Overview
Students consider different patterns of population growth by graphing multiple scenarios. Graphing the patterns, students are able to visualize how a population is affected when it exceeds the carrying capacity of its environment.

Objectives
Students will:
• graph two types of growth models: linear and exponential
• recognize that population growth has limits

Inquiry/Critical Thinking Questions
• How does exponential growth fuel rapid increases in a population’s size?
• What happens when a population exceeds the environment’s carrying capacity?

Time Required
One 45-minute class

Key Concepts
• linear growth
• exponential growth
• carrying capacity

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments

National Science Education Standards
F. Science in Personal and Social Perspectives

National EES Standards
2.2 Ecological Systems: Respect for Limits

Materials/Preparation
Handout: Patterns of Growth, 1 per student

Activity
Introduction
1. Ask students to recall from Activity 1 how population size and resource availability are connected. Discuss the concept of carrying capacity, or the ability of Earth’s ecosystems to meet everyone’s needs.

Steps
1. Pass out the handout Patterns of Growth to each student.
2. Have students work through the handout, either individually or in pairs.
3. Review the questions on the handout together.
4. Use the following questions to lead a class discussion or as journal prompts.

Discussion Questions
1. Can you think of a real-life situation that resembles Scenario 1?
2. Why do you think human population growth has not followed the pattern illustrated in Scenario 1?
3. Why is population growth considered a sustainability challenge?
4. What kinds of events might result in a population growth curve that resembles Scenario 3?
5. How could the world’s population be prevented from exceeding carrying capacity, or the ability of Earth’s ecosystems to meet everyone’s needs?

Math Extension
Have students predict what population size for Scenarios 1 and 2 will be at Year 75. Then, instruct students to create algebraic equations for Scenarios 1 and 2. They can use their equations to verify the accuracy of their predictions for the populations associated with each scenario at Year 75.
Patterns of Growth

Directions: For each scenario provided, sketch a graph below to show how population is changing over time.

### Scenario 1
<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>12</td>
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<tr>
<td>7</td>
<td>14</td>
</tr>
<tr>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
</tr>
</tbody>
</table>

### Scenario 2
<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>5</td>
<td>32</td>
</tr>
<tr>
<td>6</td>
<td>64</td>
</tr>
<tr>
<td>7</td>
<td>128</td>
</tr>
<tr>
<td>8</td>
<td>256</td>
</tr>
<tr>
<td>9</td>
<td>512</td>
</tr>
<tr>
<td>10</td>
<td>1024</td>
</tr>
</tbody>
</table>

### Scenario 3
<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>5</td>
<td>32</td>
</tr>
<tr>
<td>6</td>
<td>64</td>
</tr>
<tr>
<td>7</td>
<td>128</td>
</tr>
<tr>
<td>8</td>
<td>256</td>
</tr>
<tr>
<td>9</td>
<td>230</td>
</tr>
<tr>
<td>10</td>
<td>230</td>
</tr>
</tbody>
</table>

Questions:

1. Describe the difference in population growth between Scenario 1 and 2.

2. Which scenario most closely resembles global population growth up until now?

3. Describe how Scenario 3 differs from Scenario 2.

4. What do you think could cause the trend that emerged in Year 9 for Scenario 3?

5. What can you infer about birth and death rates during Year 9 for Scenario 3?
**Teacher Master: Patterns of Growth**

<table>
<thead>
<tr>
<th>Scenario 1</th>
<th>Scenario 2</th>
<th>Scenario 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year</strong></td>
<td><strong>Population</strong></td>
<td><strong>Year</strong></td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>12</td>
<td>6</td>
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<tr>
<td>7</td>
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<td>7</td>
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<td>8</td>
<td>16</td>
<td>8</td>
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<tr>
<td>9</td>
<td>18</td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
<td>10</td>
</tr>
</tbody>
</table>

### Questions:

1. Describe the difference in population growth between Scenario 1 and 2.
   - **Scenario 1** is linear growth; the population is increasing by the same number each year. **Scenario 2** is exponential; the number of individuals added each year is greater than the number added the year before.

2. Which scenario most closely resembles global population growth up until now?
   - **Scenario 2**

3. Describe how Scenario 3 differs from Scenario 2.
   - After Year 8, the population no longer grows in Scenario 3. It levels out the following year at 230.

4. What do you think could cause the trend that emerged in Year 9 for Scenario 3?
   - Exceeding carrying capacity, or using more resources than the environment can regenerate to sustain the population.

5. What can you infer about birth and death rates during Year 9 for Scenario 3?
   - They are equal.
Activity 3: Reading the Pyramids

Overview
Students learn how to read and interpret population pyramids. While investigating age-sex structures of several national populations, students use this skill to determine what might cause different age distributions and what challenges might arise from each age distribution.

Objectives
Students will:
• interpret information conveyed by age-sex pyramids for a variety of countries
• predict future age structures, based on past trends and given growth rates
• determine possible factors influencing a country’s given age-sex structure
• consider ramifications of different population structures

Inquiry/Critical Thinking Questions
• How do population pyramids help us to predict a population’s future age-sex distribution?
• What potential challenges are associated with particular age distributions?
• What factors could push a population into a demographic transition?

Time Required
One 45-minute class

Key Concepts
• birth rate
• death rate
• demographic transition
• population pyramid

National Standards Addressed
National Council for the Social Studies
2. Time, Continuity, and Change
3. People, Places, and Environments

National Science Education Standards
F. Science in Personal and Social Perspectives

National Efs Standards
2.2 Ecological Systems: Respect for Limits

Materials/Preparation
Handout: Reading the Pyramids, 1 per student

Activity
Introduction
1. Discuss the concept of a population pyramid with the students. (A diagram that shows the distribution of a population by age and sex; though the name suggests a pyramid shape, many countries no longer exhibit a pyramid-shaped age structure.)
2. Review with students how to read a pyramid. Examples of population pyramids can be found in the student textbook for Afghanistan and Iran.
   a. Note that the age cohorts go from the youngest at the bottom of the graph to the oldest at the top of the graph.
   b. Numbers for males in each age cohort are shown on the left side of the graph; females are on the right side.
   c. The x-axis along the bottom indicates the total size of a particular cohort.
3. Ask students why population pyramids are useful when studying populations. (These graphs allow you to quickly observe trends for a population, such as whether it has a large youth population or high child mortality rate.)
Activity 3: Reading the Pyramids  continued

Steps
1. Give a copy of the handout Reading the Pyramids to each student.
2. Allow students approximately 20 minutes to complete the worksheet, either individually or in pairs.
3. Discuss answers to the worksheet, pausing to allow students to ask questions or debate answers.
4. Conclude with a class discussion using the following questions.

Discussion Questions
1. What challenges might result from the pyramid shown for Japan?
2. What challenges might result from the pyramid shown for Lesotho?
3. Why is there a time lag between a country’s birth rate lowering and the country’s population getting smaller?
4. Which population pyramid from the worksheet seems to represent the most sustainable pyramid in the long term? What makes that age structure sustainable?
5. What are possible reasons that some countries have age structures that are less sustainable?

Math Extension
Dependency ratios indicate the relative number of people who are economically dependent on others within a population. For example, small children and elderly citizens are typically dependent on people who are employed. To determine a country’s dependency ratio, use the following equation:

\[
\left( \frac{\text{# of people 65 and older} + \text{# of people ages 0–14}}{\text{# of people ages 15–64}} \right) \times 100
\]

Have students calculate dependency ratios for the following nations: U.S., Denmark, China, India, South Africa, and Gabon. Use the U.S. Census Bureau’s International Data Base, (https://www.census.gov/2010census/popmap/) to find current population estimates (click on the Data tab). The ratios could be used to answer the following questions:

- Which nations have the highest dependency ratios?
- What are possible challenges of having a high dependency ratio?
- What policies might help meet those challenges head-on?
1. Look at the pyramid shown above for Honduras in 1980. What do the differences in population size from age 0-4 to age 5-9 indicate?

2. How is the age structure of Honduras’ population changing over time?

3. What factors would allow demographers to predict the size and structure of Honduras’ population 30 years from now?

4. What would you expect Honduras’ age structure to look like by 2100?
5. What does Japan's projected age-gender pyramid for 2050 (shown above) indicate about its population growth rate?

6. Explain the possible roles of birth rate and death rate in shaping this age structure.

7. How do the life spans of Japanese men and women differ from each other?

8. How would you describe the age structure predicted for France in 2050 (shown above)?
9. Based on the graph shown, how would you expect France's population growth rate to change between now and 2050?

_______________________________________________________________________________________
_______________________________________________________________________________________

10. What would you predict France's age structure to look like in 2100?

_______________________________________________________________________________________
_______________________________________________________________________________________

11. What does the pyramid shown above indicate about the average life span in Lesotho?

_______________________________________________________________________________________
_______________________________________________________________________________________

12. What are potential causes of this type of age structure? Name at least 2 possible factors.

_______________________________________________________________________________________
_______________________________________________________________________________________

13. What might cause Lesotho's pyramid to begin to look more like the pyramid shown for France? Name at least 2 factors that could result in this change.

_______________________________________________________________________________________
_______________________________________________________________________________________

14. Demographic transition is the process of a country moving from high birth and death rates to low birth and death rates. Which of the pyramids shown on this handout represent countries that are past the demographic transition?

_______________________________________________________________________________________
1. Child mortality is high. Approximately 130,000 children die before age 5.
2. The population is more evenly aged. The 2040 pyramid suggests that childhood mortality is no longer a problem.
3. Future population can be predicted by applying current population growth rates to existing population sizes for each age category.
4. It might look even more evenly distributed, with more people surviving to older ages.
5. Japan's population growth rate is negative, meaning the population is getting smaller over time.
6. Japan's age structure suggests both reduced birth rates and death rates. The result is a small youth population and a large elderly population.
7. Women live longer than men, as evidenced by the female population size past age 75.
8. It is very evenly distributed. The size of older generations is nearly equivalent to younger generations.
9. There appears to be a small negative trend in population growth. Youth age groups (ages 0-19) are smaller than the adult age groups (ages 20-64).
10. Because fewer youth are being born, one might expect the population pyramid to reflect a larger elderly population. That is, it may look more like the pyramid shown for Japan in 2050.
11. The life span in Lesotho is relatively short. The size of age categories over 30 is much smaller than the size of younger populations.
12. This could be caused by diseases claiming adult lives. (In fact, Lesotho's population has been severely affected by AIDS-related deaths.) The drop-off in numbers in age cohorts beginning in their thirties could also be attributed to migration out of Lesotho.
13. Reduced youth mortality and lower birth rates might result in a population pyramid more like France's.
14. Japan and France; also, Honduras 2040
Activity 4: Room for More?

Overview
Each student uses an online calculator to estimate his or her individual ecological footprint. Students then investigate the interconnections between population size and the collective ecological footprint of a region.

Objectives
Students will:
• use an ecological footprint calculator to estimate their individual impacts on Earth’s ecosystems
• explore the connections between ecological footprint and population

Inquiry/Critical Thinking Questions
• What impact do our actions have on Earth’s ability to support humanity’s needs?
• How does population size influence the carrying capacity of a region?

Time Required
One 45-minute class

Key Concepts
• ecological footprint
• carrying capacity
• biocapacity

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
7. Production, Distribution, and Consumption

National Science Education Standards
F. Science in Personal and Social Perspectives

National EfS Standards
2.2 Ecological Systems: Natural Capital
3.2 Personal Action: Local to Global Responsibility

Materials/Preparation
Students should come prepared to calculate their own ecological footprint. They may want to collect the following pieces of information before they come to class:
• approximate size of home (in square feet)
• materials used to build the house
• percentage of electricity use that is from renewable sources
• money spent on electricity and natural gas each month
• distance they travel by car, as driver or passenger, each week
• approximate gas mileage of car
• number of hours spent traveling by airplane each year

Internet access
Handout: The Footprint of the World’s People, 1 per student

Activity
Introduction
1. Ask students to recall from the chapter reading what an ecological footprint measures.
2. Ask students to volunteer a guess about whether their ecological footprints are large or small compared to other people who live in this country. What about compared to people in other countries?
3. Have students calculate their personal footprints using the Global Footprint Network’s online calculator, available at:
**Activity 4: Room for More? continued**

4. Lead a brief class discussion of students’ results, using the following questions:
   - Was your footprint larger or smaller than you expected?
   - What impacts might result if everyone in the world had a footprint the size of yours?
   - What activities would lower your ecological footprint?

**Steps**

1. Pass out the handout *The Footprint of the World’s People*, 1 for each student.
2. Have students work through the handout, either independently or with a partner. Students will need a calculator to complete the handout.
3. As a class, review/discuss the answers to the handout.
4. Conclude the class with a discussion using the questions below.

**Discussion Questions**

1. Do you think it is desirable for everyone in the world to lower their ecological footprint? Why, or why not?
2. Do you agree that the carrying capacity of industrialized nations, like the United States and Canada, is lower than the carrying capacity of other parts of the world? Why, or why not? *(Recall that carrying capacity is the number of people that can be supported in an area/environment without using resources faster than the planet can reproduce them.)*
3. What would be the consequences of everyone on Earth having an ecological footprint similar to the average footprint of a person in Canada or the U.S.?
4. What do you expect to happen as people around the world get wealthier: How will their ecological footprints change? What about population sizes? Are these changes positive or negative?

5. What ideas do you have for individuals or nations that want to decrease their ecological footprint?

**Technology Extension**

Another metric used to determine humans’ impact on Earth is the equation, \( I = P \times A \times T \), where \( I \) = impact, \( P \) = population, \( A \) = affluence, and \( T \) = technology. Have students research 2 examples of technology according to the following criteria:

- Find at least 1 example of technology that could decrease our impact.
- Find at least 1 example of technology that could increase our impact.

Ask students to use findings from their research to answer the following questions:

- What is the role of technology in the degree to which we impact the earth?
- Is the role of technology overall positive or negative?
- How could the impacts of technology be reduced? *(Provide an example of how the impact of a particular technology could be lessened.)*

**Additional Resource**

- **Video:** Finding Balance—Forests and Family Planning in Madagascar

This 10-minute video by Population Action International reveals how family planning in Madagascar could support forest conservation.
This activity will explore the role that population plays in the depletion or renewal of Earth’s resources.

**Background:**

- **An ecological footprint (EF)** is a measure of the amount of Earth’s resources—including land, water, and air—a person’s lifestyle requires.

- **Biocapacity**, or biological capacity, is the ability of ecosystems to produce usable materials and to absorb wastes generated by human activities.

**Directions:** Use the tables provided to answer the questions.

<table>
<thead>
<tr>
<th>Region</th>
<th>Population (in millions)</th>
<th>Ecological Footprint per Capita (in global hectares)</th>
<th>Combined Ecological Footprint of People in Region (in millions of global hectares)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>902</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>Middle East/Central Asia</td>
<td>366</td>
<td>2.3</td>
<td></td>
</tr>
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<td>Asia/Pacific</td>
<td>3,562</td>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td>Latin America &amp; Caribbean</td>
<td>553</td>
<td>2.4</td>
<td></td>
</tr>
<tr>
<td>Canada &amp; U.S.</td>
<td>331</td>
<td>9.2</td>
<td></td>
</tr>
<tr>
<td>Europe (EU)</td>
<td>487</td>
<td>4.7</td>
<td></td>
</tr>
<tr>
<td>Europe (non-EU)</td>
<td>240</td>
<td>3.5</td>
<td></td>
</tr>
</tbody>
</table>

1. Complete the table above by calculating the combined ecological footprint of the people in each region. (Do this by multiplying each region’s population by its ecological footprint per capita.)

2. What role does population play in a region’s ecological footprint?

3. What evidence supports your answer?

---

4. What other factor(s) influence ecological footprint?

- 
- 
- 
- 
- 

<table>
<thead>
<tr>
<th>Region</th>
<th>Percent of Earth's Biocapacity Needed to Support Current EF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>9.3%</td>
</tr>
<tr>
<td>Middle East/Central Asia</td>
<td>6.2%</td>
</tr>
<tr>
<td>Asia/Pacific</td>
<td>41.9%</td>
</tr>
<tr>
<td>Latin America &amp; Caribbean</td>
<td>9.76%</td>
</tr>
<tr>
<td>Canada &amp; U.S.</td>
<td>22.4%</td>
</tr>
<tr>
<td>Europe (EU)</td>
<td>16.8%</td>
</tr>
<tr>
<td>Europe (non-EU)</td>
<td>6.2%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
</tr>
</tbody>
</table>

5. Complete the table above by summing up the regional percentages to find the total percent of Earth's biocapacity that would be needed to support everyone on Earth at their current ecological footprint sizes.

6. What does this indicate to you? Write a short paragraph explaining the implications this could have on global sustainability.

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-
### Table: The Footprint of the World’s People

<table>
<thead>
<tr>
<th>Region</th>
<th>Population (in millions)</th>
<th>Ecological Footprint per Capita (in global hectares)</th>
<th>Combined Ecological Footprint of People in Region (in millions of global hectares)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>902</td>
<td>1.4</td>
<td>1,262.8</td>
</tr>
<tr>
<td>Middle East/Central Asia</td>
<td>366</td>
<td>2.3</td>
<td>841.8</td>
</tr>
<tr>
<td>Asia/Pacific</td>
<td>3,562</td>
<td>1.6</td>
<td>5,699.2</td>
</tr>
<tr>
<td>Latin America &amp; Caribbean</td>
<td>553</td>
<td>2.4</td>
<td>1,327.2</td>
</tr>
<tr>
<td>Canada &amp; U.S.</td>
<td>331</td>
<td>9.2</td>
<td>3,045.2</td>
</tr>
<tr>
<td>Europe (EU)</td>
<td>487</td>
<td>4.7</td>
<td>2,288.9</td>
</tr>
<tr>
<td>Europe (non-EU)</td>
<td>240</td>
<td>3.5</td>
<td>840</td>
</tr>
</tbody>
</table>

2. Larger populations can result in larger combined ecological footprints.

3. The EF of a person in the Asia/Pacific region is only 1.6, but the impact of a population of over 3.5 billion is a large ecological footprint.

4. Lifestyle, or consumption, plays a role. For example, Canada and the U.S. have a small population but a large per capita footprint, resulting in the second largest regional footprint.

<table>
<thead>
<tr>
<th>Region</th>
<th>Percent of Earth’s Biocapacity Needed to Support Current EF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>9.3%</td>
</tr>
<tr>
<td>Middle East/Central Asia</td>
<td>6.2%</td>
</tr>
<tr>
<td>Asia/Pacific</td>
<td>41.9%</td>
</tr>
<tr>
<td>Latin America &amp; Caribbean</td>
<td>9.76%</td>
</tr>
<tr>
<td>Canada &amp; U.S.</td>
<td>22.4%</td>
</tr>
<tr>
<td>Europe (EU)</td>
<td>16.8%</td>
</tr>
<tr>
<td>Europe (non-EU)</td>
<td>6.2%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>112.56%</strong></td>
</tr>
</tbody>
</table>

6. We are overshooting Earth’s biocapacity, meaning we are using more of Earth’s resources each year than the earth can supply. We are using more resources in a year than the earth can produce during a year. When those resources are finally depleted, the earth will not be able to support as many people at the same level of resource consumption.
Activity 5: Population Connections

Overview
Students are introduced to the relationship between increased life expectancy and reduced fertility rates. Students investigate 10 additional factors that correlate with fertility rates, either positively or negatively, and contemplate which factors could be focused on to slow global population growth.

Objectives
Students will:
• critically analyze a world health expert’s conclusions about how population growth can be slowed
• sketch graphs of correlations between fertility rate and other country-specific statistics
• determine which factors are most closely associated with population growth

Inquiry/Critical Thinking Questions
• What country-specific statistics and indicators correlate with reduced fertility rates?
• What country-specific statistics and indicators correlate with increased fertility rates?
• How might we go about constructing solutions to respond to population pressures?

Time Required
One 45-minute class

Key Concepts
• correlation
• fertility rate

National Standards Addressed
National Council for the Social Studies
2. Time, Continuity, and Change
3. People, Places, and Environments

National Science Education Standards
F. Science in Personal and Social Perspectives

Activity

Introduction
Hans Rosling is a physician and professor of global health at the Karolinska Institute (a medical university) in Sweden. He founded the nonprofit Gapminder to present data around global development.

2. Lead a class discussion of the main points of the video, or have students discuss in a think-pair-share format. Here are questions to guide the discussion:

a. Why would allowing child mortality to increase not reduce population growth?
b. Why isn’t there much that can be done to keep Tanzania’s population from doubling over the next 40-50 years?
c. According to Rosling, what is the only way to stop population growth?
d. Do you think he is right?
e. What characteristics of a population would you expect to be correlated with smaller families?
Activity 5: Population Connections continued

Steps
1. Divide students into pairs.
2. Provide each pair a copy of the handout What Factors Are Correlated with Population Growth?
3. Walk through the handout with students, going over the definitions and instructions. You may also want to go through the example (fertility vs. life expectancy) together, walking through the Gapminder World graphing tool to see how it works.
   • Note: Directions for viewing the graph are provided on the student handout, to the right of the trendline shown.
   Option: You can download “Gapminder Desktop” (http://www.gapminder.org/desktop/) to use animated statistics from Gapminder without Internet access.
4. Give students approximately 25 minutes to complete the worksheet.
5. Briefly go over the trends on the handout together, and discuss answers to questions 9 and 10. Continue this class discussion with the following questions.

Discussion Questions
1. Why is it difficult to formulate solutions based on a correlation? (Correlations only show that some relationship exists; they do not indicate causation.)
2. Are there any other factors that you would expect to be positively or negatively correlated with fertility rates?
3. How might people devise responses to population growth, when multiple factors are correlated with reduced fertility rates?
4. Can you think of a possible strategy for reducing population growth that would simultaneously address two or more factors correlated with high fertility rates?

Communications Extension
Have students complete an oral history project by interviewing a grandparent or elderly neighbor. They might ask questions like:
1. Can you remember what your town was like when you were very young?
2. Were there more people in your community then, or are there more people in your community now?
3. What are the major changes you have seen in the community over the last 50 years?
4. In your opinion, are these changes positive or negative? Why?

Additional Resource
• Videos: PSI stories from around the world https://www.psi.org/work-impact/
  Short videos document the personal stories of individuals in developing countries who have sought the family planning services of PSI, such as Barbra Pakamisa, a 23-year-old mother of three in Zimbabwe.
What Factors Are Correlated with Population Growth?, page 1

Background:

• A **correlation** is a relationship between two variables. It does not indicate that one variable causes the other variable to change, though a causal relationship may exist.

• **Fertility rate** is the average number of children a woman in a particular society/nation is expected to have.

Directions:

1. Use the Gapminder World website to view graphics for each of the correlations: [http://www.gapminder.org/world/](http://www.gapminder.org/world/).
2. Sketch a representative trendline for each correlation in the space provided.
3. Write 1 sentence to explain each correlation.

Example:

As life expectancy increases, fertility rate decreases.

1. Fertility Rate vs. Income
2. Fertility Rate vs. Democracy Score
   (Society Indicator)

**Directions to view graph in Gapminder:**

2. Click on “Load Gapminder World.”
3. On bottom of graph (x-axis), choose “Children per woman (total fertility)” from the pull-down menu.
4. On left side of graph (y-axis), choose “Life expectancy (years)” from the pull-down menu.
What Factors Are Correlated with Population Growth?

3. Fertility Rate vs. Child Mortality
   (Health Indicator)

4. Fertility Rate vs. Median Age
   (Population Indicator)

5. Fertility Rate vs. Teen Fertility Rate
   (Population Indicator, subheading: Population Growth)

6. Fertility Rate vs. Age at 1st Marriage (women)
   (Population Indicator)

7. Fertility Rate vs. Literacy Rate, Adult Female
   (Education Indicator)

8. Fertility Rate vs. Literacy Rate, Adult Male
   (Education Indicator)

9. If you were working to slow global population growth, what factors would you focus on?

   [Reason to be filled]

10. What about these graphs surprised you?

    [Reason to be filled]
Teacher Master: What Factors Are Correlated with Population Growth?

1. Fertility Rate vs. Income

As income increases, fertility rate decreases.

2. Fertility Rate vs. Democracy Score (Society Indicator)

No observable trend

There is no clear correlation between fertility rate and democracy score.

3. Fertility Rate vs. Child Mortality (Health Indicator)

As child mortality decreases, so does fertility rate.

4. Fertility Rate vs. Median Age (Population Indicator)

As median age increases, fertility rate decreases.

5. Fertility Rate vs. Teen Fertility Rate (Population Indicator, subheading: Population Growth)

As teen fertility rate increases, so does fertility rate.

6. Fertility Rate vs. Age at 1st Marriage (women) (Population Indicator)

As age at 1st marriage increases, fertility rate decreases.

7. Fertility Rate vs. Literacy Rate, Adult Female (Education Indicator)

As female literacy rate increases, fertility rate decreases.

8. Fertility Rate vs. Literacy Rate, Adult Male (Education Indicator)

As male literacy rate increases, fertility rate decreases.
Chapter 8

Consumption

CHAPTER BIG IDEAS

- Consumption impacts people and places around the world, in positive and negative ways.
- Critically thinking about consumption and solutions can benefit human communities, ecosystems, and local economies.
Guiding Questions
• How does the use of resources affect people and places around the world?
• What does sustainable consumption look like?

Key Concepts
• consumption
• consumerism
• ecological footprint
• ecological overshoot
• materials economy

Supporting Vocabulary
• carrying capacity
• extraction
• production
• distribution
• disposal
• e-waste
• landfill
• local living economies

Service Learning Component
Service Learning Project Idea #1
• Question: What are alternatives to consumption behaviors that harm the environment, societies, or economies?
• Hook Resource: The Story of Stuff
  http://www.storyofstuff.com/
  This 20-minute video traces the materials economy from extraction through disposal.

• Project: Students create “sustainable consumer” cards with questions to guide people in making sustainable purchasing decisions. They distribute the cards to community members.

• Additional Resources:
  • Website: Buy Less, Share More
    http://www.newdream.org/programs/beyond-consumerism/consuming-consciously/buy-less-share-more
    Download a “Wallet Buddy” from the Center for a New American Dream.
  • Website: Sustainable Choices
    http://sustainablechoices.stanford.edu/card/index.html
    Download a “Sustainable Choices” card from the Stanford University School of Earth Sciences.

Service Learning Project Idea #2
• Question: Could waste items be reused? What are alternatives to traditional waste disposal?
• Hook Resource: The Wasteland
  http://www.cbsnews.com/stories/2008/11/06/60minutes/main4579229.shtml
  This 60-minute documentary tracks recycled computers to China, where they are poisoning local people and environments.
• **Project:** Students survey community members about their recycling needs. Then they help start a recycling program (like an electronics take-back day), expand existing recycling services, or educate residents about a recycling program. If their community already has a strong recycling program, students investigate safe disposal options for things that are difficult to recycle (e.g., batteries, paint, cell phones) and educate community members about these options.

• **Additional Resources:**
  - **Website:** Basel Action Network  
    http://www.ban.org/  
    The Basel Action Network, an organization targeting toxic wastes, products, and technologies, helps you find a responsible electronics recycler and learn about recycling legislation.
  - **Website:** Do Something  
    http://safinacenter.org/programs/sustainable-seafood-program/  
    This website offers action tips for starting a school recycling program.

**Project Based Learning Component**

**Project Based Learning Idea**

• **Overview:** Students research an existing sustainable product or service, or dream up their own idea. They develop a print, radio, or televised ad for their chosen product or service, after determining what features to highlight in the ad and which advertising technique would best suit the product and audience.

• **Driving Question:** As a marketer, how would you persuade consumers to buy a product with a reduced ecological footprint?

• **Hook Resource:** Green World Ads  
  [http://greenworldads.blogspot.com/](http://greenworldads.blogspot.com/)  
  This blog showcases an assortment of “green-themed” ad campaigns and TV commercials. Show 2-3 ads from the Green World Ads blog. Ask students to think about what, if anything, from the commercials resonates with them. Do any of the commercials make them more likely to consume sustainability-based goods and services?

• **Individual Project:** Students draw up a plan to advertise a product or service that promotes social, environmental, and economic well-being. The product or service can be either one that exists now or one that students would like to see created. The plan should include a) a communication objective (what message will be conveyed), b) the target audience, c) the most appealing format, and d) a concept for the ad itself (explanation of what the graphics or audio will entail), as well as a statement about why the plan is the best way to advertise the product or service.

• **Group Project:** Students produce an ad for a product or service that promotes social, environmental, and economic well-being. The product or service can be either one that
exists now or one that students would like to see created. The ad should be delivered in the format students think will be most effective, which could range from a public service announcement to a T-shirt design.

- **Additional Resources**

  For gathering ideas about sustainable products and services:
  - **Website:** GoodGuide  
    [www.goodguide.com](http://www.goodguide.com)
    This website has rated thousands of popular products in terms of their health/nutritional status, and companies' environmental and social records.
  - **Website:** Blue Ocean Sustainable Seafood Program  
    Blue Ocean Institute provides information about which seafood species are the most sustainable consumption choices.
  - **Website:** Green America Responsible Shopper Guide  
    [www.greenamerica.org/programs/responsibleshopper/](http://www.greenamerica.org/programs/responsibleshopper/)
    Find out where to buy sweatshop-free clothing and fair trade products from Green America.
  - **Website:** Fair Trade USA  
    [http://www.fairtradeusa.org/products-partners](http://www.fairtradeusa.org/products-partners)
    Information about fair trade products and businesses.

  For developing an ad:
  - **Website:** Adbusters  
    [http://www.adbusters.org/spoofads/printad](http://www.adbusters.org/spoofads/printad)
    Step-by-step suggestions for creating your own print ad.
  - **Video:** The Art of Rhetoric  
    A 6-minute video from ReadWriteThink that explains how advertising techniques are used to persuade consumers.

**Summative Assessment**

Chapter Test

**Connections**

**World History connections:**
History and spread of Industrial Revolution; environmental impacts of people from different countries; production practices in different countries

**Economics connections:**
Production and distribution processes; consumer spending; externalities

**Geography connections:**
Human impacts on environment; globalization

**Civics connections:**
Personal and structural solutions to consumption issues
Activities in Teacher’s Guide: Suggested Sequence

**Day 1**

**Reading:** *Introduction to Consumption*

**Activity 1:** *Watch Where You Step*—Students create a web diagram to illustrate impacts associated with everyday items. This activity builds on the concept of “ecological footprint” to consider the mark that consumption leaves on the environment, along with impacts on people and societies. Students then develop ideas to reduce the ecological footprint and associated impacts related to an everyday item.

**Day 2**

**Reading:** *Background on Consumption*

**Activity 2:** *The Cost of Production*—Students consider where most of our imported material goods are assembled and the environmental and social impacts of production. In small groups, students develop policies that a company might use in working with foreign manufacturers, considering pros and cons of each policy.

**Day 3**

**Reading:** *Consumption Today*

**Activity 3:** *Why Buy?*—Students begin by considering the purpose of advertising. Each student critically analyzes an advertisement that appeals to him or her, weighing advertising techniques against personal consumption values/ideals. Students discuss whether additional information should be included in product advertisements and how advertising links to consumption choices.

**Day 4**

**Reading:** *Consumption Today*

**Activity 4:** *Cashmere Connections*—Students use information from an engaging video to learn about how environmental concerns, economic forces, and social behaviors are connected to the cashmere clothing industry. They then construct a “connection circle” to identify relationships among variables in the system of cashmere production and consumption.
Day 5

**Reading:** Pathways to Progress: Consumption

**Activity 5:** Hidden Costs—Students work in teams to identify externalities involved with paper products. They brainstorm ways to place a value on externalities, considering how externalities might be measured, attributed to an individual or company, and tracked.

Day 6

**Reading:** Pathways to Progress: Consumption

**Activity 6:** Opinions Wanted—Students write an op-ed article to express their ideas about how we can consume in ways that benefit both producers and consumers.
Discussion Questions from the Chapter Reading

Introduction to Consumption
1. Based on the graphic shown, what would you guess is the footprint component that places the greatest stress on Earth's ecosystems? How could you use this information to make an informed decision about how to reduce a country's ecological footprint?

2. How much do you think advertisements influence your consumption patterns?

Background on Consumption
3. Identify pros and cons of Ford's assembly line.

4. Brainstorm reasons why the size of U.S. homes has increased. What are possible positive and negative impacts of larger houses? What could be driving some people to embrace “downsizing” and “tiny houses” (very small houses, typically less than 1,000 square feet)?

Consumption Today
5. Some people argue that shopping online, rather than visiting a store, negatively impacts local communities and economies. Could online shopping help local communities in a global sense? If so, how? Do you prefer to shop online or in a retail store? Why?

6. The chapter states that advertising has a strong influence on consumption rates. What are other influences on the types and amounts of resources that people consume? Do you agree with people who call the U.S. a consumer society?

Pathways to Progress: Consumption
7. How did the Salwen family choose to address consumption? Do you think the typical citizen would be able to do the same?

8. How was Jessica Assaf’s approach to addressing consumption a structural solution?

9. What would make you purchase sustainable goods and services?
Chapter Assessment: Consumption, page 1

Recall
Match the following words on the left with their definitions on the right.

1. Consumption
   the measure of how much land and water resources a person’s life requires

2. Ecological footprint
   the use of goods and services—from eating out at a restaurant to buying a t-shirt

3. Consumerism
   when humans use resources faster than the planet can replenish them

4. Ecological overshoot
   the cultural orientation that leads people to find meaning, contentment, and acceptance through what they consume

Reasoning/Explanation
Complete the following multiple choice questions by choosing 1 correct answer.

5. How did the Industrial Revolution dramatically change consumption patterns?
   a. The Industrial Revolution produced higher quality goods that cost more to produce.
   b. The Industrial Revolution increased the speed at which goods were produced and consumed.
   c. The Industrial Revolution decreased the number of goods to a few specialized ones for production.
   d. The Industrial Revolution enforced rules around how goods could be produced in factories.

6. How did Henry Ford contribute to our modern system of mass production and consumption?
   a. He designed a car that was customized to an individual’s needs.
   b. He designed a car that could be mass produced.
   c. He designed a luxury car that helped boost the economy.
   d. He designed a car that required workers to walk around the factory to get its parts.

7. Which of the following groups of people would generate the largest ecological footprint?
   a. a community with many people who each consume many resources
   b. a community with few people who each consume few resources
   c. a community with many people who each consume few resources
   d. a community with few people who each consume many resources
Chapter Assessment: Consumption, page 2

8. Which statement is an accurate representation of today’s global consumption trends?
   a. As people become wealthier, they work to protect the environment by using fewer resources.
   b. As production of goods in factories has become more efficient, fewer natural resources are being extracted from the earth.
   c. Due to a downturn in population growth, experts are no longer worried about overconsumption.
   d. As incomes of workers around the world have increased, so have rates of consumption.

9. Why are electronics difficult to dispose of sustainably?
   a. They are often too bulky for consumers to carry to recycling centers.
   b. They are made of many different resources, some of which are hazardous.
   c. Consumers want to keep outdated electronics for spare parts.
   d. No one knows how to recycle electronics safely.

10. Which statement best describes 1 impact of goods that are distributed in a global economy?
    a. Workers from different countries are paid equal wages to create the goods.
    b. Goods travel across the globe to reach consumers, increasing fossil fuel use.
    c. Goods are brought to different countries via airplanes, increasing the need for more planes.
    d. Workers create customized goods based on the country the goods are distributed to.

11. All of the following examples are possible externalities based on a materials economy, except:
    a. a landfill that leaks toxic materials into groundwater
    b. hazards to the health of miners who extract gold
    c. air pollution from a factory that increases environmental degradation
    d. businesses that lose money because a product wasn’t successful in sales
12. Which statement best explains how local living economies can sustainably address consumption?
   a. Local living economies pay workers who produce goods in different countries fair wages.
   b. Local living economies collaborate with multinational corporations to produce products.
   c. Local living economies have business owners who live in the community where goods are produced.
   d. Local living economies increase the health of people, environments, and economics.

13. Which example best demonstrates ecological overshoot?
   a. a company that uses natural resources in a way that does not require toxics to be mixed with them
   b. a company that uses natural resources until they become rare and then finds new ones
   c. a company that uses excessive natural resources at a rate faster than the earth can recreate them
   d. a company that uses the least amount of natural resources required in order to support conservation

14. All of the following demonstrate unsustainable practices related to production that have been documented in China, except:
   a. chemicals used in products that impact the health of factory workers
   b. no limitations on daily working hours
   c. factories’ wastes that are discharged into rivers and the air
   d. no union contracts provided to workers

**Application/Complex Reasoning**

Answer the following short answer questions.

15. **Part A.** Identify 1 approach for improving the sustainability of global consumption.

   **Part B.** Identify 1 strategy consumers could use to advance the approach.

16. Some people say that the materials economy is a system in need of redesign. Explain how the materials economy could be redesigned. In your response:

   **Part A.** Explain the current linear system of the materials economy.

   **Part B.** Suggest a means by which the system could be shifted from a linear system to a closed system.
Teacher Master
Chapter Assessment: Consumption

Recall (4 points)
1. Consumption—the use of goods and services—from eating out at a restaurant to buying a T-shirt
2. Ecological footprint—the measure of how much land and water resources a person's lifestyle requires
3. Consumerism—the cultural orientation that leads people to find meaning, contentment, and acceptance through what they consume
4. Ecological overshoot—when humans use resources faster than the planet can replenish them

Reasoning/Explanation (10 points)
5. b 10. b
6. a 11. d
7. d 12. c
8. d 13. d
9. b 14. d

Application/Complex Reasoning (6 points)
15. Part A. Answers will vary. (1 point)
   • Lifecycle (cradle-to-cradle) design
   • Corporate social responsibility
   • Use of nontoxic materials in manufacturing
   Part B. Answers will vary. (1 point)
   • Consumers can purchase products that are made with a cradle-to-cradle design.
   • Consumers can research companies to learn if they have social responsibility policies. If they do not, consumers can contact them and encourage them to implement such policies.
   • Consumers can reach out to government representatives and ask them to advocate for nontoxic materials in manufacturing.

16. Part A. (2 points)
   • The current linear system follows the following steps: extraction, production, distribution, consumption, and disposal.
   Part B. Answers will vary. (2 points)
   • A closed system would mean that once a customer is done with a service or product, the manufacturer who created the product would be able to take it back and use the materials to create new products.
Activity 1: Watch Where You Step

Overview
Students create a web diagram to illustrate impacts associated with everyday items. This activity builds on the concept of “ecological footprint” to consider the mark that consumption leaves on the environment, along with impacts on people and societies. Students develop ideas to reduce the ecological footprint and associated impacts related to an everyday item.

Objectives
Students will:
• identify resources, processes, and impacts embodied in material goods
• analyze interconnections among lifestyle, population, economy, and environment
• determine ways to reduce ecological footprint and other impacts associated with material goods

Inquiry/Critical Thinking Questions
• What are environmental, economic, and social impacts of a typical U.S. diet and lifestyle?
• What would be the consequences if the entire world adopted a typical U.S. lifestyle?
• What can we do to reduce negative impacts associated with resource consumption?

Time Required
One 60-minute class

Key Concepts
• ecological footprint
• resource consumption

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
7. Production, Distribution, and Consumption
9. Global Connections

National Science Education Standards
F. Science in Personal and Social Perspectives

National Efs Standards
2.1 Interconnectedness: Systems Thinking
3.1 Personal Action: Personal Responsibility
3.1 Personal Action: Accountability

Materials and Preparation
(Optional) Handout: Hamburger, Fries, and a Cola, 1 per student
(Optional) Cards: What Does It Take to Make? 1 per group of 3-4 students
Tools: Large sheets of butcher or chart paper, 1 per group
Tools: Colored marking pens, 3-4 per group

Activity
Introduction
1. Ask students to recall what the idea of ecological footprint means. How does this word combine the definitions of ecology and footprint? (Ecological footprint refers to the area of the earth's productive surface, both land and sea, that it takes to support a person's or a population's lifestyle. Ecological footprint includes natural resources needed from the environment, plus space for infrastructure, recreation, and waste disposal.)

2. Ask students to recall ecological footprint sectors from the chapter. As they call out sectors, write them on the board. (Different kinds of environmental impacts can be measured in each of these sectors. Sectors include forests; farmland; construction and mining; wild meat, fish, and seafood; water; transport, trade, and tourism; energy use.)

3. Ask students what sorts of impacts from consumption are left out of a traditional ecological footprint analysis. (An ecological footprint measures environmental impacts, rather than impacts on human societies.)

4. Let students know that they will be creating a web diagram to illustrate the ecological footprint and human impacts associated with an everyday item. But first, you will do an example together.
**Activity 1: Watch Where You Step** continued

### Sample Impact Diagram: Hamburger

- **Soil Erosion** → **Grazing Land** → **Cows** → **Feedlot** → **Slaughterhouse** → **Bun** → **Lettuce** → **Water Runoff into Rivers**
- **Climate Change** → **Fertilizer** → **Water** → **Pesticide** → **Wheat** → **Runoff into Rivers**
- **Dangerous Working Conditions** → **Conditions for Farm Workers**

### Optional: Modeling Activity

1. Ask students to raise their hands if they have eaten a hamburger in the last week. Has anyone eaten a hamburger today?

2. Distribute the handout *Hamburger, Fries, and a Cola* to each student. Give students 5 minutes to read through the handout. Ask them to circle or highlight resources required to produce the meal and impacts to the environment and people as they read.

3. Draw a hamburger in the middle of a board or other location where all students can see it. Then proceed through the following exercise to diagram the impacts associated with producing the hamburger. (See the Sample Impact Diagram if you need ideas to get started.)

   a. Ask students what basic ingredients are needed to create a hamburger. (e.g., cow, bun, lettuce)—Draw or write student answers around the hamburger.

   b. There are several steps required to raise the cow. What are they? (e.g., grazing land, feedlot)—Write student answers on your example.

   c. Between the cow and the burger, what else happens? (e.g., slaughterhouse, processing/grinding) the meat, transportation of the beef to the restaurant, the energy to heat the stove to cook the burger)—Write student answers on your example.

   d. What impacts result from each of the processes and technologies required to produce the hamburger? (e.g., soil erosion, pesticide runoff, climate change, high injury rates among workers)—Include these impacts on your diagram wherever appropriate.

   e. Lastly, have students consider additional impacts that have not yet been shared, perhaps ones beyond those mentioned in the reading. What are some impacts of hamburger consumption on people and societies, including people involved in producing hamburgers and people who consume them? (e.g., safety concerns for workers, health concerns from consumption, waste from disposable wrapping)—Write these impacts on your diagram where they seem most appropriate.

Option: You may also want to have students identify positive consequences of producing and consuming the hamburger, such as economic benefits. Include these on your diagram in a way that distinguishes them from negative impacts (such as by writing them in a different color).
**Activity 1: Watch Where You Step  continued**

**Steps**

1. Give the following directions before grouping students: “In groups, brainstorm and diagram all of the resources, processes, and impacts associated with 1 everyday object, such as an item of clothing or a piece of sports equipment. For example, if you decide to diagram the impacts of a cell phone, you would write and/or draw it in the center of the paper, and then write and/or draw the resources and processes required to produce each part of the phone and all the impacts you can think of that might be related to producing and using it.”

   - **Note:** There is no single “right” way to do this activity. A simple web diagram could include lines or arrows connecting the various components of an item to all of the related inputs and impacts. Students may be able to think of many possible inputs and outputs related to their chosen item. This activity could also be expanded to include student research on the materials required to produce a given item and how the production of those materials affects the lives of people in various places.

2. Arrange students in groups of 3-4. Provide each group with a large sheet of paper and marking pens.

3. Ask each group to decide on 1 item that will be the focus of their web diagram. They might want to create an impact diagram for a favorite meal, an article of clothing, a favorite object, or a mode of transportation.

   - **Alternative:** If you want to make this activity more structured, distribute one *What Does It Take to Make?* card to each group. Groups can use information from these cards to get started. Note that information on these cards is just a starting point; there are many inputs and resources not listed.

4. If students need help organizing their thoughts, you may want to create a chart on the board like the example on this page to get them started.

5. Allow about 20 minutes for this portion of the activity. Encourage students to be creative and think of everything that is related to the object. Remind them to consider impacts related to transportation of a product, the marketing of popular brand items, health issues, and waste disposal.

6. After completing their diagrams, have students brainstorm and list ways to reduce the ecological footprint and other impacts associated with creating or using the object. Give them 5-10 minutes to brainstorm. Students might come up with an alternative to the item, or an alternate way of producing or using it that might impact people and the planet in more positive ways. Ask them to record this information on the back of their sheet of paper.

   - **Note:** Be sure to emphasize that they do not need to give up everything they like, but rather should focus on ways to reduce their impacts. For example, instead of saying that people should never drive cars, they could suggest that people ride a bike or carpool to school when possible.

   - Also, you may want to have students think about how products can have both negative and positive impacts on consumers. What are ways of consuming products that can have positive impacts on the environment, societies, and/or economies?

<table>
<thead>
<tr>
<th>Component/Part</th>
<th>What is it made of?</th>
<th>Was energy required?</th>
<th>How are people involved?</th>
<th>What are possible impacts?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumption</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Activity 1: Watch Where You Step  continued

7. Have each group present their diagram and their proposed ideas for reducing the item’s negative impacts on people and the planet.

   Option: Post the impact diagrams around the room or in a hallway where other students can view them.

8. Ask the following discussion questions.

Discussion Questions

1. How is the ecological footprint of a person’s lifestyle connected to social and economic impacts?

2. If only a small number of the world’s people purchased and used these items, what would the environmental, social, and economic consequences be?

3. How would the impacts associated with an item change if everyone in the world purchased or used it? Would it be sustainable for everyone in the world to have the same lifestyle as U.S. citizens?

4. Does lessening our impacts necessarily mean reducing our quality of life? Why, or why not?

5. What actions might encourage businesses to produce these items in ways that have more positive impacts on the environment and on people?

6. Often negative impacts associated with an item are not experienced directly by the people who purchase and use the item. Do these impacts have an economic value? Explain why or why not. Who might end up paying for the impacts of our lifestyle?

History Extension

The Industrial Revolution had impacts far beyond the number and type of goods produced. It had dramatic impacts on people in industrializing countries. How did industrialization impact families, women, and children, in both positive and negative ways?

Additional Resources

Resources for product research:

- Chocolate, cleaning products, furniture, paint, plastic bags, shrimp, soap, and more: Good Stuff? A Behind-the-Scenes Guide to the Things We Buy

- CDs and DVDs: The Life Cycle of a CD or DVD (EPA poster)
  [Available here](http://www.epa.gov/osw/education/pdfs/life-cell.pdf)

- Cell phones: The Life Cycle of a Cell Phone (EPA poster)
  [www.epa.gov/osw/education/pdfs/life-cell.pdf](http://www.epa.gov/osw/education/pdfs/life-cell.pdf)

- Paper, cell phones, and meat: The Secret Life film series

- Food, clothing, leather, and more: Product water footprints

- Personal care products, household cleaners, pet food, electronics, appliances, and more: Good Guide
  [www.goodguide.com](http://www.goodguide.com)

- Newspapers, shoes, cars, and more: Stuff: The Secret Lives of Everyday Things by John C. Ryan and Alan Thein Durning (Sightline Institute, 1997)


Online footprint calculators:

- [www.myfootprint.org](http://www.myfootprint.org)
- [www.footprintnetwork.org](http://www.footprintnetwork.org)
The meat came from cattle initially grazed on public or private land, and later fed grain. About 10% of all public lands in the western United States have been turned to desert by overgrazing, and about two-thirds of those public lands are significantly degraded. Streamside lands where cattle graze have been especially damaged.

It took approximately 2 pounds of grain to produce that quarter pound of meat, and that grain production caused five times its weight in topsoil loss due to erosion from unsustainable farming methods. Producing that grain also took substantial amounts of pesticides and fertilizers (half of all fertilizer in the United States is applied to feed corn for animals), some of which ran off into surface water or seeped into groundwater supplies. Commercial fertilizers have been linked to climate change. For example, the creation of nitrogen fertilizers releases the greenhouse gas nitrous oxide, which can combine with other greenhouse gases in the atmosphere to make temperatures on Earth warmer.

At a feedlot, where cattle are fattened before they are slaughtered for food, a typical steer will eat about 3,000 thousands of pounds of grain to increase in weight 400 pounds. By the time the steer was finished in the feedlot, it took 600 gallons of water to build that hamburger patty. At the meatpacking plant where the steer was slaughtered and butchered, most of the workers receive low wages and no health insurance or vacation days. These workers face high injury rates.

Once slaughtered and processed, the meat was frozen, shipped by truck, kept cold, and then cooked on a grill using natural gas. Both the diesel fuel to run the truck and the natural gas grill require burning fuels that contribute to climate change.

The 5-ounce order of fries came from one 10-ounce potato grown in Idaho on half a square foot of soil. It took 7.5 gallons of water to raise that potato, plus quantities of fertilizer and pesticides, some of which ran off into the Columbia or Snake Rivers. This, along with dams that generate power and divert water for irrigation, has caused sockeye salmon to become virtually extinct in the Snake River. A number of other species are also in decline because of these production practices.

Farmers receive a small fraction of the price of the fries, maybe 1 or 2% of the price a customer paid for the fries. Most potatoes are now grown on large farms that require large potato harvesting equipment. This reduces the number of potato farmers that are required to produce potatoes.

The potato was dug with a diesel-powered harvester and then trucked to a processing plant where it was dehydrated, sliced, and frozen. The freezing was done by a cooling unit containing hydrofluorocarbons (HFCs), some of which escaped into the atmosphere and likely contributed to global climate change. The frozen fries were then trucked to a distribution center, then on to a fast-food restaurant where they were stored in a freezer and then fried in corn oil heated by electricity generated by hydropower.

The meal was served in a fast-food restaurant built on land that was originally forest, then farmland, and then converted to commercial/industrial uses as the city expanded. Many of the workers in the fast-food restaurant are teenagers and young adults who only work part-time for minimum wage.

1 Unless otherwise noted, environmental impacts adapted from John C. Ryan and Alan Thein Durning, Stuff: The Secret Lives of Everyday Things (Seattle: Sightline Institute, 1997), and human impacts derived from Eric Schlosser, Fast Food Nation (New York: Perennial, 2002).
The cola came from a Seattle processing plant. It is made of 90% water from the Cedar River. The high-fructose corn syrup came from Iowa, as did the carbon dioxide used to produce the fizz, which is produced by fermenting corn. The caffeine came from a processing plant that makes decaffeinated coffee. The cola can was made from one-third recycled aluminum and two-thirds bauxite ore strip-mined in Australia. It came to Washington State on a Korean freighter, and was processed into aluminum using an amount of energy equivalent to a quart of gasoline. The energy came from some of the same dams mentioned earlier that have contributed to a 97% decrease in the salmon runs of the Columbia Basin.

Cola has been called “liquid candy” because of its high sugar content. In the late 1950s a typical fast-food cola was 8 ounces. Today a large cola might be 32 ounces, containing over 300 calories and a third of the daily maximum amount of sugar recommended for an adult. High amounts of calories and sugars can lead to conditions like obesity and diabetes. In the U.S. an estimated 34% of adults are obese. Cola is extremely profitable for fast-food restaurants. It costs a restaurant just 9 cents to buy the syrup needed for a medium cola that sells for around $1.29.

The typical mouthful of food consumed in the United States traveled 1,200 miles for us to eat it. Along the way, it requires packaging, energy, roads, bridges, and warehouses, and contributed to atmospheric pollution, adverse health effects, and traffic congestion. Both people and machines are required for each step of the food production.

What Does It Take to Make?

Coffee

Beans
• Beans grown in Colombia
• Pesticide from Germany applied to beans
• Beans roasted in New Orleans

Sugar and Cream
• Sugar produced in Florida
• Cream from dairy near Seattle

Cup
• Made from 10% recycled paper
• Virgin paper from trees grown in Canada
• Cup lined with a thin layer of plastic, made from oil drilled in Venezuela

T-shirt

T-shirt is 50% cotton / 50% polyester

Polyester
• Crude oil drilled in Venezuela
• Crude oil refined in Curaçao
• Refined oil processed in Delaware to create polyester fiber

Cotton
• Cotton grown in Mississippi
• Cotton fibers spun into yarn in North Carolina

Assembly
• Shirt sewn in Honduras

Computer

Semiconductor (computer chip)
• Made of silicon mined in Washington State
• Silicon processed in Oregon
• Sent to chip manufacturer in California
• Copper from Arizona and gold from South Africa applied to chip

Circuit Board
• Made of tin from Brazil and lead obtained from recycling car batteries in Houston

Monitor
• Assembled in Japan
• Plastic created from oil drilled in Saudi Arabia and processed in the U.S.

Bicycle

Metal frame
• Recycled steel from Chicago
• Manufactured and painted in Wisconsin

Aluminum gears, brakes, and spokes
• Made from ore mined in Australia and smelted (when metal is pulled from the ore) in Russia
• Manufactured in Japan

Tires
• Synthetic rubber made in Taiwan from petroleum oil

Activity 2: The Cost of Production

Overview
Students consider where most of our imported material goods are assembled and the environmental and social impacts of production. In small groups, students develop policies that a company might use in working with foreign manufacturers, considering pros and cons of each policy.

Objectives
Students will:
• explain various factors that might contribute to a company’s sourcing decisions
• describe real-life working conditions in different locations
• weigh the pros and cons of corporate manufacturing policies
• develop corporate policies with sustainability in mind
• identify costs and benefits of global trade

Inquiry/Critical Thinking Questions
• How does production of material goods impact people and places where those goods are produced?
• What policies might change these impacts, and in what ways?
• What are pros and cons of manufacturing goods in foreign countries?

Time Required
One 45-minute class

Key Concepts
• production
• globalization
• corporate social responsibility

National Standards Addressed
National Council for the Social Studies
1. Culture
3. People, Places, and Environments
5. Individuals, Groups, and Institutions
6. Power, Authority, and Governance
7. Production, Distribution, and Consumption
9. Global Connections
10. Civic Ideals and Practices

National Science Education Standards
F. Science in Personal and Social Perspectives

National Efs Standards
2.3 Economic Systems: Globalization
2.4 Social and Cultural Systems: Social Justice
3.2 Collective Action: Organizational and Societal Change Skills and Strategies

Materials and Preparation
Handout: Working for a Living? 1 per student
Handout: You’re the Boss, 1 per group of 3 students

Activity
Introduction
1. Ask students if they know where the clothes they are wearing were made.
2. Have students work with a partner to determine where their shirts (or jackets, shoes, etc.) were made. Ask each student to report to the class where his or her shirt was made. Record answers on the board.
Activity 2: The Cost of Production continued

3. Let students know that we import more material goods from China than from any other country. Ask students: Why do you think we import so many of our goods from China? Why don’t we get them from the U.S. or somewhere closer?

Steps
1. Distribute 1 Working for a Living? handout to each student.
2. Have students read the handout.
3. Write the following scenario on the board: “If you were an executive at a company that sells clothing sewn in foreign factories, what policies would your company require those factories to follow?”
4. Divide students into groups of 3.
5. Provide each group with the handout You’re the Boss. Allow them time to work through and discuss the questions on the handout.
6. Have each group report their 2 proposed policies to the class, explaining pros and cons of each choice. Ask them to explain why they believe their proposed policies are essential.

Discussion Questions
1. Why might some countries not want to enforce minimum wage and worker safety laws?
2. One business professor says that trade is “an instrument of peace and understanding” because it requires countries to cooperate with each other. Based on what you know, do you agree with this statement? Does it change your opinions about globalization?
3. If workers are to be paid higher wages, who should bear that cost? Should CEOs be paid less? Should the costs be absorbed by the consumer?
4. Kofi Annan, former Secretary-General of the United Nations, stated, “We must ensure… that all the world’s people share the benefits of globalization.” Do you think all countries benefit equally from globalized production (that is, making and shipping products all over the world)? If not, what would allow for more people to benefit?
5. Human rights journalist Nicholas Kristof has said that sweatshop labor would be a dream for the poorest people in the world, such as those who survive by scavenging through garbage. Do you think that working in a sweatshop (a factory with substandard working conditions) would be a significant improvement in the lives of people who dig through garbage to survive? If so, should sweatshops be given a break?
6. Should consumers be better informed about working conditions? What about environmental impacts of manufacturing? What are some ways that consumers could have access to more information about where and how their goods were made?
7. When you purchase a product, what sorts of costs are not included in its price?

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Writing Extension

Have students research the corporate policies of popular apparel companies. Students can write letters to any companies that do not have corporate policies taking into consideration people, places, and the environment. Persuasive letters should be written in a business letter format in which students express their major concerns about production. A few examples of corporate policies regarding labor and the environment include:

- Nike, Inc. (http://nikeinc.com/pages/responsibility)
- Gap Inc. (http://www.gapinc.com/content/gapinc/html/csr.html)
- Patagonia (http://www.patagonia.com/us/home
Students can click on the “Corporate Responsibility” link at the bottom of the page. (http://www.patagonia.com/us/patagonia.go?assetid=67372)

Students could also write letters of support to companies that have strong corporate policies in place to protect people and the environment. Letters should indicate the specific policies with which the student agrees and why. Students should also consider letting the company know how this will influence their shopping behaviors.

Additional Resources

- **Film: China Blue**
  www.pbs.org/independentlens/chinablu
  This 86-minute documentary from 2005, directed by Micha X. Peled, tells the tale of 17-year-old Jasmine, a worker in a Chinese garment factory, and the conditions she must work in.

- **Website: Global Exchange**
  www.globalexchange.org
  Global Exchange hosts a fair trade online store where consumers can make purchases that ensure the producers are paid fair wages. Additionally, the website provides information on how to support ‘sweat free’ communities.
Working for a Living?

If you bought a pair of jeans for $50, how much money would you expect the worker who sewed the jeans to receive? $25? $10? $5? You might be surprised to learn that the hourly wage for some workers range from 23 cents to 1.75 dollars.¹

So where does the rest of that money go? Much of it goes to advertising, corporate salaries, store rental fees, and middlemen (people who connect manufacturers with retailers). Some of it is spent on raw materials, like cotton. Very little goes to the people who actually make the clothing.

American companies import more goods from China than from any other country. Much of China’s wealth comes from investment from foreign companies. These companies hire factories in China to make products that will be sold in the United States and other countries. In the year 1998, exports from China to the United States were around $71.2 billion. Over the past decade, the price has increased to over $287.8 billion. Growing exports over the years have been products such as computers, apparel, household items, and furniture.²

Like many countries around the world, China has labor standards designed to protect its workers. According to the International Labour Organization, China has laws related to worker hours (generally 8 hours per day), overtime compensation (50–200% greater than the base pay rate), and required rest days (2 per week). Minimum wage is set by each region of the country. The lowest minimum wage is between 500 to 720 yuan per month (between $80 to $115/month) in the province of Jiangxi. The highest is 1,120 yuan per month ($180/month) in the city of Shanghai. China also has labor unions that protect workers’ rights.³

China is an attractive location for manufacturing for several reasons. Chinese factories are able to keep costs low for foreign corporations. Also, China has a number of major ports and terminals to make shipping easy. And it has the largest labor force of any country in the world.⁴

The True Cost of Labor

The unattractive side of manufacturing reveals the real-life working conditions for Chinese laborers and the toll that production of material goods is taking on the environment. Although China has restrictive labor laws, these laws are often broken. Some factories maintain two sets of books in order to evade inspectors who visit the factories. One estimate suggests that up to 75% of Chinese suppliers submit false pay records to inspectors. Perhaps only 5% of Chinese factories obey limitations on daily working hours. Apparel manufacturers often do not pay workers for mandatory overtime and may not allow workers more than a few days off each month.⁵

Toxic chemicals used to make products have a huge impact on factory workers. On a daily basis, workers in many factories in China inhale or are exposed to a number of toxic materials like lead, mercury, cadmium, and benzene. Benzene is a colorless and flammable liquid and can be found in materials like ink, paint, and plastic. Excessive benzene exposure can lead to leukemia, bone marrow damage, and a damaged immune system.

Direct exposure to other industrial materials can result in lung cancer and silicosis, a lung disease. An estimated 4.4 million workers throughout China have developed silicosis by ingesting toxic air. A lack of proper ventilation in factories allows these carcinogens (cancer-causing substances) to circulate in the air without proper disposal. Health protections such as good ventilation systems and protective masks

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could reduce the number of workers who develop diseases and illnesses from working in factories.

In some factories, workers also risk losing fingers and limbs by working with unsafe machines. In 2002, the government created a law ordering factories to dispose of unsafe machines. However, local governments in the country rarely enforce this law. Within the province of Guangdong, 360,000 workers lost limbs since 1995. Without strict labor standards actually enforced in China, many individuals in factories risk their health and their lives.6

In addition to impacts on workers’ health and safety, factories can take a large environmental toll. Factory wastes discharged into rivers and into the air cause pollution, which leads to illness among people who do not even work at the factories. China’s primary energy source for providing electricity to factories is coal, which is a fossil fuel that contributes to climate change and smog. Hundreds of thousands of premature deaths have been traced to China’s environmental degradation, in which factories play a significant role.7

The Bottom Line
The low costs of labor and land in China are a tempting option that can save the United States millions of dollars when importing products. However, the true cost of production has had detrimental impacts on people and the environment. Governments, businesses, and consumers all play a role in these impacts. Enforced labor practices around the world can result in a healthier environment, a healthier workforce, and healthier consumers.

What’s a Concerned Shopper to Do?
If you’ve ever heard the expression “money talks,” you know that how you choose to spend money sends a message. So how can you let your money do the talking?

For one thing, you can look into the labor and environmental practices of companies that sell products you want to buy. Many companies publish their corporate policies online. Then, tell companies what matters to you. Would you prefer to buy products that are made by workers who are paid a fair wage? Would you prefer to buy products that were produced without causing environmental damage? If so, let companies know!

6 Tofani.
You’re the Boss

Group members: ________________________________

Guiding Question: If you were an executive at a company that sells clothing sewn in foreign factories, what policies would your company require those factories to follow?

Directions: Work through the questions on this page to construct corporate policies for your company.

1. Of the following, which 2 things do you think are most important?

<table>
<thead>
<tr>
<th>Labor Standards</th>
<th>Environmental Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum number of hours in a workday</td>
<td>Guaranteed rest days each week</td>
</tr>
<tr>
<td>Required breaks during workday</td>
<td>Recycle and reuse waste materials</td>
</tr>
<tr>
<td>Use locally sourced materials</td>
<td>Purchase sustainably extracted raw materials</td>
</tr>
<tr>
<td>Health insurance for workers</td>
<td>Set and enforce limits for air and water pollution</td>
</tr>
<tr>
<td>Safety training and equipment</td>
<td>Find alternatives to replace toxic materials</td>
</tr>
<tr>
<td>No child workers</td>
<td>Record and report on disposal of all wastes</td>
</tr>
<tr>
<td>No harassment or discrimination by managers</td>
<td>Create durable materials that will not break</td>
</tr>
<tr>
<td>Other: __________________________________________________________________</td>
<td>Other: __________________________________________________________________</td>
</tr>
</tbody>
</table>

2. Write a policy statement for each of the 2 most important things.

For example: Our company is going to require any factories it works with to limit workers to a strict 50-hour work week.

Policy Statement 1: __________________________________________________________________________

Policy Statement 2: __________________________________________________________________________

3. For each policy, determine its pros and cons.

For example:

Pro—Limiting workers to a strict 50-hour work week could increase the productivity and health of workers.

Con—Limiting workers to a strict 50-hour work week might increase prices for consumers.

Policy Statement 1 Pro: ______________________________________________________________________

Policy Statement 1 Con: ______________________________________________________________________

Policy Statement 2 Pro: ______________________________________________________________________

Policy Statement 2 Con: ______________________________________________________________________
Activity 3: Why Buy?

Overview
Students begin by considering the purpose of advertising. Each student critically analyzes an advertisement that appeals to him or her, weighing advertising techniques against personal consumption values/ideals. Students discuss whether additional information should be included in product advertisements and how advertising links to consumption choices.

Objectives
Students will:
- recognize the connections between advertising and consumption choices
- become critical consumers of youth-directed marketing and advertising

Inquiry/Critical Thinking Questions
- What kinds of ad techniques appeal to youth?
- How does advertising influence consumption?

Time Required
One 45-minute class

Key Concepts
- media literacy
- marketing and advertising

National Standards Addressed
National Council for the Social Studies
1. Culture
4. Individual Development and Identity
7. Production, Distribution, and Consumption

National Science Education Standards
F. Science in Personal and Social Perspectives

National Efs Standards
3.1 Personal Action: Personal Change Skills and Strategies
3.2 Collective Action: Organizational and Societal Change Skills and Strategies

Materials and Preparation
Before class: Each student needs to bring an advertisement that appeals to him or her. This could be a print or online ad, or it might be a recorded television or radio advertisement. Any commercial advertisement, from bumper stickers to T-shirts, can be analyzed.

Agree and Disagree signs: In large letters, write “Agree” in large print on a piece of paper and “Disagree” on another piece of paper. Tape the Agree sign to one wall in your classroom and the Disagree sign to the opposite wall.

Handout: Analyzing an Ad, 1 per student

Activity
Introduction
1. Refer to the Materials and Preparation section for instructions regarding Agree and Disagree signs. Write the following statement on the board: “The point of an advertisement is to make us unhappy with what we have.” (This statement is adapted from Annie Leonard’s The Story of Stuff, www.storyofstuff.org.)

2. Ask students to decide whether they agree or disagree with this statement. Those who agree should stand by the Agree sign. Those who disagree should stand by the Disagree sign.

3. Ask for volunteers from each group to explain why they agree or disagree. Make sure that no one has spoken twice before everyone has spoken once. If a student makes a persuasive case for one side, other students are welcome to switch to that side.

4. After this sides debate, ask students to return to their seats.

5. Share the following statistics with students:
- The average young person in America watches around 40,000 television ads per year.¹

Activity 3: Why Buy? continued

- Companies spent $100 million advertising to kids in 1983. By 2007, they were spending $17 billion per year.\(^1\) (Write out these numbers on the board to emphasize the growth: $100,000,000 and $17,000,000,000.)
- 8- to 12-year-olds spend $30 billion each year.\(^2\)

6. Ask students why they think youth advertising has boomed so much in recent years.

7. Ask students to identify some positive effects of advertising. Conversely, what are some negative effects?

**Steps**

1. Tell students that they are going to discover how advertising impacts their own consumption. Distribute the handout *Analyzing an Ad* to students.

2. Ask each student to use the handout to analyze the ad he or she brought to class.
   - If students are struggling to answer question 9, encourage them to think broadly. Alternatives might be more sustainably produced products, or they might not be new products at all. An alternative to buying a product might be to repair something, to borrow an item, or to do without it altogether.

3. **Option:** Have each student present his or her ad and analysis to the class.

4. Conclude with a discussion using one or more of the following questions.

**Discussion Questions**

1. How does advertising relate to consumption?

2. Think about the advertisements you see every day, from magazine ads to TV commercials. What sorts of values do you think these advertisements reflect? What do you think someone unfamiliar with our culture would think were the most important values of our society, based on advertisements? Do you think these are accurate reflections of your culture?

3. Should sustainability concerns, including the true environmental and social costs of a product, be included in advertisements? Why, or why not?

4. How could the unseen side of production of a consumer product be highlighted to a company’s advantage?

5. Would having more information about the unseen side of production influence what you buy? Why, or why not?

6. Do you think we are sufficiently informed about the sustainability of our consumption habits? If not, how can we become more informed about the global impacts of our consumption?

7. Whose responsibility is it to ensure that products are safe and that people know the ingredients? Consumers/citizens? Government? Companies/manufacturers?

**Additional Resources**

- **Film:** *America the Beautiful*  
  [http://americathebeautifuldoc.com/about/](http://americathebeautifuldoc.com/about/)  
  This 105-minute documentary, directed by Darryl Roberts, takes a look at the beauty industry in the U.S. and the effects of this industry on American society.

- **Book:** *Fast Food Nation*  

- **Article:** *Cidade Limpa* (“Clean City”)  
  This article about São Paulo illustrates the impact that visual advertisements, or the lack thereof, can have on the aesthetics of a city.

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\(^2\) Ibid.
Analyzing an Ad, page 1

1. What product or service is being advertised?

_______________________________________________________________________________________

2. What advertising technique does the ad employ? Choose from at least 1 of the following:

   - **Humor**—Is the ad funny?
   - **Celebrity Endorsement**—Does a celebrity promote the product/service?
   - **Personal Testimonial**—Is a user of the product/service promoting it?
   - **Image**—Will the product/service enhance your image? Does it look cool or sexy?
   - **Product Quality**—Is the product/service of high quality?
   - **Sale or Promotion**—Is there a special sale or limited-time offer advertised?
   - **Other (explain):** ________________________________________________________________

_______________________________________________________________________________________

3. What is the message of the ad?

_______________________________________________________________________________________

_______________________________________________________________________________________

4. What about the ad immediately appeals to you?

_______________________________________________________________________________________

_______________________________________________________________________________________

5. What demographic (age and sex) do you think the ad is targeting?

_______________________________________________________________________________________

_______________________________________________________________________________________

6. Does the ad provide you with information related to what is most important to you when choosing what to buy? (If not, why do you think this information is not included?)

_______________________________________________________________________________________

_______________________________________________________________________________________

7. Do you think the ad is misleading? Why, or why not?

_______________________________________________________________________________________

_______________________________________________________________________________________

Consumption
8. What are ways you would change the ad to make it meet your needs as a consumer?

_______________________________________________________________________________________

_______________________________________________________________________________________

9. Do you think the product/service advertised would improve your life? Why, or why not?

_______________________________________________________________________________________

_______________________________________________________________________________________

10. Are there more sustainable alternatives to buying this product/service—that is, alternatives that would more positively impact local and global economies, societies, or environments?

_______________________________________________________________________________________

_______________________________________________________________________________________

11. Think about things you have bought recently (in the last few weeks). Which one of the following most influences what you buy?

   - **Advertising:** Encouragement from a company to buy its product
   - **Appearance:** How a product looks
   - **Brand loyalty:** You have a commitment to a certain brand and continue to buy this brand repeatedly
   - **Country of origin:** Where a product was made
   - **Durability:** How long something lasts
   - **Environmental impact:** Environmental damage caused by creating (and/or using) the product
   - **Labor:** How the workers who made the product are treated and paid
   - **Popularity:** Whether the product is bought and used by many people
   - **Price:** How much something costs
   - **Product warranty/guarantee:** A promise from a company to repair or replace something that breaks
   - **Recommendation:** Someone you know encourages you to buy a product that he/she uses

_______________________________________________________________________________________

_______________________________________________________________________________________

12. Do you think this is a good reason to buy a product? If not, how will you shop differently in the future?

_______________________________________________________________________________________

_______________________________________________________________________________________
Activity 4: Cashmere Connections

Overview

Students use information from an engaging video to learn about how environmental concerns, economic forces, and social behaviors are connected to the cashmere clothing industry. They then construct a “connection circle” to identify relationships among variables in the system of cashmere production and consumption.

Objectives

Students will:
• learn how demand for consumer products can impact producer communities
• discover how government incentives can drive economic choices
• identify how variables in a system are interconnected
• determine points of intervention to change a system’s dynamics

Inquiry/Critical Thinking Questions
• How do patterns of consumption impact people, economies, and environments?
• How can a system of production and consumption be altered to make it more environmentally sustainable?

Time Required

One 45-minute class

Key Concepts
• systems
• globalization

National Standards Addressed

National Council for the Social Studies
3. People, Places, and Environments
7. Production, Distribution, and Consumption
9. Global Connections

National Science Education Standards
F. Science in Personal and Social Perspectives

National EfS Standards
2.1 Interconnectedness: Systems Thinking
2.2 Ecological Systems: Respect for Limits
2.2 Ecological Systems: Tragedy of the Commons
2.3 Economic Systems: Globalization
2.3 Economic Systems: Resource Scarcity
3.1 Personal Action: Critical Thinking
3.2 Collective Action: Designing a Sustainable System

Materials and Preparation

Internet access
Tools: Butcher paper and markers, or digital sketching tools, 1 set per student group of 3

Activity

Introduction

1. Show the 3-minute video “The Hidden Cost of Cashmere” (directed by student Zane Scheuerlein, Limited Productions, 2007). It can be accessed through the following links:

**Option**: A 4-minute video interview with author Evan Osnos is also available online at [http://www.youtube.com/watch?v=R1InKC_25yQ](http://www.youtube.com/watch?v=R1InKC_25yQ).

**Steps**

1. Break students into groups of 3.

2. Ask student groups to start by making a list of variables from the story shown in the video. *(A variable is a factor that is subject to change over time.)* Each group should list at least 7 variables. *(Examples include price of cashmere, Chinese government support for cashmere production, size of goat herds, marketing of discount cashmere products, presence of trees and grass, availability of cashmere products, popularity of cashmere, desertification, and dust clouds.)*

3. Tell students that they will use their lists to create a connection circle, a systems modeling tool that helps to visualize connections among variables within a system.

4. You can use a simple example like this one to illustrate how a connection circle works:

   - **Number of Books Read**
   - **Reading Instruction**
   - **Enjoyment of Reading**
   - **Time Reserved for Reading**

   Explain that variables are written around the outside of the circle. Each of these variables is a factor that is subject to change. The arrows are drawn from cause to effect. For example, as reading instruction is increased, the number of books read also increases. As the number of books read increases, so does enjoyment of reading.

   - **Alternative**: Various other systems models could be utilized in this activity, including causal loops, a fishbone diagram, and an iceberg model.

   - **Alternative**: Rather than constrict students to a particular model, allow them to devise their own graphic representation to show how the variables are connected. Ask groups, either on butcher paper or using computer tools, to sketch a diagram explaining how these 7 variables are connected to desertification of the Alashan Plateau.

5. Pass out paper and markers/pens to each group.

6. Instruct groups to draw a large circle on their paper and list their variables around the outside edge of the circle.

7. Give students 10 minutes to determine how the variables are connected with each other. When one variable is *directly* connected to another variable, students should draw an arrow from the cause to the effect. For example, an arrow might be drawn from ‘goat herd size’ to ‘desertification’ because an increase in herd size results in increased desertification. Another arrow might be drawn from ‘government incentives’ to ‘price of cashmere’ because an increase in government incentives results in a decrease in the price of cashmere.

   - **Note**: Some variables may be connected to many others, and some variables may not have any connections to other variables. When a variable is not connected to any others, it is likely that another variable needs to be added to the outside of the circle.
A sample completed connection circle is shown above.

- **Note** that students may come up with other variables, especially if they read the newspaper story.

8. As students work, walk around the room and ask groups to articulate why they made connections between certain variables.

9. Ask student groups to determine possible points of intervention that could improve the environmental sustainability of the system (i.e., reduce the dust storms mentioned at the end of the video). Have students list these on the back of their connection circle. For each point of intervention, students should identify possible unintended consequences and ways that these consequences can be avoided.

10. Below the connection circle on the front of their paper, ask each group to recommend 1 action that they think will make a lasting positive impact on the people and the environment of the Alashan Plateau. Their recommendation should be accompanied with a short explanation of how this will help people and the environment in the long term.

11. Ask each group to show their connection circle and share their recommendation with the class. Allow students from other groups to ask questions or respectfully challenge a group’s recommendation.

12. Conclude with a class discussion or journal activity using one or more of the following questions.

**Discussion Questions**

1. How does creating a connection circle help you to solve a problem?

2. By a system’s very nature, any change in a system affects other parts of that system. How would your group’s recommendation affect other variables in the system?

3. How do the goat herders’ short-term and long-term economic gains conflict?

4. Currently land in the Alashan Plateau is a common resource, meaning everyone can use it. How might private ownership of grazing land change the system of cashmere production? Are there other ways to manage the grazing commons that would result in a different outcome?
Activity 4: Cashmere Connections  continued

5. How could the phrase “Think Global, Act Local” apply to this situation?

6. How can individual consumers like you affect the outcome of the system in the video?

Additional Resources

- Article: High cost of cashmere on Mongolia plains
  This CNN World article by Kit Gillet and Jeffrey Lau make the links between demand for cashmere, a rising goat population, and the erosion of pastureland in Mongolia.

- Activity: Do You Want Fries with That? Learning about Connection Circles
  A lesson in the Creative Learning Exchange newsletter in which authors Rob Quaden, Alan Ticotsky, and Debra Lyneis demonstrate how to use connection circles to understand a magazine article about the health risks associated with rising french-fry consumption.
Activity 5: Hidden Costs

Overview
Students work in teams to identify externalities involved with paper products. They brainstorm ways to place a value on externalities, considering how externalities might be measured, attributed to an individual or company, and tracked.

Objectives
Students will:
• understand that externalities represent indirect costs to individuals, communities, and/or ecosystems
• identify externalities associated with distinct stages of the materials economy
• brainstorm ideas for measuring, attributing, and tracking externalities

Inquiry/Critical Thinking Questions
• Why do externalities exist?
• Who, if anyone, pays for externalities?
• How might externalities be accounted for during the production of a material good?

Time Required
One 60-minute class

Key Concepts
• externalities
• true cost accounting

National Standards Addressed
National Council for the Social Studies
7. Production, Distribution, and Consumption

National Science Education Standards
F. Science in Personal and Social Perspectives

National Efs Standards
1.1 Intergenerational Responsibility: Intergenerational Equity
2.2 Ecological Systems: Respect for Limits
2.2 Ecological Systems: Environmental Justice
2.3 Economic Systems: True Cost Accounting
2.4 Social and Cultural Systems: Social Justice
3.2 Personal Action: Accountability
3.2 Collective Action: Local to Global Responsibility

Materials and Preparation
Internet access
Handout: Exposing Externalities, 1 per student

Activity

Introduction
1. On the board, draw a simple tree on the far left and a recycling bin on the far right.

2. Ask students to brainstorm as a class the steps involved in the lifecycle of a magazine, from the tree on the left to disposal in the recycling bin on the right. Have student volunteers come write or draw any steps between the tree and the recycling bin on the board. Allow students to continue adding steps to the lifecycle until at least 5 steps have been identified.
Activity 5: Hidden Costs  continued

3. Choose one step and ask students to brainstorm possible externalities associated with this step. (As a reminder, externalities are costs or benefits that go unpaid. Externalities, often unforeseen or unintended, are not paid directly by producers and/or consumers. People external to the production and consumption of an item may pay these costs indirectly through pollution remediation, health care, or loss of property value. People may also indirectly benefit from positive externalities, which improve the well-being of a third party.)

Steps

1. Break students into groups of 4. Distribute 1 copy of the handout Exposing Externalities to each student.
   Option: You may want to have different groups research externalities for different types of products: clothing, cosmetics, food products, etc.

2. Instruct student groups to identify externalities through research and discussion. They should identify at least 2 externalities for each of the following steps of the materials economy associated with their product: extraction, production, distribution, and disposal. Group work may be facilitated by each student researching externalities for 1 step.
   Option: The web links listed in the Additional Resources at the end of this lesson provide starting points for student research.

3. Students should share their answers with their groups. Afterward, ask student groups to discuss and answer the follow-up questions at the bottom of the handout.

4. Conclude with a class discussion using the following questions.

Discussion Questions

1. What role, if any, do consumers play in encouraging externalities?
2. What role, if any, could consumers play in discouraging externalities?
3. Do governments have an impact on externalities? Explain.
4. Why do you think it is difficult to put a price on externalities?
5. What procedures or strategies might help to better account for externalities in the purchase price of an item?

Additional Resources

Resources for research on the paper industry:

- Website: Trees into Paper
  http://conservatree.org/learn/EnviroIssues/TreeStats.shtml

- Report: Environmental Impacts of Logging
  http://www.forestsmonitor.org/fr/reports/550066/550083

- Video: Copy Paper How It’s Made
  http://www.youtube.com/watch?v=FO4pEpejE1s
  A 5-minute Discovery Channel video showing how paper is manufactured.

- Website: How is paper made?
  http://www.straightdope.com/columns/read/2231/how-is-paper-made

- Website: Packaging & Sustainability

- Website: Municipal Solid Waste
  http://www.epa.gov/epawaste/nonhaz/municipal/index.htm
**Exposing Externalities**

**Directions:** Think about the various steps that go into creating and producing paper for magazines. Also, consider the steps involved in distributing magazines and disposing of them. Complete the following table by identifying at least 2 externalities for each step in the lifecycle listed.

<table>
<thead>
<tr>
<th>Step in Lifecycle</th>
<th>Identify a potential externalized cost associated with this step.</th>
<th>Who might indirectly pay for this cost in the long term? (Explain.)</th>
<th>Who do you think should pay?</th>
<th>What is a way to reduce the likelihood of this externality?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a. extraction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1b. extraction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2a. production</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2b. production</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3a. distribution</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3b. distribution</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4a. disposal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4b. disposal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Follow-up Questions**

1. What, if any, externalities might be associated with actually consuming (that is, buying and reading) magazines?

2. Are these externalities *positive* (unanticipated benefits) or *negative* (unforeseen costs)? Explain.

3. Consider the definition of *sustainability* (*meeting the needs of the present without impacting future generations’ abilities to meet their needs*). How are externalities linked to sustainability?
**Teacher Master: Exposing Externalities**

**Note:** These are merely suggestions; many more answers are possible.

<table>
<thead>
<tr>
<th>Step in Lifecycle</th>
<th>Identify a potential externalized cost associated with this step.</th>
<th>Who might indirectly pay for this cost in the long term? (Explain.)</th>
<th>Who do you think should pay?</th>
<th>What is a way to reduce the likelihood of this externality?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a. extraction</td>
<td>soil erosion</td>
<td>people whose drinking water supply is sullied by sediment</td>
<td>selective logging, so that some roots remain</td>
<td></td>
</tr>
<tr>
<td>1b. extraction</td>
<td>loss of forest habitat</td>
<td>hunters</td>
<td>retaining some stands of trees</td>
<td></td>
</tr>
<tr>
<td>2a. production</td>
<td>water used to create paper</td>
<td>people who share the water supply with the manufacturer</td>
<td>develop process whereby factory can reuse waste water</td>
<td></td>
</tr>
<tr>
<td>2b. production</td>
<td>energy used during process</td>
<td>if electricity is supplied by coal, people with asthma could be affected</td>
<td>use of renewable fuels that do not pollute the air</td>
<td></td>
</tr>
<tr>
<td>3a. distribution</td>
<td>depletion of oil resources</td>
<td>as oil becomes scarce, everyone who buys gasoline could be affected</td>
<td>pack trucks as tightly as possible, so fewer trips need to be made</td>
<td></td>
</tr>
<tr>
<td>3b. distribution</td>
<td>climate change</td>
<td>people who live in vulnerable environments, like coasts or islands</td>
<td>switch to fuels that reduce contributions to climate change</td>
<td></td>
</tr>
<tr>
<td>4a. disposal</td>
<td>takes up landfill space</td>
<td>taxpayers may have to fund creation of a new landfill</td>
<td>increase recycling</td>
<td></td>
</tr>
<tr>
<td>4b. disposal</td>
<td>pollution from waste-hauling truck exhaust</td>
<td>everyone—we all breathe the air</td>
<td>educate people to reduce waste</td>
<td></td>
</tr>
</tbody>
</table>

**Follow-up Questions**

1. What, if any, externalities might be associated with actually consuming (that is, buying and reading) magazines?
   - Improved knowledge—positive externality; Reduced time for other activities—negative externality

2. Are these externalities positive (unanticipated benefits) or negative (unforeseen costs)? Explain.
   - See previous answer.

3. Consider the definition of sustainability (meeting the needs of the present without impacting future generations’ abilities to meet their needs). How are externalities linked to sustainability?
   - Negative externalities present obstacles for future generations to meet their needs, such as clean air and water and ample energy resources.
Activity 6: Opinions Wanted

Overview
Students write an op-ed article to express their ideas about how we can consume in ways that benefit both producers and consumers.

Objectives
Students will:
• analyze various aspects of our system of consumption, as explored in previous lessons and readings
• synthesize their ideas into a single call to action for sustainable consumption
• write an op-ed article to persuade others to respond to their call to action

Inquiry/Critical Thinking Questions
• What actions would make consumption more sustainable?
• Which of these actions is most critical for consumers to take?
• What information and messaging would best persuade citizens to take action or change their behaviors?

Time Required
One 60-minute class

Key Concepts
• sustainable consumption
• civic responsibility

National Standards Addressed
National Council for the Social Studies
6. Power, Authority, and Governance
7. Production, Distribution, and Consumption
10. Civic Ideals and Practices

National Science Education Standards
F. Science in Personal and Social Perspectives

National EFS Standards
1.1 Intergenerational Responsibility: Intergenerational Equity
3.1 Personal Action: Personal Responsibility

Materials and Preparation
Overhead: Writing an Op-Ed
(Optional) Bring to class a variety of op-ed pieces as examples; many can be found on The New York Times website: http://www.nytimes.com/interactive/2010/09/25/opinion/opedat40.html

Activity
Introduction
1. As a class, ask students to reflect on ways in which consumption is not sustainable. They might recall information from the chapter reading or topics discussed in previous activities/lessons.
2. As they call out ideas, jot key words down on the board.

Steps
1. Tell students they are each going to determine 1 action that citizens like themselves could take to consume in ways that benefit both producers and consumers (i.e., consume in ways that are sustainable). This could include direct or indirect benefits, such as environmental preservation or economic stimulation. They will be expressing their opinion about what consumers should do through an op-ed.
Activity 6: Opinions Wanted  continued

2. Go through the overhead *Writing an Op-Ed* with students. You could display this using a whiteboard or document camera, or you could distribute copies to students.
   • **Alternative:** Instead of going through these steps arbitrarily, read through an op-ed with students and ask them the questions from the overhead: *What is it? (an op-ed) …What is the purpose? …How should it be written?*

3. Have students write their individual op-ed pieces based on their own beliefs about what their fellow citizens should do in order to consume in more sustainable ways.
   **Option:** Provide students with examples of published op-ed pieces, to give them an idea of how to write their own.

4. Students could publish their op-ed articles in a school newspaper, on a blog or website, or in a community or national newspaper.

5. Conclude with a class discussion of at least 1 of these questions.

---

**Discussion Questions**

1. Do you think an op-ed is an effective tool for changing personal behaviors? Why, or why not?
2. What would most encourage you to change your behaviors/actions? Is it a particular type of message, or from a certain messenger?
3. How did you choose which action to focus on in your op-ed? Why would you want to encourage people to take this particular action instead of other actions?

**Additional Resource**

- **Articles:** *The New York Times*

*The New York Times* is famous for its opinion pages. Students can find examples of recent opinion and editorial pieces here.
Writing an Op-Ed

**What is it?**

A newspaper article that expresses the author’s opinion

**What is the purpose?**

To persuade readers about how to improve something

**How should it be written?**

**Characteristics:**

- Short (no more than 750 words)
- Clear and easy to read
- Persuasive

**Tips:**

- Make a single point
- Hook your readers at the very beginning
- Explain why your readers should care
- Include strong examples that support your opinion
- Incorporate humor and personality, where appropriate
- End with a concise restatement of your position
Human activities have led to a significant increase in greenhouse gas concentrations in our atmosphere.

Increasing greenhouse gas concentrations in our atmosphere are causing the Earth’s climate to change.

The process of climate change cannot be reversed instantaneously or even within our lifetimes.

Impacts of a changing climate will affect people and places all over the world in diverse ways.
Guiding Questions
• What natural and anthropogenic processes influence climate change?
• How can we sustainably address the impacts of changing climate?

Key Concepts
• greenhouse gases
• greenhouse effect
• carbon sources
• carbon sinks
• fossil fuel
• climate change
• carbon footprint

Supporting Vocabulary
• weather
• climate
• correlation
• anthropogenic
• albedo effect
• acidification
• mitigate

Service Learning Component
Service Learning Project Idea
• Question: How much carbon dioxide is your school generating and what can students, teachers, and staff do to limit the school’s carbon footprint?
• Hook Resource: Cool School Challenge at Mountlake Terrace High School
  http://www.youtube.com/watch?v=Uak_jtvuaVg&feature=plcp

Example of the Cool School Challenge being undertaken by a high school in Washington State. Additionally, here are some eco tips from school in Bellingham, Wash.
• Project: As a part of the Cool School Challenge (mentioned in the chapter’s Youth Profile), students will perform an energy audit of their classroom to identify major sources of CO₂ emissions. Students will then brain-storm strategies for reducing CO₂ emissions in their classroom and create a CO₂ reduction goal for the Challenge. Students may recruit other classrooms to participate in the Challenge as well, perhaps even the whole school.

• Additional Resource:
  • Website: EPA’s Climate Change Calculator Kit
  http://www.epa.gov/climatechange/wycd/school.html
  A tool which calculates greenhouse gas emissions by assessing a school’s energy use, waste, and land management.

Project Based Learning Component
Project Based Learning Idea
• Overview: Students investigate a popular controversy surrounding climate change, such as: Is climate change occurring more rapidly now than it has in the past? Are human activities affecting the climate? By researching scientific data, students will draw their own conclusions about the severity of climate change, as well as the influence of humans on the Earth’s changing climate today.
• **Driving Question:** Why is climate change a controversial topic of discussion?

• **Hook Resource:** *The Climate Change Controversy: What’s It Really About?*
  

  This article, written by Al Bredenberg in 2011, identifies the key arguments presented by those who believe Earth’s changing climate is, in part, due to human activity, and those who believe Earth’s climate is not changing or that any climatic changes are not due to human actions.

• **Individual Project:** A student will identify 2 points of controversy or disagreement related to climate change and produce a report for an online format (e.g., wiki or blog). For each point of controversy or disagreement, the student will summarize both sides of their argument and present their own analysis.

• **Group Project:** Student groups will identify 3 points of controversy or disagreement related to climate change, presenting their research and analysis on each point to the rest of the class using a visual presentation tool (e.g., PowerPoint).

• **Additional Resources:**
  
  • **Website:** *Information Is Beautiful*
    

  Data visualizations and explanations provided for common global warming skeptic arguments and today’s scientific consensus.

• **Website:** *Skeptical Science*
  

  Scientific evidence is provided to counteract some misconceptions related to climate science. Explanations are provided at 2 levels of scientific literacy: basic and intermediate.

**Summative Assessment**

Chapter Test

**Connections**

**World History connections:**
Industrial Revolution; prehistoric climate records; ancient Norse civilization; United Nations climate change negotiations

**Economics connections:**
Financial impacts of a changing climate; shifting trade routes; technological innovations associated with climate adaptation; economic incentives for climate conscious business decisions

**Geography connections:**
Localized impacts of climate change; human migration; shifting growing seasons; ocean acidification; sea level rise

**Civics connections:**
Personal and structural solutions to climate change
## Activities in Teacher’s Guide: Suggested Sequence

### Day 1

**Reading:** *Introduction to Climate Change*

**Activity 1:** *Changes All Around*—In small groups, students examine the climate of 6 distinct locations. Students will then predict what might happen to the climate of a particular region as Earth continues to warm and share these predictions with the rest of the class.

### Day 2

**Reading:** *Background on Climate Change*

**Activity 2:** *Determining Trends*—In small groups, students will learn about different environmental and societal changes that have occurred since the Industrial Revolution. Each group will share trends they discern from their assigned variable with the rest of the class. The class will then work together to see how all of the variables might be related to one another and how each of them could relate to climate change.

### Day 3

**Reading:** *Climate Change Today*

**Activity 3:** *It All Adds Up*—Students gather information about their personal energy use to calculate their carbon footprint using an online carbon calculator. Each student will compare their personal result with the carbon footprint of an average person living in the United States as well as other countries around the world. To close, students will discover ways to reduce their carbon emissions.

### Day 4

**Reading:** *Pathways to Progress: Climate Change*

**Activity 4:** *So Many Solutions!*—Students consider the costs and benefits of a variety of responses to climate change to determine which solutions might be the most sustainable.
Discussion Questions from the Chapter Reading

**Introduction to Climate Change**

1. What is an observation you could make about the climate where you live or how the climate where you live has changed over the years?
2. What is the difference between weather and climate?

**Background on Climate Change**

3. What proxies have scientists used to study historical climate trends?
4. Why do you think the Norse chose to maintain their way of life and not adapt to the colder temperatures?

**Climate Change Today**

5. Who is the most vulnerable to climate change?
6. Do you believe humans will be able to adapt to climate change? What evidence do you have to support this opinion?
7. What is your assessment of the predictions made about climate change? What predictions worry you the most? Are you doubtful of any of the predictions made?

**Pathways to Progress: Climate Change**

8. What do you think is the most effective way to mitigate climate change on each of the following levels: individual, local, national, and global?
9. How can you, as an individual, impact Earth's climate in both positive and negative ways?
Chapter Assessment: Climate Change, page 1

Recall
Match the following words on the left with their definitions on the right.

1. Carbon footprint
   tool for assessing how our lifestyle choices may generate carbon dioxide emissions

2. Carbon source
   process by which gases in Earth’s atmosphere retain infrared radiation (heat) from the sun, warming Earth’s surface

3. Climate change
   system that releases more carbon than it absorbs

4. Greenhouse effect
   a significant shift in the Earth’s overall climate occurring over an extended period of time

Reasoning/Explanation
Complete the following multiple-choice questions by choosing 1 correct answer.

5. Use the flow chart to help answer the multiple-choice question below.

A forest is clear-cut to make way for agriculture. Carbon dioxide is released into the atmosphere. X The greenhouse effect is intensified.

Which statement best replaces the X in the flow chart?

a. Once the crops have sprouted, the carbon dioxide release will be recaptured during photosynthesis.”

b. The area has transformed from a carbon sink to a carbon source, causing more carbon dioxide to be released than absorbed.

c. The release of carbon dioxide to the atmosphere will reduce the amount of sunlight the Earth receives, cooling the planet.

d. Methane will be released from the exposed soil, causing sickness to spread among nearby residents.

6. Detrimental impacts of climate change on Pacific islands may include all of the following except:

a. contaminated drinking water

b. coastline erosion

c. deforestation

d. destruction of local fisheries
7. Which of the following is the most effective way to **prevent** further climate change today?
   a. drive less, walk and bike more
   b. invest your retirement savings in a solar-powered outdoor lights
   c. build sea walls to limit coastal erosion
   d. create an artificial volcano that will help dim the sun

8. Which is not an example of a greenhouse gas?
   a. carbon dioxide
   b. methane
   c. nitrous oxide
   d. sulfur dioxide

9. Which statement **best** describes how carbon dioxide is essential for human life?
   a. Carbon dioxide is absorbed by our skin cells to cool down our body temperature.
   b. Carbon dioxide is an element found in our atmosphere that helps cool down the planet.
   c. Carbon dioxide is the byproduct of decomposition.
   d. Carbon dioxide is absorbed by plants during photosynthesis and animals exhale carbon dioxide as a by-product of cellular respiration.

10. Use the graphic organizer below to help answer the question:

    What example of scientific observations could **best** replace the X for helping scientists study the Earth's previous climate cycles?
    a. collected rain water
    b. pollen buried in lakes
    c. dinosaur bones
    d. wetland soil samples

11. The following activities will add to your carbon footprint **except:**
    a. eating a hamburger for lunch
    b. flying to Paris for a student exchange program
    c. accidently leaving the front porch light on during the day
    d. playing a game of pick-up basketball after school
12. How could making predictions about future climate change impacts prove helpful?
   a. Predictions may help us determine the causes of past climate change phenomenon.
   b. Predictions may offer us a precise forecast for the average temperature and rainfall in our region over the next 200 years.
   c. Predictions may help us anticipate and prepare for the worst-case scenarios as well as consider what we can do now to mitigate those circumstances.
   d. Predictions may support be used as propaganda to manipulate energy policy.

13. What statement best describes how climate change may be linked to social justice issues?
   a. Those who are most affected by climate change are often the ones who have contributed the least to greenhouse gas emissions.
   b. Climate change will lead to a significant loss in biodiversity.
   c. Only developing countries will experience the impacts of climate change while developed countries are unaffected.
   d. Climate change can only be prevented using expensive technology.

14. How does the image below depict an impact of climate change?

   ![](http://www.bbc.co.uk/news/world-europe-18978483)

   a. illustrates the need for more shipping routes with an ever changing climate
   b. portrays changing wind patterns around the Caribbean
   c. reveals a rapid melting of an ice sheet on Greenland on a scale never before seen
   d. shows Greenland before and after Ice Age events
Chapter Assessment: Climate Change, page 4

Application/Complex Reasoning
Answer the following short answer questions below.

15. As discussed in the chapter, climate change will affect different parts of the world in different ways.
   - **Part A.** Explain 3 ways in which climate change will affect people differently around the world.
   - **Part B.** Describe 1 solution for 1 of these problems.

16. Consider the following statement made by United Nations Secretary-General, Ban Ki Moon, about climate change in 2009:

   "It is, simply, the greatest collective challenge we face as a human family."\(^1\)
   - **Part A.** Why is climate change a “collective” challenge?
   - **Part B.** What might be a “collective” solution?

   \(^1\)https://www.telegraph.co.uk/news/earth/environment/climatechange/6004553/Ban-Ki-moon-warns-of-catastrophe-without-world-deal-on-climate-change.html
Recall (4 points)
1. Carbon footprint—tool for assessing how our lifestyle choices may generate carbon dioxide emissions
2. Carbon source—system that releases more carbon than it absorbs
3. Climate change—a significant shift in Earth’s overall climate occurring over an extended period of time
4. Greenhouse effect—process by which gases in Earth’s atmosphere retain infrared radiation (heat) from the sun, warming Earth’s surface

Reasoning/Explanation (10 points)
5. b
6. c
7. a
8. d
9. d
10. b
11. d
12. c
13. a
14. c

Application/Complex Reasoning (6 points)
15. Part A: Answers will vary. (3 points)
   • Drought and famine
   • Flooding and storms
   • Increased rainfall
   • Coastal erosion and saltwater inundation
   • Spread of disease
   Part B: Answers will vary. (1 point)
   • Migration
   • Seawalls
   • Aid from other countries
   • Limiting GHG emissions
   • Renewable energies
16. Part A. Answers will vary. (1 point)
   • Everyone around the world will be affected
   • Human societies all over the world have contributed to climate change
   • Climate change is altering regional climate patterns and Earth’s overall climate
   Part B. Answers will vary. (1 point)
   • Obligations on all nations to reduce their GHG emissions
   • Obligations on individuals to limit their carbon footprint
   • A global fund to provide aid and adaptive technologies to those people and countries facing the immediate impacts of climate change
Activity 1: Changes All Around
Adapted from “Regional Effects of Global Warming” by Elizabeth K. Andre, Will Steger Foundation

Overview
In small groups, students examine the climate of 6 distinct locations. Students will then predict what might happen to the climate of a particular region as Earth continues to warm, and share these predictions with the rest of the class.

Objectives
Students will:
• examine the climatic conditions of different regions around the world
• consider the common manifestations of climate change
• predict how a rise in average global temperature might impact particular regions
• explore how humans will be impacted by changes in their own environment and by changes in foreign environments
• identify ways to prevent or mitigate the effects of climate change on different environments

Inquiry/Critical Thinking Questions
• How does the climate differ around the world?
• As Earth’s overall temperature rises, how might the climate of a particular region be effected?
• What are some common impacts of climate change?

Time Required
One 50-minute class

Key Concepts
• regional climate features and variations
• global impacts of climate change
• interconnections

National Standards Addressed
National Science Education Standards
A. Science as Inquiry
C. Life Science
D. Earth and Space Science
F. Science in Personal and Social Perspectives

National Council for the Social Studies
2. Time, Continuity, and Change
3. People, Places, and Environments
9. Global Connections

National EfS Standards
2.1 Interconnectedness: Systems Thinking
2.2 Ecological Systems: Respect for Limits
2.3 Economic Systems: Ecosystem Services

Materials/Preparation
Handout: Climate Impact Projections, 1 per group
Cards: Regional Climate Summary, 1 per group
Handout: Climate Prediction Sheet, 1 per group

Activity
Introduction
1. Ask students if they think climate change is different than global warming. Have them explain why or why not.
2. Have students review/brainstorm some common elements of climate change worldwide (e.g., changes in precipitation, rising sea levels).
3. Tell students that they are going to be making more specific predictions about climate change impacts for specific locations in different parts of the world.
Activity 1: Changes All Around continued

Steps

1. Divide students into groups of 2 to 4.

2. Hand out card 1 Regional Climate Summary to each group. If students do not know the location of the region discussed in their handout, help them find it on a world map.

Option: Instead of using the Regional Climate Summaries, have students research information about specific countries using the CIA World Factbook (http://www.cia.gov/cia/publications/factbook/index.html), the World Bank (http://data.worldbank.org/), and World Climate (http://www.worldclimate.com). Students can find information about population, GDP, economic sectors, geographic features, climate trends, and signs of climate change, to help them predict climate impacts for their assigned country.

3. Give each group a Climate Impact Projections handout.

4. Give the groups 10 to 20 minutes to research and make a prediction of how the climate in their assigned region may change as Earth continues to warm. Have the group members read through the Climate Impact Projections and then discuss how the general trends described might affect their region using information from the Regional Climate Summary.

5. Have each group write their predictions on the Climate Prediction Sheet, and let them know they should be prepared to share their predictions with the rest of the class.

6. Ask each group to share with the class a short description of their region and its climate, as well as the group’s predictions for that region’s future climate and how they reached these predictions.

7. When listening to the other groups, encourage students to think about how the impacts other students are predicting might affect the climate in their assigned environment.

8. Continue with a discussion using the following questions.

Discussion Questions

1. Was it difficult to make predictions, even with the information and knowledge you had? Why or why not? What additional information or tools would be helpful in making more accurate predictions?

2. How important do you think it is to make accurate projections about climate change so steps can be taken to reverse, mitigate, or prevent the impacts of climate change?

3. What kinds of connections did you discover between climate change impacts in the region you researched and other places?

4. Are any environments impacted more (i.e., more vulnerable to climate change) than others? What characteristics of these environments make them especially sensitive to climate change?

5. What are some variables that are likely to affect the rate of future climate change? (e.g., population growth, economic development, global equity, type and efficiency of energy use)

6. How might we be contributing to the impacts of climate change on other environments? What can we do to mitigate these impacts?

Technology Extension

Have students examine computerized climate models from the Hadley Centre for Climate Prediction and Research: http://www.metoffice.gov.uk/climate-change. (Click on “Guide,” then “Future,” and finally “Climate Projections.”) One of the animated models shows predicted global temperature changes from 1950 to 2100. The other shows predicted sea ice coverage from 2000 to 2100.
Activity 1: Changes All Around  continued

Based on what they have learned about climate change predictions in this lesson, ask students to identify some of the uncertain variables that must have gone into these models (e.g., future population growth, economic growth, measures to reduce greenhouse gas emissions, etc.). Have them imagine how these models would be altered by a change in these variables. Students can create drawings of these new “models” for specific time periods.

Additional Resources

- **Website:** Climate Witness
  
  [http://www.panda.org/climatewitness](http://www.panda.org/climatewitness)
  
  Climate Witness is a World Wildlife Fund (WWF) initiative to document the direct experiences of people who are witnessing the impacts of climate change on their local environment today. WWF works with scientists around the world who provide scientific background information to the climate witness testimonies. Search the interactive world map to find witness stories coupled with commentary from climate scientists.

- **Website:** Climate Connections: A Global Journey
  
  
  Students can click on an interactive world map to hear and read stories from National Public Radio (NPR) related to climate change around the world.

- **Website:** Global Warming Effects Map
  
  
  National Geographic provides an interactive map with expected impacts of climate change in various regions. Students can click on specific locations on the map to learn about these impacts.

- **Documentary:** There Once was an Island: Te Henua e Nnoho
  
  
  Film about an island community in Papua New Guinea who are experiencing impacts of climate change today.

References for Student Handouts

**Climate Impact Projections**


Activity 1: Changes All Around  continued

Regional Climate Summaries

For basic country background information and statistics:

Norway:

Iowa:

Southern California:

Republic of Chad:

Amazon River Basin:
Increasing Temperatures

Scientific models suggest the global average temperature is likely to rise between 3.2 and 7.2°F (1.8–4.0°C) during the 21st century. Temperatures will not rise equally everywhere, however. Land will warm more than oceans. The centers of continents will warm more rapidly than land near the oceans. Landmasses in higher latitudes (polar regions) are also predicted to warm more than in lower latitudes (tropical regions). For example, the Arctic is projected to warm much faster than tropical regions during the 21st century.

The warming trend is not expected to be consistent across seasons. Winters are likely to warm more than summers. Consequently, the increased temperatures may change some precipitation from snow to rain.

Consequences of higher temperatures may include the following:
• more heat-related deaths, especially in urban areas and among poor people
• decreased use of energy for heat (in cooler climates) and increased use of energy for air conditioning
• melting glaciers and thawing permafrost (permanently frozen ground)
• later frosts, earlier spring plantings, and longer growing seasons in cooler climates
• reduced growing season and increased heat damage to crops in warmer and drier climates
• poleward (i.e., toward north or south poles) shift of plant and animal species
• earlier spring migrations of birds and fish
• increased heat stress to wildlife and livestock
• increased risk of drought and forest wildfires
• increased susceptibility of trees and crops to pests
• shifts in tourist destinations

Changes in Precipitation

Warmer temperatures are expected to lead to changes in the water cycle, and global mean precipitation is expected to increase. However, it is difficult to predict how much the amount of precipitation will change in any given area. Climate models predict an increase in the frequency of heavy precipitation events in the 21st century, particularly in tropical regions and (near the equator) and high latitudes (near the poles). Conversely, it is likely that precipitation will decrease in subtropical and mid-latitude regions.

A warmer climate increases the likelihood of precipitation extremes, including both droughts and floods. Consequences of these extreme events may include increased stress on insurance systems and government disaster relief systems, increased damage to plants and crops, and increased risk of forest fires.

Shifting Freshwater Supplies

Climate change has the potential to affect both surface water and groundwater storage. Climate change is expected to affect groundwater recharge rates. The recharge (water that moves from Earth’s surface down into the ground) that used to happen in spring will move to winter, and the summer recharge will decrease. This may affect the quantity of groundwater stored in aquifers, which are used for municipal drinking water and for irrigation.

Higher temperatures will increase glacial melt, leading to higher river flows in the short term. That glacial melt is expected to decrease in the future, as there is less glacial mass remaining. Reduced snowpack, another anticipated result of climate change, will affect communities that depend on snowmelt for drinking water. A warmer climate may also adversely impact water quality; heat promotes growth of algal blooms, bacteria, and fungi.
Changes to Ocean Chemistry
Global ocean heat content is expected to continue to increase. Most of the increase will happen near the surface of the ocean. The Atlantic Ocean accounts for about half of the global increase in ocean heat content.

Globally, the world’s oceans are becoming less saline, although this is not the case in all places (salinity has actually increased in subtropical waters). This may be due to increased precipitation, higher runoff from land, and melting ice. The Pacific Ocean is overall warming and “freshening.”

The increased carbon dioxide in Earth’s atmosphere affects the amount of carbon dioxide in oceans. The world’s oceans are becoming more acidic. Coral are particularly sensitive to acidification; they may die as a result. Coral reefs, which are often brightly colored, appear bleached when the coral die. Coastal communities that rely on fish and other marine animals living around these coral reefs will be affected.

Rising Sea Levels
Sea level will continue to rise as a result of global warming. Part of this rise is due to thermal expansion of the oceans (as water gets warmer, it becomes less dense and therefore takes up more space), and part is due to melting glaciers and icecaps. Thawing permafrost is also expected to contribute up to 5 millimeters to ocean levels in the 21st century.

Scientists have so far been unable to predict precisely how much and how quickly the oceans will rise because there are so many variables, including how much glaciers will melt, how much sea water will expand, and how ocean circulation patterns will change. Rising sea levels will make low-lying coastal areas, deltas, and small islands at risk for flooding and erosion. Some very low-lying islands and other areas may need to be evacuated.

Spreading Disease Vectors and Pests
As the climate warms, disease vectors (things that carry disease) like mosquitoes and ticks will be able to extend their ranges into places that were previously too cold. At the same time, climate change may increase waterborne pathogens (microorganisms that cause disease), decrease water and air quality, and decrease the amount and quality of available food in some regions. These effects will be most severe in developing countries and among the poor.

In areas with traditionally cold winters, the hard frosts kill off insect pests. Warmer winters would enable more insect pests to survive. This could threaten forests, agricultural fields, and other landscapes.

Climate Change
Region #1: Maldives

This island nation, located in the Indian Ocean about 435 miles (700 kilometers) southwest of Sri Lanka, is smaller than one-tenth of the U.S. state of Rhode Island and is home to almost 400,000 people. The Maldives holds the record for being the flattest and lowest nation. Its highest natural elevation is 7.5 feet (2.3 meters) above sea level, although in certain areas the land has been constructed to be somewhat higher. The Maldives is composed of 26 atolls, which are low-lying coral islands, and 1,190 islands (200 of which are inhabited by people). Islets are mounds of broken coral and other reef detritus (waste) that stick out of the water in shallow lagoons.

The December 2004 Tsunami almost completely flooded the Maldives with waves of up to 5 feet (1.5 meters) high. The tsunami killed at least 75 people and the devastation from the waves left many people homeless. After the tsunami, the shape of the islands had changed and maps of the country had to be redrawn.

The two major industries of the Maldives are tourism and fisheries. Each year, more than half a million tourists visit the Maldives. Fisheries are the second leading economic sector, although the annual fish catch has been dropping.

The Maldives has one of the highest per capita GDPs (gross domestic product, which is one way that economists measure wealth) of all the nations in South Asia. The Maldives GDP is about US $8,400 per person per year.

Region #2: Norway

The Scandinavian nation of Norway is approximately the size of the U.S. state of New Mexico and is home to 4.7 million people. Norway is a long and thin country with a very long coastline bordering 5 bodies of water (North Atlantic Ocean, Barents Sea, Arctic Ocean, North Sea, and Norwegian Sea). The northern part of Norway is north of the Arctic Circle. More than two-thirds of Norway is covered in rugged mountains. Several major glaciers occupy the central mountain plateau.

The moderating influence of the oceans and the Gulf Stream make the climate in coastal Norway quite temperate, considering how far north it is. Temperatures in the capital, Oslo, average 61°F (16.4°C) in the summer and 24°F (–4.3°C) in the winter. The climate farther inland and to the north can be more severe.

In the past century, however, Norway has been experiencing warmer temperatures. In 2009, the mean temperature was 1 degree Celsius higher than the average from 1900 to 2009. Deviations from the mean are even higher in the Arctic regions in the northern part of the country.

The economy of Norway is based on petroleum and natural gas exports, forestry, fishing, mining, and hydroelectric power. Less than 3% of the land in Norway is arable (able to be cultivated with crops).
Region #3: Iowa

The U.S. state of Iowa is located in the upper Midwest and home to 3 million people. The upper Midwest has a continental climate, which means that it is far away from the temperature-modering influence of the oceans. Winters are cold, with daytime temperatures as low as 0°F (−18°C). Summers can get very hot, with daytime temperatures higher than 100°F (38°C).

Iowa's main industries are agriculture, manufacturing, and insurance. About 86% of the land area in Iowa is used for farming. Iowa leads the nation in the production of pork, corn, and soybeans. Iowa is also the country's largest producer of corn-derived ethanol (a fuel). Iowa also produces other crops and livestock, including sheep and wheat.

Iowa receives an average of about 34 inches (86 centimeters) of precipitation per year. The months of April through October receive the most rain. This relatively regular rainfall, especially during the growing season, means that it has traditionally been possible to grow crops in Iowa without irrigation, although some farmers do irrigate.

The Mississippi River forms the eastern border of Iowa, and the Missouri River forms the western border. From May until September of 1993, heavy rains caused record flooding on the Mississippi, Missouri, and numerous other major rivers in the upper Midwest. The flooding caused billions of dollars in damage in what was one of the worst natural disasters in United States history.

Region #4: Southern California

The southern quarter of the U.S. state of California is home to more than 37 million people and includes the second largest metropolitan area in the United States (encompassing Los Angeles, San Diego, and neighboring cities) as well as the surrounding desert. Coastal areas in southern California are home to unique ecosystems.

Southern California has a diversified economy that includes the service industry, entertainment, tourism, technology, construction, manufacturing, finance, insurance, real estate, and trade, as well as agriculture and fishing. Southern California leads the nation in production of fruit and vegetables such as broccoli, carrots, onions, lettuce, almonds, strawberries, and cut flowers. These crops depend on irrigation because they are grown in regions that receive very little rainfall (the Imperial and San Joaquin Valleys are both considered deserts). With irrigation, however, the land can erase two crops and is a major source of the nation's fresh produce during the winter.

Securing and distributing enough water to the large human population in southern California is a challenge for this region.

Parts of southern California are moist enough to allow trees to grow but are still dry enough that forest fires are a common occurrence. With frequent winds fueling the flames, wildfires in southern California can be intense. Wildfires can destroy the vegetation that previously prevented erosion. When intense rains come after wildfires, they can sometimes trigger landslides and flash floods.
Region #5: The Republic of Chad

Chad is a landlocked nation in Central Africa and larger than the U.S. states of Texas and California combined. It is home to about 11 million people, 80% of whom rely on subsistence farming and raising livestock. Chad’s main exports have, until recently, been cotton, cattle, and chewing gum. Beginning in 2003, Chad began to export petroleum, and its petroleum exports have been growing rapidly since then. The country’s GDP (gross domestic product, one way that economists measure wealth) is about $1,900 US dollars per person per year. Chad is one of the poorer countries in the world.

Chad is far from the ocean and gets little precipitation. Only 3% of the land in Chad is arable (able to be cultivated with crops). Chad has frequent droughts, persistent hot and dry winds, and frequent locust plagues (insects that destroy crops). Lake Chad, which is in a basin shared by Chad, Cameroon, Nigeria, and Niger, was once the sixth largest lake in the world. In the last 35 years, however, Lake Chad has shrunk by 90%. Decreased rainfall, droughts, and use of water for irrigation have reduced the amount of water flowing into the lake from the rivers that feed it.

Chad’s two major rivers are in the southwest of the country and flow into Lake Chad. The low-lying plains in the Lake Chad Basin get enough rainfall during the rainy season to allow agriculture without irrigation. At other times of the year, irrigation is required. Daytime temperatures in this region range from around 75°F (24°C) to higher than 104°F (40°C). The center of the country is arid plains inhabited by mostly nomadic people (people who, instead of living in permanent housing, move frequently to follow livestock or desirable weather conditions). The northern part of Chad is desert (the Sahara) and receives only trace amounts of rain. Daytime temperatures there are some of the hottest in the world.

Region #6: The Amazon River Basin

The Amazon River basin covers about 2.6 million square miles (nearly 7 million square kilometers) in 8 different South American countries: Brazil, Bolivia, Peru, Ecuador, Colombia, Venezuela, Guyana, and Suriname. The climate is warm and humid with an average daily temperature of almost 80°F (26.6°C) and an average annual rainfall of around 80 inches (203 centimeters). There is little seasonal temperature variation in the Amazon basin.

There is typically no dry season in the Amazon River Basin. The basin often floods between June and October. This wet climate supports the Amazon rainforest, the largest rainforest in the world. Ten percent of all known species on Earth, along with 30 million people, live in the region.

The Amazon River is 4,195 miles (7,100 kilometers) long; it runs from Peru to the Atlantic coast of Brazil. The main channel of the Amazon River is usually between 1 and 6 miles wide, although it is much wider in some places. This river is an important means of transportation for people along its length.

In 2005, the Amazon experienced an extreme drought. The river dried to a trickle in many places, stranding boats and stressing ecosystems. It was the worst drought in over a century, attributed in part to warmer ocean temperatures.
Climate Prediction Sheet

Group members: ________________________________________________________________

Country name: ________________________________________________________________

Instructions: Based on the information you have about the climate of your assigned region and the *Climate Impact Projections* reading, answer the questions below to predict how climate change might affect your region. Remember that these are just your predictions, and not right or wrong answers.

1. At what time of year might precipitation come? In what form? How much?
   ____________________________________________________________
   ____________________________________________________________

2. Could part of your region be affected by droughts? What about floods?
   ____________________________________________________________
   ____________________________________________________________

3. Could the region be affected by storms? What kinds of storms, and where?
   ____________________________________________________________
   ____________________________________________________________

4. Would shorter and milder winters affect the region? If so, how?
   ____________________________________________________________
   ____________________________________________________________

5. Could the region be affected by rising sea levels? If so, how?
   ____________________________________________________________
   ____________________________________________________________

6. How would the production of food or other crops be affected?
   ____________________________________________________________
   ____________________________________________________________

7. What concerns might the area have related to diseases? Agricultural pests?
   ____________________________________________________________
   ____________________________________________________________
Activity 2: Determining Trends

Overview
In small groups, students will learn about different environmental and societal changes that have occurred since the Industrial Revolution. Each group will share trends they discern from their assigned variable with the rest of the class. The class will then work together to see how all of the variables might be related to one another and how each of them could relate to climate change.

Objectives
Students will:
• decode information in graphs and tables to uncover long-term trends
• discover how world population, technology, and environmental conditions have changed during the past 300 years and how the changes may relate to one another

Inquiry/Critical Thinking Questions
• What are indicators that Earth’s climate is changing?
• How are world population, technology, and environmental conditions connected?

Time Required
One 50-minute class

Key Concepts
• population growth
• Industrial Revolution
• climate change
• carbon dioxide
• sea level rise

National Standards Addressed
National Science Education Standards
A. Science & Inquiry
D. Earth Science
F. Science in Personal and Social Perspectives

National Council for the Social Studies
2. Time, Continuity, and Change
3. People, Places, and Environments
7. Production, Distribution, and Consumption
8. Science, Technology, and Society
9. Global Connections

National EoS Standards
2.1 Interconnectedness: Systems Thinking
2.2 Ecological Systems: Respect for Limits

Materials/Preparation
Handout: Determining Trends, 1 for each group of 3 to 4 students (there are 6 distinct Trends handouts)

Activity
Introduction
1. Ask students to reflect on what they know about the history of the last two centuries. How has it differed from history prior to 1750? Some answers might reference the Industrial Revolution and technological innovation, emergence of large urban centers, change from primarily agricultural to manufacturing economies, etc.
2. Let them know that they will be working in groups to discover trends in a variety of variables—both human-related and environmental—for the last several centuries.

Steps
1. Break students into groups of 3 to 4 and distribute 1 of the Determining Trends handout to each group.
2. Give students 10 minutes to work in their groups, reviewing data presented on the handout and answering the questions at the top of each handout. Let them know that you’ll be asking each group to share with the rest of the class the major trends they observed.
3. Call the class back together. Have each group share with the rest of the class (1) a brief note on the variable they studied and (2) overall trends observed.  
   **Option:** Have the students write a brief summary of their variable on a board so all students can refer back to it.  
4. After all 6 trends have been discussed, have the class return to their original groups and brainstorm connections between these variables. Allow 5 to 10 minutes for brainstorming in groups.  
5. Ask groups to share, one at a time, connections that they made among the trends observed for the 6 variables. You may want to remind students that observing correlations between any of the variables does not provide evidence of causation. For example, although graphs depicting temperatures increases and sea level rise may appear to have some correlation, they do not necessarily indicate that 1 variable is the direct result of the other.  
6. Conclude with a discussion using 1 or more of the following questions.  

**Discussion Questions**  
1. What trends surprised you and why?  
2. Do you have confidence this data is accurate? What sort of additional information would help reassure you of the data's accuracy?  
3. How are the environmental variables (atmospheric CO₂ concentrations, global temperature averages, ocean levels, and sea ice in the polar regions) interconnected? What are other environmental variables that may connect with these?  
4. What are some negative impacts technologies may have on the environment? How could technologies be used to reduce our impact on the environment?  

**Additional Resources**  
- **Website:** NASA Earth Observatory  
  [http://earthobservatory.nasa.gov/](http://earthobservatory.nasa.gov/)  
  The site hosts a variety of animated maps showing environmental changes over time.  
- **Website:** Global Change Research Program  
  The U.S. Global Change Research Program hosts resources related to climate and other environmental changes, including an image gallery of observable changes in ecosystems around the globe.  
- **Video:** The Industrial Revolution  
  [http://www.history.com/videos/the-industrial-revolution#the-industrial-revolution](http://www.history.com/videos/the-industrial-revolution#the-industrial-revolution)  
  A 2-minute film by the History Channel discusses the Industrial Revolution.  
- **Video:** Filling Up  
  A 3-minut clip from NPR that offers analysis on population trends.
Questions for your group:
1. What trends are observable for atmospheric carbon dioxide concentrations since the early 1700s?
2. What factors could be driving the trends you observe?

Table 1. Carbon dioxide data taken from air captured in ice cores, Siple Station in West Antarctica

<table>
<thead>
<tr>
<th>Estimated Date (in range of years)</th>
<th>Atmospheric CO₂ (ppmv)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1734–1756</td>
<td>279</td>
</tr>
<tr>
<td>1754–1776</td>
<td>279</td>
</tr>
<tr>
<td>1794–1819</td>
<td>280</td>
</tr>
<tr>
<td>1814–1836</td>
<td>284</td>
</tr>
<tr>
<td>1842–1864</td>
<td>288</td>
</tr>
<tr>
<td>1883–1905</td>
<td>297</td>
</tr>
<tr>
<td>1903–1925</td>
<td>300</td>
</tr>
<tr>
<td>1921–1943</td>
<td>306</td>
</tr>
<tr>
<td>1938–1960</td>
<td>311</td>
</tr>
<tr>
<td>1947–1969</td>
<td>312</td>
</tr>
<tr>
<td>1954–1976</td>
<td>318</td>
</tr>
<tr>
<td>1962–1983</td>
<td>328</td>
</tr>
</tbody>
</table>

*ppmv stands for parts per million by volume

Figure 1. Monthly mean atmospheric carbon dioxide measured at Mauna Loa Observatory in Hawaii, 1960–2010

Climate Change
Questions for your group:

1. What trends are observable for average global temperatures since the late 1800s?
2. What factors could be driving the trends you observe?

Figure 1. Annual Global Temperature Anomalies

Background Information from NOAA

“The term ‘temperature anomaly’ means a departure from a reference value or long-term average. A positive anomaly indicates that the observed temperature was warmer than the reference value, while a negative anomaly indicates that the observed temperature was cooler than the reference value.”

NOAA uses temperature anomalies because absolute estimates of surface temperature are difficult to compile. For one, some regions have few temperature measurement stations.
Group 2
Determining Trends: Temperature

Figure 2. Global and Regional Temperature
Group 3
Determining Trends: Population

Questions for your group:
1. What trends are observable for global population since the early 1700s?
2. What factors could be driving the trends you observe?

Figure 1. Estimated World Population, 1750–2050

Figure 2. Regional Population Trends, 1800-2050

Group 4

Determining Trends: Industrialization

Questions for your group:
1. What trends are observable for technology and industry since the early 1700s?
2. What factors could be driving the trends you observe?

Table 1. Timeline of Selected Major Innovations in Transportation and Manufacturing

<table>
<thead>
<tr>
<th>Year</th>
<th>Technological Innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1709</td>
<td>Abraham Darby invented process of coke smelting (using coal to refine metals, such as brass and iron goods).</td>
</tr>
<tr>
<td>1712</td>
<td>Thomas Newcomen builds a steam engine that converts chemical energy from wood and coal into motion energy and was predominately used pump water out of mine shafts.</td>
</tr>
<tr>
<td>1764</td>
<td>James Hargreaves invented the spinning jenny, which allowed large-scale textile production. Before then, weaving was done on a spinning wheel, which can only accommodate 1 ball of yarn at a time.</td>
</tr>
<tr>
<td>1769</td>
<td>Richard Arkwright built an automated machine (known as a water frame) that could create stronger thread than the spinning jenny.</td>
</tr>
<tr>
<td>1775</td>
<td>James Watt built a steam engine that would power transportation (trains and steamships) and industry (factories and mines).</td>
</tr>
<tr>
<td>1807</td>
<td>Robert Fulton established a commercial steamship service that allowed passengers to travel 5 miles per hour.</td>
</tr>
<tr>
<td>1825</td>
<td>The Stockton &amp; Darlington Railroad Company allowed passengers to ride on locomotives for the first time, in addition to transporting raw materials and finished goods.</td>
</tr>
<tr>
<td>1831</td>
<td>Michael Faraday discovered the principle of electromagnetic current (electricity is generated across a wire when the wire is exposed to a changing magnetic field), which is used to run electric motors.</td>
</tr>
<tr>
<td>1859</td>
<td>Edwin Drake drilled the first oil well, which supplied oil for kerosene lamps.</td>
</tr>
<tr>
<td>1867</td>
<td>Joseph Monier patented his invention of reinforced concrete (concrete strengthened by the use of metal mesh, bars, or wire), which was later used for bridges and buildings.</td>
</tr>
<tr>
<td>1879</td>
<td>Thomas Edison developed the first commercially successful light bulb.</td>
</tr>
<tr>
<td>1883</td>
<td>Nikola Tesla designed alternating current (AC).</td>
</tr>
<tr>
<td>1886</td>
<td>Karl Benz patented the first gas-fueled car.</td>
</tr>
<tr>
<td>1889</td>
<td>George Fuller built the first 10-story steel skyscraper (a tall building whose exterior walls do not support the weight of the building).</td>
</tr>
<tr>
<td>1909</td>
<td>Leo Baekeland patented the first synthetic plastic, known as Bakelite.</td>
</tr>
<tr>
<td>1913</td>
<td>Henry Ford began mass-producing cars using a moving assembly line.</td>
</tr>
<tr>
<td>1924</td>
<td>Clarence Birdseye founded the first frozen foods company.</td>
</tr>
<tr>
<td>1925</td>
<td>John Logie Baird introduced the first television.</td>
</tr>
<tr>
<td>1939</td>
<td>The first aircraft to use a turbojet engine, built by Hans von Ohain and Ernst Heinkel, took to the skies.</td>
</tr>
<tr>
<td>1947</td>
<td>The microwave oven, developed by Percy Spencer and Roly Hanson, was commercially released.</td>
</tr>
<tr>
<td>1973</td>
<td>Motorola released the first mobile phone.</td>
</tr>
<tr>
<td>1975</td>
<td>IBM released its first portable computer.</td>
</tr>
</tbody>
</table>
Questions for your group:
1. What trends are observable for sea levels between 1880 and 2012?
2. What factors could be driving the trends you observe?

**Figure 1. Global Mean Sea Level, 1880–2011**

Source: NOAA

**Figure 2. Global Mean Sea Level, 1992–2012**

Source: IPCC, 2007
Questions for your group:
1. What trends are observable for polar sea ice between 1979 and 2000?
2. What factors could be driving the trends you observe?

Table 1. Arctic Sea Ice Extent*

<table>
<thead>
<tr>
<th>September/March (minimum/maximum)</th>
<th>September Average Extent (millions of square kilometers)</th>
<th>March Average Extent (millions of square kilometers)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1979–2000 mean</td>
<td>7.0</td>
<td>15.7</td>
</tr>
<tr>
<td>1999/2000</td>
<td>6.2</td>
<td>15.3</td>
</tr>
<tr>
<td>2000/2001</td>
<td>6.3</td>
<td>15.6</td>
</tr>
<tr>
<td>2001/2002</td>
<td>6.8</td>
<td>15.4</td>
</tr>
<tr>
<td>2002/2003</td>
<td>6.0</td>
<td>15.5</td>
</tr>
<tr>
<td>2003/2004</td>
<td>6.1</td>
<td>15.1</td>
</tr>
<tr>
<td>2004/2005</td>
<td>6.0</td>
<td>14.7</td>
</tr>
<tr>
<td>2005/2006</td>
<td>5.6</td>
<td>14.4</td>
</tr>
<tr>
<td>2006/2007</td>
<td>5.9</td>
<td>14.6</td>
</tr>
<tr>
<td>2007/2008</td>
<td>4.3</td>
<td>15.2</td>
</tr>
<tr>
<td>2008/2009</td>
<td>4.7</td>
<td>15.2</td>
</tr>
<tr>
<td>2009/2010</td>
<td>5.4</td>
<td>15.1</td>
</tr>
<tr>
<td>2010/2011</td>
<td>4.6</td>
<td>14.6</td>
</tr>
</tbody>
</table>

* "Sea ice extent" refers to the total area in which ice cover is 15% or more. Routine satellite observations of sea ice began in 1979.

According to a new NASA study, Arctic perennial sea ice has been decreasing at a rate of 9 percent per decade since the 1970s.
Activity 3: It All Adds Up!

Overview
Students gather information about their personal energy use to calculate their carbon footprint using an online carbon calculator. Each student will compare their personal result with the carbon footprint of an average person living in the United States as well as other countries around the world. To close, students will discover ways to reduce their carbon emissions.

Objectives
Students will:
• use an online carbon calculator to determine impacts of their daily choices have on our climate
• explore ways to reduce their carbon footprint

Inquiry/Critical Thinking Questions
• How do our lifestyle choices affect carbon dioxide levels in the atmosphere?
• What is a carbon footprint, and how is it measured?
• What changes in our daily lives would result in a smaller carbon footprint?

Time Required
One 50-minute class

Key Concepts
• carbon footprint
• personal solutions

National Standards Alignment
National Science Education Standards
A. Science as Inquiry
F. Science in Personal and Social Perspectives

National Council for the Social Studies
3. People, Places, and Environments
4. Individual Development and Identity
10. Civic Ideals and Practices

National EefS Standards
2.1 Interconnectedness: Systems Thinking
2.2 Ecological Systems: Respect for Limits
3.1 Personal Action: Personal Change Skills and Strategies

Materials/Preparation
Before class, have students come prepared to answer the questions for the EPA’s online carbon calculator; students may wish to bring a copy of their home electricity, gas, heating oil bills, as well as information about the number of miles they or their parents drive a week.

Handout: Carbon Footprint Results, 1 per student
Internet access

Activity

Introduction
1. Ask students to brainstorm all of the things they use on a daily basis that requires energy (or power). Ask how the use of energy is related to climate change.
2. Have students recall what carbon dioxide is and how it can affect Earth’s climate. Ask students if they think they produce much carbon dioxide during their daily activities. Tell them that they’re about to find out how their carbon emissions (also called a “carbon footprint”) compare to those of an average person living in the United States as well as other countries around the world.

Steps
1. Give each student a Carbon Footprint Results handout.
2. Have students go to the U.S. Environmental Protection Agency’s household emissions calculator at http://www.epa.gov/climatechange/ghgemissions/ind-calculator.html and enter their responses for the Household Carbon Footprint Calculator.
3. After students enter their information (under “Current Emissions”), have them record their total emissions estimated by the calculator on the handout, Carbon Footprint Results.
Activity 3: It All Adds Up! continued

4. Students can also compare their results with the average carbon footprint of an individual from another country here: [http://unstats.un.org/unsd/environment/air_co2_emissions.htm](http://unstats.un.org/unsd/environment/air_co2_emissions.htm) (compare their results to the number listed under the country's per capita emissions data).

5. Now have students experiment with making positive changes (under “Reduce Emissions” on the EPA carbon calculator site) to see how they may reduce their carbon emissions, completing the Carbon Footprint Results handout as they go.

6. After students have completed the handout, begin a discussion using the following questions.

Discussion Questions

1. How does waste disposal affect your carbon footprint? What actions could you take to reduce the emissions from your waste disposal?

2. What are some examples of energy use that were NOT included in the carbon calculator? *(e.g., the energy required to manufacture, process, and transport material goods and food items)*

3. What are additional benefits, other than reduced CO₂ emissions, of reducing your carbon footprint? How might reducing CO₂ emissions improve your quality of life?

4. Carbon footprints can be calculated not only for individuals, but for countries as well. What factors could you imagine increasing a country’s overall carbon footprint?

5. What government policies could help to lower a country’s overall footprint?

Science Extension

Have students calculate the volume of 1 pound of carbon dioxide. To put it in terms they can easily identify with, ask students to report how many 2-liter soda bottles would be required to contain 1 pound of carbon dioxide.

Writing Extension

Ask students to imagine what their lives might be like with a carbon footprint twice the size of the footprint they currently generate, and then imagine if their carbon footprint was half the size. Have students write an essay or journal entry describing a day in their life with a larger carbon footprint, and then a day in their life with a smaller carbon footprint. How would they spend their time? Where would they live? What would they eat? What kinds of things would they use? How would they travel?

Additional Resources

- **Book:** You Can Prevent Global Warming (and Save Money!): 51 Easy Ways
  Authors Jeffrey Langholz and Kelly Turner provide practical tips for reducing energy use and CO₂ emissions. Savings are calculated in dollars and in pounds of CO₂ not emitted. (Andrews McMeel Publishing, 2003.)

- **Website:** Home Energy Saver
  [http://hes.lbl.gov](http://hes.lbl.gov)
  The Home Energy Saver website offers specific tips for making your home more energy efficient.

- **Website:** American Forests
  The nonprofit conservation organization, American Forests, provides a climate change calculator that translates energy use and other activities to CO₂ emissions, and the number of trees it takes to offset those emissions.

- **Reading:** The American Carbon Footprint: Understanding and Reducing Your Food’s Impact on Climate Change
  Authors Matthew Kling and Ian Hough, of Brighter Planet, Inc., analyze the average American’s carbon footprint based on food consumption and offer ways to reduce your carbon footprint through what you eat.
# Carbon Footprint Results

From the Environmental Protection Agency’s Personal Emissions Calculator:
[https://www3.epa.gov/carbon-footprint-calculator/](https://www3.epa.gov/carbon-footprint-calculator/)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What is your carbon footprint (total CO₂ emissions per year)?</td>
<td>______________ pounds CO₂</td>
</tr>
<tr>
<td>2. How do your household emissions compare to the average emissions for a comparably sized household in the United States?</td>
<td></td>
</tr>
</tbody>
</table>
| 3. Explain two ways to increase a car’s gas mileage.  
(See EPA’s website for tips on how you can reduce greenhouse gas emissions on the road: [https://19january2017snapshot.epa.gov/climatechange/what-you-can-do-road_.html](https://19january2017snapshot.epa.gov/climatechange/what-you-can-do-road_.html)) | a.   
b.   |
| 4. How many pounds of CO₂ per year would you avoid by driving 7 fewer miles per week?  
(That’s just 1 less mile per day.) |   |
| 5. How could you or others in your household drive less each week but still get where you want to go? |   |
| 6. How many pounds of CO₂ per year can be avoided by turning down the thermostat by 1 degree Fahrenheit in the winter? |   |
| 7. Do you think you would feel a 1-degree change? |   |
| 8. What are 2 things you could do to keep warm without turning up the heat? | a.   
b.   |
| 9. How many pounds of CO₂ per year can be avoided by recycling aluminum and steel cans? |   |
| 10. What things can be recycled in your community? |   |
| 11. If you do not already recycle, identify the main obstacle that prevents you from recycling. |   |
| 12. What are two simple things that you can do to reduce your carbon dioxide emissions, other than ideas you have already listed on this handout? | a.   
b.   |

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**Activity 4: So Many Solutions!**

**Overview**
Students consider the costs and benefits of a variety of responses to climate change to determine which solutions might be the most sustainable.

**Objectives**
Students will:
- evaluate costs and benefits of different responses to climate change
- consider the sustainability of proposed climate change solutions

**Inquiry/Critical Thinking Questions**
- How will climate change mitigation and adaptation affect our society, economy, and environment?
- What responses to climate change will prove most effective for sustaining our planet?

**Time Required**
Two 45-minute classes

**Key Concepts**
- mitigation
- adaptation
- personal solutions
- structural solutions

**National Standards Addressed**

**National Science Education Standards**
D. Earth and Space Science
E. Science and Technology
F. Science in Personal and Social Perspectives

**National Council for the Social Studies**
3. People, Places, and the Environment
5. Individuals, Groups, Institutions
6. Power, Authority, and Governance
7. Production, Distribution, and Consumption
8. Science, Technology, and Society
9. Global Connections
10. Civic Ideals and Practices

**National EfS Standards**
2.1 Interconnectedness: Systems Thinking
3.1. Collective Action: Organizational and Societal Change Skills and Strategies

**Materials/Preparation**
Handout: *Sustainable Solutions?*, 1 per student
Internet access

**Activity—Day 1**

**Introduction**
1. Ask students about the potential solutions to climate change they have learned about thus far.
2. Inform students they will be researching the costs and benefits of a handful of climate change solutions.
3. Before getting started with their own research, run through the research process for 1 of the proposed solutions from the handout with the whole class. You may choose to project your computer screen on the board while you research the solution using the internet or provide details on how you would go about researching the topic and what resources may require a critical eye.

**Steps**
1. Pass out a copy of the handout *Sustainable Solutions?* to each student.
2. Have students, either individually or in pairs, research the 8 solutions listed on the handout. They should complete the handout as they go.
3. Instruct students to bring their completed handout to the next class.
Activity—Day 2

Steps
1. Break the class into groups of 4.
2. In their groups, give students about 20 minutes to discuss conclusions they made on their own about the sustainability of each proposed solution, along with the reasons for this determination. This information should be listed in the last column of their worksheet. As students discuss, allow them to amend their answers based on further reflection.
3. Ask each group to come up with a recommendation about which of the 8 solutions is the most sustainable and why.
4. Bring the class back together. Ask each group to report back on which solution they found most sustainable and why.
5. During the last few minutes of class, conclude with a discussion using 1 or more of the following questions.

Discussion
1. Why is it important to consider short-term versus long-term effects when evaluating the sustainability of a solution?
2. When might it make sense to advocate for a solution that you anticipate will only have small-scale effects?
3. Are there other solutions not listed in the handout that may prove an even better solution than the ones listed? What is a solution that you think would be high leverage (meaning, it would have a large, sustained impact)?
4. What are challenges to encouraging people to adopt some of these solutions? How would you suggest overcoming these challenges?

Civic Extension
Using the solution that receives the most support from the class, students may undertake a project related to that solution. Or students could work to support an individual or group working to make that solution a reality.

Additional Resources
- Website: Ten Personal Solutions to Global Warming
  The Union of Concerned Scientists’ provides suggestions for curbing global warming, varying from unplugging your freezer to changing your light bulbs to purchasing sustainably harvested wood.
- Article: 10 Solutions for Climate Change
  This [Scientific American](http://www.scientificamerican.com) article by David Biello, climate change solutions are proposed ranging from reducing fossil fuel consumption and the number of children you consider having.
- Article: Could an Artificial Volcano Cool the Planet by Dimming the Sun?
  [http://www.guardian.co.uk/environment/blog](http://www.guardian.co.uk/environment/blog)
  This [Guardian](http://www.guardian.co.uk) article by environmental editor, John Vidal, Vidal reports on one proposed geengineering solution for climate change: creating an artificial volcano to dim out the sun.
**Directions:** Using information from the textbook and other sources, complete the table below.

<table>
<thead>
<tr>
<th>Potential Response</th>
<th>Potential Costs (economic, social, environmental)</th>
<th>Potential Benefits (economic, social, environmental)</th>
<th>Are the anticipated effects short- or long-term?</th>
<th>Are the anticipated effects small- or large-scale?</th>
<th>Is this a sustainable solution? Explain why or why not.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Relocating communities living in vulnerable areas</td>
<td>2. Eating less meat and shopping at markets that sell locally produced food</td>
<td>3. Emphasizing energy efficiency and conservation at home and at school</td>
<td>4. Choosing transportation options with low carbon emissions</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Climate Change**
<table>
<thead>
<tr>
<th>Potential Response</th>
<th>Potential Costs (economic, social, environmental)</th>
<th>Potential Benefits (economic, social, environmental)</th>
<th>Are the anticipated effects short- or long-term?</th>
<th>Are the anticipated effects small- or large-scale?</th>
<th>Is this a sustainable solution? Explain why or why not.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Creating and enforcing international policies to reduce national greenhouse gas emissions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Imposing restrictions on emissions from business and industry</td>
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<tr>
<td>7. Undertaking major geo-engineering projects (e.g., artificial volcano, carbon capture and storage)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>8. Protecting and enhancing carbon sinks (e.g., forests, soil)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What additional resources did you use when conducting your research to complete the table?
CHAPTER BIG IDEAS

- Biodiversity is an indicator of the health of Earth’s systems.
- High biodiversity supports the resilience of our natural environment and preserves ecosystem services.
- Human activities threaten the survival of many other species.
- Preserving biodiversity can support other species, ecosystem functions, economic activity, and the conservation of cultures as well as human communities.
Guiding Questions
• What are the benefits of biodiversity?
• How do humans affect other species in positive and negative ways?

Key Concepts
• evolution
• biodiversity
• keystone species
• ecosystem services
• endangered species
• invasive species
• biodiversity hotspot

Supporting Vocabulary
• ecosystem diversity
• species diversity
• genetic diversity
• background extinction rate
• biocontrol
• endemic
• poaching
• seed banking
• wildlife corridor

Service Learning Component
Service Learning Project Idea #1
• Question: How can we support biodiversity within our local community?
• Hook Resource: The Moment It Found Me
http://www.tedxteen.com/talks/tedxteen-2011/74-zander-srodes-the-moment-it-found-me
In this 6-minute TEDxTeen talk, Zander Srodes delivers an impassioned speech about how he became inspired at the age of 11 to devote his life to the conservation of sea turtles.

• Project: Students investigate factors that encourage biodiversity in their community (e.g., large park areas, native plants) as well as factors that discourage biodiversity (e.g., invasive plants, lack of green space, pollution). Students then brainstorm ideas to increase biodiversity in their region, either within their local community or in a nearby wildlife area. Students choose one of their brainstorming ideas to develop into an action plan.

• Additional Resource:
  - Students look into efforts by their local parks department, department of soil and conservation, and department of natural resources to gather ideas on how to encourage biodiversity in their local community.

Service Learning Project Idea #2
• Question: How can we teach younger students about the importance of biodiversity?
• Hook Resource: Biological Diversity For Kids
http://kids.cbd.int/
This interactive website created by the Secretariat of the Convention on Biological Diversity provides games and other educational tools to help teach younger kids about the value of biodiversity.

• Project: Students create a lesson for a 1st or 2nd grade class that teaches the younger students about the importance of biodiversity. Part of the lesson can even include the younger students doing an action project around biodiversity.
• **Additional Resources:**
  
  **Book: The Lorax**  
  This classic Dr. Seuss children’s book explores the consequences of overexploitation, as the Once-ler cuts down the last Truffula Tree. (New York: Random House, 1971)
  
  **Movie: Over the Hedge**  
  This 83-minute animated film from 2006 illustrates the human-wildlife conflicts that can result from housing developments that push into wilderness areas.
  
  **Movie: Up**  
  In this 96-minute animated film from 2009, the main characters happen upon a rare species (a flightless bird they name “Kevin”), which has been hunted nearly to extinction.
  
  **Book: Tree of Life: The World of the African Baobab**  
  This story, written by Barbara Bash, shows how these thousand-year-old trees provide habitat and food for an array of creatures that depend on them. (San Francisco: Sierra Club Books, 2002)
  
  **Website: BrainPop Jr. on Extinct and Endangered Species**  
  This short video looks at how habitat destruction is leading to species becoming endangered, even going extinct, and what can be done to save these species.

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**Project Based Learning Component**

**Project Based Learning Idea**

**Overview:** Students act as lobbyists around the issue of whether the Endangered Species Act and other environmental regulations should be relaxed in order to strengthen security measures at U.S. borders. Individuals write a position paper to explain their thinking; groups participate in an oral debate.

**Driving Question:** Should environmental laws be relaxed to allow the Department of Homeland Security to build security-related infrastructure?

**Hook Resource:** Dangers on the U.S. Border  
[http://www.youtube.com/watch?v=VBh-1YbuGw](http://www.youtube.com/watch?v=VBh-1YbuGw)  
This 2-minute video, produced by Republicans on the House Natural Resources Committee in August of 2010, is designed to persuade the public that a bill is needed to ensure that the U.S. Border Patrol has absolute access to the country’s borders.

**Individual Project:** Students write a position paper explaining their thinking on whether the Endangered Species Act and other environmental regulations should be relaxed to strengthen security measures at U.S. borders.

**Group Project:** Groups of 3-4 students will research both sides in preparation for a debate where they should be ready to defend either position.
• **Additional Resources:**

  • **Video:** Rep. Rob Bishop Opening Statement on Securing Our Border  
    A 9-minute video of Representative Bishop explaining the need for the National Security and Federal Lands Protection Act.

  • **Letter:** December 2009 letter regarding vehicle access to San Bernardino National Wildlife Refuge  
    A letter from the Fish and Wildlife Service to the U.S. Customs and Border Protection’s Chief Patrol Agent, explaining the effects of border patrol activities on endangered species and environmental resources near the U.S.-Mexico border.

  • **Interview:** No Environmental Laws Near the Border  
    A 7-minute interview with UC Hastings College of the Law Professor John Leshy, who claims the proposed National Security and Federal Lands Protection Act is politically motivated and unnecessary.

  • **Article:** Border Security and Public Lands  
    Writing for PRI’s The World in 2011, Ashley Ahearn presents arguments on both sides of the debate around the proposed National Security and Federal Lands Protection Act, including the fact that U.S. Customs and Border Protection actually opposes the plan.

  • **Article/Slideshow:** U.S.-Mexican Border Wall Destroying Habitats for Endangered Animals  
    This 2010 article and slideshow by Boon-sri Dickinson document how endangered species are impacted by the physical border erected between the U.S. and Mexico.

**Summative Assessment**  
Chapter Test

**Connections**

**World History connections:**  
International and national efforts to protect species; history of overharvesting (whales, seals, fish)

**Economics connections:**  
Commercial use of species (food, pharmaceuticals, etc.); ecosystem services; ecological economics

**Geography connections:**  
Biodiversity hotspots; human-environment interactions; mass extinction events and the background extinction rate

**Civics connections:**  
Personal and structural solutions to biodiversity loss
Activities in Teacher’s Guide: Suggested Sequence

### Day 1

**Reading:** Introduction to Biodiversity

**Activity 1:** What Is Nature Worth?—Working in small groups, students brainstorm the services different ecosystems provide and critically analyze how ecosystem services support environmental, social, or economic systems. Students then explore the idea of determining an economic value for ecosystem services.

### Day 2

**Reading:** Background on Biodiversity

**Activity 2:** Seeking Refuge—Students are presented with 4 different conservation efforts that currently exist in the United States. After determining the pros and cons of each approach, students must decide which is the best use of conservation funding and articulate their reasoning.

### Day 3

**Reading:** Biodiversity Today

**Activity 3:** Endangered Species Investigation—Students individually research an endangered species to learn about activities that threaten the survival of the species and what actions have been taken to reverse the species’ decline. As a class, students make conclusions about the human activities that have the greatest impact on endangered species. Students then work to develop their own policies that address the decline in biodiversity.

### Day 4

**Reading:** Pathways to Progress: Biodiversity

**Activity 4:** Designing Community-based Conservation Programs—Students experience the process of community-based conservation firsthand as they work in small groups to develop solutions that support both human and wildlife communities. In a jigsaw activity, students develop conservation strategies designed to meet different goals, ultimately collaborating to come up with solutions that achieve multiple goals.
Discussion Questions from the Chapter Reading

Introduction to Biodiversity
1. What types of biodiversity do you see where you live? Are there any species on the brink of extinction living in your region? If so, what has contributed to this threat of extinction?
2. How is biodiversity connected to the well-being of our own species?

Background on Biodiversity
3. Scientists have suggested we are nearing a sixth major extinction event, brought on by human activities. What types of human activities contribute to extinction?

Biodiversity Today
4. What are the 5 major threats facing biodiversity today?
5. How do invasive species contribute to loss of biodiversity?
6. What is the risk of managing natural resources as a commons? What are possible solutions to the tragedy of the commons?
7. How can humans ensure the continued progress of our own species while protecting the biodiversity and ecosystems of our natural environment as well?

Pathways to Progress: Biodiversity
8. Why are the Tropical Andes considered a biodiversity hotspot? What are potential threats to the biodiversity that exists in the Tropical Andes?
9. What are some structural and personal responses to declining biodiversity?
10. Some people think that conservation means trying to keep things as they are now. Do you think that is advisable, or even possible?
Chapter Assessment: Biodiversity, page 1

Recall
Match the following words on the left with their definitions on the right.

1. Biodiversity  
   area that has lost much of its original habitat but contains significant species diversity

2. Biodiversity hotspot  
   measure of the diversity of life found in any given system

3. Keystone species  
   plant and animals that have a disproportionately larger effect on their ecosystem than their abundance might suggest

4. Invasive species  
   non-native plants or animals introduced into an established ecosystem, able to overwhelm the native species

Reasoning/Explanation
Complete the following multiple choice questions by choosing 1 correct answer.

5. The great horned owl is at the top of a food chain and eats snowshoe hares, bats, mice, weasels, and shrews. If all of these species aside from horned owls and weasels suddenly disappeared, what would be the most likely outcome?
   a. The great horned owl would rely on other types of food to survive and adapt to a new diet.
   b. The great horned owl would consume too many weasels, and eventually there would be none left.
   c. The great horned owl would move to another ecosystem in order to have access to more species.
   d. The great horned owl would refrain from eating too many weasels in an effort to prevent the weasels’ extinction as well.

6. Which statement best describes the impact of growing opium poppy fields in hotspots such as the Tropical Andes?
   a. The poppies contain a toxic substance. When animals eat them, they risk death.
   b. Rainforests are cut down in order to grow poppies, causing some animals to lose their homes.
   c. Opium fields are grown in fertile soil, giving native plants additional opportunities to thrive.
   d. Opium seeds help support local economies. The more opium seeds grown in biological hotspots, the more economically powerful a country can become.
7. All of the following contribute to a loss of biodiversity, except:
   a. invasive plants and animals
   b. habitat degradation
   c. land restoration
   d. climate change

8. A sudden surge in the public demand for shrimp from the Gulf of Mexico made fishermen optimistic about their economic prospects after Hurricane Katrina and the BP oil spill. What is a sustainable way to avoid the tragedy of the commons?
   a. allow everyone to harvest as much shrimp as they need in order to sell it on the market and benefit economically
   b. utilize technology like faster boats and larger nets in order to harvest shrimp in an efficient way
   c. implement regulations that allow for fishermen to harvest a limited amount of shrimp
   d. allow one large corporation to harvest shrimp, fining all local fishermen who still attempt to fish without a license

9. Which of these statements best describes how salmon found in the Pacific Northwest relate to economic sustainability?
   a. Since salmon found in the Pacific Northwest are keystone species, they provide food for other species and support the fishing industry.
   b. Since salmon found in the Pacific Northwest are invasive species in the Northwest, a decrease in their populations would allow other species to thrive and be harvested.
   c. Since salmon found in the Pacific Northwest are endangered species, the fish are highly sought after by fishermen who can sell them at high prices.
   d. Since salmon found in the Pacific Northwest are an abundant species, they can be fished frequently and sold across the globe.
10. Use the graphic organizer below to help answer the question.

![Graphic Organizer]

What is the best answer to replace the X as another possible solution to support a renewal of biodiversity?

a. Banking seeds of threatened plant species to preserve their genetic information.

b. Planting exotic species in your yard to add to the species diversity and genetic diversity of your neighborhood.

c. Building barriers or paving roads to help confine a species to one area where they can be more adequately protected.

d. Paying close attention to national and international conservation issues.

11. A company wants to build a dam in Brazil. In the past, building dams has resulted in deforestation because the project leads to the development of roads and increased access to the surrounding area for loggers. The deforestation would impact the indigenous populations who live in the forest in all of the following ways, except:

a. The natural resources the indigenous populations rely on would be depleted.

b. The indigenous populations may be forced to migrate to a new area they may not be familiar with.

c. The food security of the indigenous populations would change dramatically.

d. The indigenous populations would have increased access to drinking water.

12. Invasive species pose a threat to local ecosystems because:

a. native species lack the genetic variation to resist the diseases non-native species introduce to the ecosystem.

b. native species will breed with the non-native species, contaminating the ecosystem's natural genetic diversity.

c. non-native species often lack natural predators in that particular ecosystem and their rising population overwhelms native species.

d. non-native species will interfere with the endocrine systems of wild animals.
13. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) effectively engages governments around the world in the support of biodiversity by:

a. ensuring sustainable trade between countries that does not threaten the survival of plants and animals
b. drafting legislation that imposes fines on countries for illegal trade of plants and animals
c. instituting an international court that brings countries that harm endangered species to trial
d. establishing a trade agreement that allows countries to introduce new exotic species where native species have gone extinct

14. Use the photograph below to help answer the question.

Which of these statements best explains how the image shown above is affecting biodiversity?

a. Agricultural runoff carrying genetic material from farm animals contaminates the genetic diversity of the local ecosystem.
b. Wastewater runoff is never treated and heavily pollutes our natural waterways.
c. Chemical runoff enters natural waterways and interferes with the endocrine systems of wild animals.
d. Toxic runoff from industrial plants morphs local species into invasive species and harms the local ecosystem.
Chapter Assessment: Biodiversity, page 5

Application/Complex Reasoning
Answer the following short answer questions below.

15. As discussed throughout the chapter, human activities have contributed to the loss of biodiversity on a global scale.
   
   **Part A.** Describe 2 of these activities and explain how they affect biodiversity.
   
   **Part B.** For each activity, provide 1 solution that could reduce this detrimental human impact on biodiversity.

16. To answer the questions that follow, use what you learned from the chapter and the following quote attributed to Chief Seattle, a leader of the Duwamish Tribe in the Pacific Northwest:

   *What is man without the beasts? If all the beasts were gone, men would die from a great loneliness of spirit. For whatever happens to the beasts, soon happens to man. All things are connected.*

   **Part A.** Explain how this quote relates to biodiversity.
   
   **Part B.** Explain how this quote relates to sustainability.
Recall (4 points)
1. Biodiversity—measure of the diversity of life found in any given system
2. Biodiversity hotspot—area that has lost much of its original habitat but contains significant species diversity
3. Keystone species—plants and animals that have a disproportionately larger effect on their ecosystem than their abundance might suggest
4. Invasive species—non-native plants or animals introduced into an established ecosystem, able to overwhelm the native species

Reasoning/Explanation (10 points)
5. b 10. a
6. b 11. d
7. c 12. b
8. c 13. a
9. a 14. c

Application/Complex Reasoning (6 points)
15. Part A. Answers will vary. (1 point)
   • habitat degradation
   • introduction of invasive species
   • pollution
   • climate change
   • exploitation/overconsumption

   Part B. Answers will vary. (2 points)
   • government action
   • NGO activities
   • conservation-minded consumption
   • wildlife corridors
   • alternative forms of income

16. Part A. Answers will vary. (2 points)
   • Natural resources provide us the food, shelter, and health we need in order to survive.
   • Biodiversity maintains the health of the Earth.
   • The greater the variety of species, the healthier the Earth is.
   • When there are more species, there are more links and connections in food chains.

   Part B. Answers will vary. (1 point)
   • Biodiversity promotes all 3 forms of sustainability: social, environmental, economic.
Activity 1: What Is Nature Worth?

Overview
Working in small groups, students brainstorm the services different ecosystems provide and critically analyze how ecosystem services support environmental, social, or economic systems. Students explore the idea of determining an economic value for ecosystem services.

Objectives
Students will:
• brainstorm ecosystem services provided by natural ecosystems
• determine how ecosystem services support a region's sustainability
• consider the benefits and challenges associated with putting an economic value on ecosystem services

Inquiry/Critical Thinking Questions
• What are the benefits of biodiversity within an ecosystem?
• How do ecosystem services support environmental, economic, and social systems?
• What actions can support the conservation of ecosystem services?

Time Required
One 50-minute class

Key Concepts
• biodiversity
• ecosystem services
• ecological economics
• biomes

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
7. Production, Distribution, and Consumption

National Science Education Standards
C. Life Science
F. Science in Personal and Social Perspectives

National Efs Standards
2.1 Interconnectedness: Systems Thinking
2.2 Ecological Systems: Natural Capital
2.3 Economic Systems: Ecosystem Services

Materials/Preparation
Teacher Master: Ecosystem Services
Overhead: Three Sectors of Sustainability
Internet access

Activity
Introduction
1. Show students a 3-minute clip from the Natural Capital Project entitled “What is nature worth?” (http://www.youtube.com/watch?v=TartoYpK1yI).

2. Ask students to come up with a definition for the term ecosystem services. (Ecosystem services are resources and processes supplied by nature. Typically these are things that benefit humans. They might include clean drinking water, decomposition of wastes, habitat for wildlife, and weather moderation.)

3. Ask students to recall from the video how biodiversity and ecosystem services might be connected. (As we lose natural areas and species become extinct, we also lose some of the functions that ecosystems provide.)

4. Share with students the following information from the United Nations Convention on Biological Diversity:
• At least 40% of the world’s economy and 80% of the needs of the poor are derived from biological resources.
• The richer the diversity of life, the greater the opportunity for medical discoveries, economic development, and adaptive responses to such new challenges as climate change.¹


5. Let students know that they will be exploring how ecosystem services support sustainability as well as considering how to designate an economic value for those services that nature provides freely.

Steps

1. Divide students into groups of 3–4. Assign each group a letter: A, B, C, or D. It is fine if two or more groups have the same letter.

2. Let students know what type of ecosystem each letter corresponds to. Also write this information somewhere visible:
   - A: temperate and tropical forests
   - B: freshwater lakes, rivers, and wetlands
   - C: oceans and coasts
   - D: grasslands and prairies

3. Ask each group to create a list of 6 or more potential ecosystem services that are provided by the type of ecosystem they were assigned. If students need additional guidance, provide extra time for online research or a visit to the library. Refer to the teacher master Ecosystem Services if you need ideas.

   Option: If students have studied biomes in depth, divide students into groups based on specific biomes, such as: tropical rainforest, tropical savanna, desert, temperate grassland, temperate forest, oceans, freshwater ecosystems, tundra.

4. For each ecosystem service a student group lists, ask them to also consider how they or others might benefit from that service. Encourage students to think of ways that they might enjoy these services either directly or indirectly. Groups should also record this information on their list of ecosystem services.

   Option: If you chose the more specific biome option, ask students to consider how their lives are connected to ecosystems beyond where they live. For example, how does a rainforest near the equator relate to life in North America?

5. Now ask them to consider how each ecosystem service is linked to the sustainability of a region. Remind students that sustainability refers not only to the health of the environment but also to the health of societies and economies. In a sustainable community, all 3 sectors—environment, economy, and society—are thriving.

6. Project the Three Sectors of Sustainability overhead onto the board or draw a large Venn diagram with 3 overlapping circles: environment, economy, and society. Explain to students that the Venn diagram was invented in the early 20th century by John Venn to represent mathematical or logical sets with common elements.

7. Ask a volunteer from each group to share 1 ecosystem service from their list, indicate where that ecosystem service falls in the sustainability Venn diagram, and explain their reasoning. For example, if a particular service contributes to environmental sustainability, then students should write it in the “environment” circle. Alternately, if an ecosystem service contributes to sustainability in more than one category, it should be listed where those categories overlap.

   Option: Go through an example together with students. Take the ecosystem service of providing food, for example.
   - Ask students to think about what kinds of foods are provided by an ecosystem. (e.g., fish, fruit, and wild game)
   - Next, ask them to consider how this might help sustain the environment. (wildlife are supported by this food)
   - Does it help sustain people or societies? (people eat the food)
   - Does it help sustain local economies? (people earn a livelihood from catching fish and harvesting fruit)
   - Write the word “food” in the area of the Venn diagram where it best fits. (In this example, it would fit in the center because it supports all 3 sustainability sectors.)

8. Now ask students to consider how ecosystem services could be valued in monetary terms. Ecological economics is an emerging field of study; researchers have produced various estimates of the “worth” of ecosystem services. Break the students back into their groups to discuss the following 2 questions relating to the ecosystem services they listed before:

- How would you come up with a price tag for each of the ecosystem services on your list? (e.g. compare with the price of similar goods, break down price into monthly bills, etc.)
- In what ways might determining the economic value of ecosystem services be beneficial?
- What would be some difficulties in determining the economic value of ecosystem services?

9. You may call on groups to share their answers or guide a larger group discussion, using the following questions.

Discussion Questions

1. What do you think might happen to our community if these ecosystem services are not protected?

2. In your opinion, does an ecosystem service need to directly benefit humans to be valuable? Explain why, or why not.

3. Ecosystem services often provide valuable services, yet they are not valued with a price tag. How do you think putting a monetary value on them would change things?

4. Why do you think it is difficult to put a price tag on ecosystem services?

Economics Extension

Have the students first take a look at some basic information about dollar-based ecosystem valuation methods (www.ecosystemvaluation.org). The following resources provide estimates of the economic value of ecosystem services. Please be aware that these documents are academic in nature and may not be appropriate for students who have not studied economics.


Additional Resources


  Author Anup Shah summarizes research from many sources on the topic and introduces readers to the idea of putting an economic value on biodiversity.

- Website: Ecosystem Services http://www.fs.fed.us/ecosystemservices/

  The USDA Forest Service website provides information about ecosystem services, including the repercussions of undervaluing forest resources.
## Ecosystem Services

<table>
<thead>
<tr>
<th>Service</th>
<th>Temperate and Tropical Forests</th>
<th>Freshwater Lakes, Rivers, and Wetlands</th>
<th>Oceans and Coasts</th>
<th>Grasslands and Prairies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Fiber/timber</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Fuel sources</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Medicinal plants</td>
<td></td>
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<td></td>
<td>X</td>
</tr>
<tr>
<td>Drinking water</td>
<td></td>
<td></td>
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<td>X</td>
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<tr>
<td>Waterway for boats</td>
<td></td>
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<td>X</td>
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<tr>
<td>Hydroelectric power</td>
<td></td>
<td>X</td>
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<td>X</td>
</tr>
<tr>
<td>Flood/storm surge protection</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
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<tr>
<td>Water purification</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Soil stabilization/erosion control</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Place for outdoor recreation</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Spiritual/cultural meaning from nature and wildlife</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Oxygen</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Air purification</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Nutrient cycling (maintain fertility)</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Climate moderation</td>
<td>X</td>
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</tbody>
</table>
Three Sectors of Sustainability

Environment

Economy

Society/Culture
Overview
Students are presented with 4 different conservation efforts that currently exist in the United States. After determining the pros and cons of each approach, students must decide which is the best use of conservation funding and articulate their reasoning.

Objectives
Students will:
• discover different approaches to wilderness conservation
• evaluate the pros and cons of each conservation scenario presented
• determine which approaches should be prioritized when allocating conservation funding

Inquiry/Critical Thinking Questions
• What is a conservation effort?
• What factors are of the utmost importance when prioritizing conservation efforts?
• What types of conservation models are the most effective in protecting biodiversity?

Time Required
One 50-minute class

Key Concepts
• conservation
• nature reserve
• nature refuge

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
6. Power, Authority, and Governance
10. Civic Ideals and Practices

National Science Education Standards
C. Life Science
F. Science in Personal and Social Perspectives

National EFS Standards
2.1 Interconnectedness: Systems Thinking
2.2 Ecological Systems: Respect for Nature

Materials/Preparation
Signs, 2 sheets of paper—one sheet with “1” and the other with “10” written in large print—posted on one side of the classroom, far apart from each other
Handout: Conservation Efforts, 1 per student

Activity
Introduction
1. Point out the sheets of paper hung on the wall, and let students know that they will use these signs to indicate the degree to which they agree with the following statement: “We should care about protecting wilderness areas.” Write this statement somewhere that everyone can read it as well.
2. Instruct students to align themselves against the wall somewhere on the scale of 1-10, where 1 means “disagree strongly” and 10 means “agree strongly.”
3. Take a few minutes to have students explain why they are located at a particular point on the continuum.
4. Share the following statistics with students:
• In 2010, the National Parks system received over 281,000,000 visitors.¹
• Less than 5% of the entire U.S. (and only 2.7% of the “lower 48”) is protected as wilderness.²
• A research study found that wilderness areas in the U.S. provide $3-4 billion in economic benefits annually.³

Activity 2: Seeking Refuge  continued

5. Ask students if any of these statistics would make them reconsider their position on the 1-10 scale.

Steps

1. Pass out a copy of the handout Conservation Scenarios to each student.

   Option: Have students conduct their own research to find out more about these 4 scenarios.

2. Ask students to imagine that they are conservation financiers. They have money to support a conservation effort, but they can only support one. After working through the handout with a partner, they will have to decide which of the scenarios they would choose to support.

3. Have students pair up to read through the handout and determine the pros and cons for each of the 4 conservation scenarios.

4. Give students about 25 minutes to work through the handout.

5. Once the discussion in pairs begins to wind down, call the class back together.

6. Write the titles for the 4 scenarios from the handout across the top of the board.

7. Starting with Scenario 1, ask student pairs to share their pros and cons for that conservation approach. As students share ideas, jot down key words under the Scenario 1 heading. You do not need to call on everyone or write everything down; you just want to make sure that a variety of ideas and perspectives have been considered.

8. Continue this process for the remaining scenarios.

9. Give student pairs a few minutes to confer together to determine which of the conservation scenarios they would fund and why.

10. Hold a vote to see who supports Scenario 1. Ask those students to share their reasoning.

11. Do the same for Scenarios 2-4, asking students to articulate their reasoning each time.

12. During the last few minutes of class, hold a discussion using one or more of the following questions.

Discussion Questions

1. What were the most important considerations when you were making your decision as a conservation financier? (e.g., human uses or ecosystem functions)

2. Which of the conservation models seemed easiest to manage, and why? Which would be the most difficult to manage, and why?

3. Which do you think is a better long-term strategy: conservation designated by federal or state legislation, or conservation by a private or nonprofit organization?

4. Can you think of models beyond the ones presented that would be a better use of resources for species conservation?

5. What would be the consequences of having no legally protected wild lands or areas where human activities are limited?

6. Do you think it is ethical to determine conservation priorities based on human needs and values? If not, how else would you go about determining what wild lands and species to conserve?

Additional Resource

- Article: U.S. Jaguar Plan Foiled by Border Fence, Critics Say

This article by H. Josef Hebert from January 2008 explains why U.S. officials have decided not to focus on recovery of the jaguar, a species whose range extends from South America into the southwestern U.S. but is rarely spotted in the United States.
**Conservation Efforts, page 1**

**Scenario 1: The Golden Gate National Parks (California)**

- One of the world’s largest urban national parks: 80,000 acres in all, spanning 80 miles north to south
- Management: National Park Service, with support from nonprofit organizations and volunteers
- Rare species: contains more federally protected species considered threatened and endangered than any other national park unit in the continental United States
- Large numbers of endemic species: 1,000 types of plants and 250 bird species
- Part of a larger biodiversity hotspot: the California Floristic Province, home of the giant sequoia and coast redwood trees
- Human use: second most visited park in the National Park Service, with over 15 million visits annually, 130 miles of trails, and 700 historic structures

<table>
<thead>
<tr>
<th>PROS for Golden Gate National Parks Model</th>
<th>CONS for Golden Gate National Parks Model</th>
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Scenario 2: Arctic National Wildlife Refuge (Alaska)\(^1\)

- Vast wilderness: total of 19.3 million acres, spanning 200 miles north to south (about the size of South Carolina)
- Management: U.S. Fish and Wildlife Service
- Ecosystem diversity: includes 5 ecological regions (coastal marine areas, coastal plain tundra, alpine tundra, forest-tundra transition, and boreal forest)
- Legal designation: approximately 8 million acres (about 40% of the refuge) is protected as “Wilderness,” where human development is prohibited
- Home to many species, including: 42 fish, 37 land mammals (including the polar bear), 8 marine mammals, and over 200 migratory and resident bird species
- Human use: recreational hunting, fishing, trapping, wildlife observation, backpacking, river floating and camping, scientific investigations, and subsistence uses

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<thead>
<tr>
<th>PROS for Arctic National Wildlife Refuge Model</th>
<th>CONS for Arctic National Wildlife Refuge Model</th>
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Scenario 3: Florida Keys National Marine Sanctuary (Florida)¹

- Islands off the southern tip of Florida: a protected region of approximately 2,800 square nautical miles of state and federal waters, stretching 202 miles to the south and west of Florida
- Management: administered by the National Oceanic and Atmospheric Administration, though jointly managed with the state of Florida
- Unique ecology: includes North America’s only (and the world’s third largest) living coral barrier reef
- Ecosystem diversity: includes reefs, seagrass meadows, soft and hard bottom communities, and coastal mangroves
- Human use: the public is allowed access to most of the sanctuary for diving, fishing, and other recreation
- Protected areas: 24 ecological reserves (6% of the sanctuary) are fully protected through strict restrictions on harvesting marine life (fish, mollusks, etc.); public access is also restricted in 27 wildlife management areas, in order to protect sensitive wildlife habitats
- Other uses: the sanctuary includes 20 existing “management areas,” such as national parks, national wildlife refuges, state parks, and aquatic preserves, which are managed by other entities

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Conservation Efforts,  page 4

Scenario 4: Washo Reserve (South Carolina)¹

- One continuous area: 1,040 acres in Charleston County
- Management: The Nature Conservancy, a nonprofit organization (private owners donated the land)—primarily funded by charitable donations
- Larger context: the reserve is part of 24,000 acres known as the Santee Coastal Reserve, which the Nature Conservancy gave to the South Carolina Department of Natural Resources; the Nature Conservancy kept the Washo Reserve because of its ecological sensitivity
- Ecology: the reserve contains a 200-year-old freshwater cypress lake and cypress-gum swamp
- Biodiversity: home to the oldest continuously used wading bird rookery (a breeding colony) in North America, where over 50 pairs of osprey nest
- Endangered species: the wood stork, an endangered species in South Carolina, can be found on the reserve

<table>
<thead>
<tr>
<th>PROS for Washo Reserve Model</th>
<th>CONS for Washo Reserve Model</th>
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Activity 3: Endangered Species Investigation

Overview
Students individually research an endangered species to learn about activities that threaten the survival of the species and what actions have been taken to reverse the species’ decline. As a class, students make conclusions about the human activities that have the greatest impact on endangered species. Students then work to develop their own policies that address the decline in biodiversity.

Objectives
Students will:
• conduct independent research to learn about the life history, threats, and conservation approaches for an endangered species
• draw conclusions about which human activities pose the greatest threat to other species
• evaluate the effectiveness of conservation policies as a tool to protect wild species

Inquiry/Critical Thinking Questions
• What factors contribute to species becoming extinct?
• In what ways do human activities threaten the survival of other species?
• What actions or policies could reverse a decline in a species’ population?

Time Required
One 60-minute class

Key Concepts
• endangered species
• life history
• conservation policies

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
6. Power, Authority, and Governance
10. Civic Ideals and Practices

National Science Education Standards
A. Science as Inquiry
C. Life Science
F. Science in Personal and Social Perspectives

National Efs Standards
2.2 Ecological Systems: Respect for Limits
2.2 Ecological Systems: Natural Capital
3.2 Collective Action: Community-Based and Societal Level Decision-Making

Materials/Preparation
Species photos, show these via a document camera or other means of projection
Handout: Endangered Species, 1 per student (cut out cards)
Handout: Endangered Species Research, 1 per student
Internet access
Activity 3: Endangered Species Investigation  continued

**Activity**

**Introduction**

1. Show students the species photos included in this activity.
2. Ask them if they can guess what these 6 species have in common, aside from the fact that they are all living organisms.
3. Let students know that the International Union for the Conservation of Nature (IUCN) considers these species “critically endangered.”
4. If students have not yet considered the meaning of the word endangered, review the definition with them. (An endangered species is one that is in danger of becoming extinct in the foreseeable future.) Students might also have heard the term threatened species. (While threatened species are not yet at the point of being considered endangered, their numbers are significantly low or declining to the point of being a concern. Threatened species are likely to become endangered in the foreseeable future if their circumstances do not change.)
5. Let students know that they will each research an endangered species and draw conclusions about the most pressing threats to biodiversity.

**Steps**

1. Give each student 1 Endangered Species card. Students will be conducting independent research on the species on their card.
2. Pass out a copy of the handout Endangered Species Research to each student. They should write the name of the species from their card in the space provided for question 1 on the handout.
3. Give students 30 minutes to research their species, online or through other means. The following sources are particularly informative:
   - U.S. Environmental Protection Agency Endangered Species Fact Sheets: [http://www.epa.gov/oppfed1/endanger/factsheets.htm](http://www.epa.gov/oppfed1/endanger/factsheets.htm)
4. On the board, write headings for 5 columns: Invasive Species, Habitat Loss and Fragmentation, Pollution, Climate Change, and Exploitation and Overconsumption.
5. Bring the class back together. Ask each student to very briefly share which species they researched and the primary threats to that species’ survival (question 6 on the handout). Ask each student to determine which of the 5 categories on the board best describes the primary threat to the species. (If more than one threat is considered a primary or direct cause of the species’ decline, there may be more than one answer.)
Activity 3: Endangered Species Investigation  continued

6. As students indicate which of the 5 categories is the main threat to the species they researched, make a mark under the appropriate heading to tally student responses.

7. Once all students have shared, ask them to note which category of activities seems to have the largest impact on species survival. (Habitat loss/degradation is generally considered the greatest threat to biodiversity.)

8. Have students think-pair-share with a partner about how they could use that piece of information to develop a conservation policy designed to protect the greatest number of species. Give students 5 minutes to discuss with their partner 1 policy or law that could protect endangered species.

9. Have students share their ideas with the class.

10. Conclude with a discussion using one or more of the following questions.

Discussion Questions

1. Do you think that government policy is the best means to protect endangered species? If not, what would be a better way to preserve species?

2. What communications or education efforts would be especially persuasive for encouraging people to support conservation measures or to “tread lightly” in natural areas? Why would these be particularly effective?

3. The species you studied in this activity are all animals. Do you think people are more or less likely to care about other types of organisms, such as plants or fungi, and why? What about smaller animals, such as insects and small crustaceans?

Civics Extension

Students review the Endangered Species Act (ESA), a law designed to protect rare species in the United States. They explore how the ESA protects one or more threatened or endangered species. They determine at least 1 pro and 1 con of the ESA for the species investigated. Students then share the information with classmates, to get a broader idea of how the law applies to multiple species. They draw their own conclusions about whether or not the ESA is an effective tool to preserve rare species. Does it overly restrict economic or other activities? Could it be more effective, and if so, how?

Helpful resources may include the U.S. Environmental Protection Agency’s summary of ESA (http://www.epa.gov/lawsregs/laws/esa.html) or the U.S. Fish & Wildlife Service’s list of threatened or endangered species (http://www.fws.gov/endangered/).

Additional Resource

• Article: Interior to Consider Endangered Species Listings for 374 Aquatic Species
  This New York Times article by Phil Taylor from September 2011 sheds some light on how the Interior Department determines whether to add new species to those protected under the Endangered Species Act.
Endangered Species Photos
## Endangered Species

<table>
<thead>
<tr>
<th>Hawaiian monk seal</th>
<th>Chinese giant salamander</th>
<th>Riverine rabbit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethiopian fox</td>
<td>South Asian river dolphin</td>
<td>Sea otter</td>
</tr>
<tr>
<td>Sumatran orangutan</td>
<td>Pygmy three-toed sloth</td>
<td>Mexican prairie dog</td>
</tr>
<tr>
<td>Stellar sea lion</td>
<td>Mountain gorilla</td>
<td>Leatherback sea turtle</td>
</tr>
<tr>
<td>Northern white rhinoceros</td>
<td>California condor</td>
<td>Brown spider monkey</td>
</tr>
<tr>
<td>Red wolf</td>
<td>Snow leopard</td>
<td>Giant panda</td>
</tr>
<tr>
<td>Blue whale</td>
<td>Tasmanian devil</td>
<td>Bonobo</td>
</tr>
<tr>
<td>Gray wolf</td>
<td>Asian elephant</td>
<td>Egyptian vulture</td>
</tr>
<tr>
<td>Kokako</td>
<td>Chimpanzee</td>
<td>Whooping crane</td>
</tr>
</tbody>
</table>

*Note: The above list includes various endangered species from different parts of the world.*
Endangered Species Research

1. Endangered species researched (common name and scientific name):

2. Geographic location(s):

3. Habitat/ecology:

4. Other interesting characteristics:

5. Importance of species:

6. Primary/direct threats to species:

7. Secondary/indirect threats to species:

8. Actions taken to protect species:

9. Current status of species:

10. References:
Activity 4: Designing Community-based Conservation Programs

Overview
Students experience the process of community-based conservation firsthand as they work in small groups to develop solutions that support both human and wildlife communities. In a jigsaw activity, students develop conservation strategies designed to meet different goals, ultimately collaborating to come up with solutions that achieve multiple goals.

Objectives
Students will:
• recognize that community-based conservation is a multifaceted effort that involves consideration of multiple perspectives and incentives
• understand that human communities’ needs must be considered in addition to the needs of wildlife to sustain local conservation programs
• devise sustainable solutions for enhancing human and ecological communities simultaneously

Inquiry/Critical Thinking Questions
• What is community-based conservation?
• How is the well-being of wildlife connected to human well-being?
• What are sustainable conservation solutions?

Time Required
One 60-minute class

Key Concepts
• community-based conservation
• human-wildlife conflicts
• sustainable solutions

National Standards Addressed

National Council for the Social Studies
3. People, Places, and Environments
7. Production, Distribution, and Consumption
9. Global Connections
10. Civic Ideals and Practices

National Science Education Standards
C. Life Science
F. Science in Personal and Social Perspectives

Materials/Preparation
Handout: Goals 1–4, 1 per group of 3–4 students

Activity
Introduction
1. Show students photos or videos to introduce them to snow leopards, using one or more of the following resources:
• Discovery Channel’s Planet Earth video clips—http://dsc.discovery.com/tv/planet-earth/ (search for “snow leopard”)
• National Geographic’s snow leopard page, with photos and audio—http://animals.nationalgeographic.com/animals/mammals/snow-leopard/
• Snow Leopard Trust photos and videos—http://www.snowleopard.org/learn/photos-videos

2. Ask students if anyone has seen a snow leopard before, either at the zoo or on film. Let them know that the snow leopard is an endangered species located in the mountains of Central Asia, their range extending from Russia to India.

Option: Show students the snow leopard’s range on a map. Its range includes: Afghanistan, Bhutan, China, India, Kazakhstan, Kyrgyzstan, Mongolia, Nepal, Pakistan, Russia, Tajikistan, and Uzbekistan.

3. Read the following statement about human-wildlife conflicts involving snow leopards to students. Ask them to take notes as you read, jotting down threats to snow leopards and reasons why people may not want snow leopards around.
Activity 4: Designing Community-based Conservation Programs  continued

Many people who live alongside snow leopards are nomadic herders, meaning they move their livestock—goats, yaks, and camels—throughout the year in search of grazing land. Livestock herders make money by selling wool, milk, and meat from their animals.

Earning money as a nomadic herder is unpredictable. When winter weather is especially severe, livestock animals may die. A herder’s income also depends on the health of livestock animals. If livestock are diseased, a herder will lose money. Often the people who herd livestock in these regions earn very little money, making each livestock animal very important to them.

For various reasons, snow leopards will sometimes attack and kill livestock. In some cases, the snow leopard’s natural prey—wild sheep and goats—are not easily available because hunters have killed them for meat. In other cases, livestock animals overgraze the same grass that wild sheep and goats need, leaving less prey for snow leopards. When snow leopards attack domestic livestock, some herders retaliate by killing snow leopards.

Others kill snow leopards for money. A poacher who kills snow leopards illegally can make much more money from the sale of a snow leopard’s fur and body parts than the average nomadic herder earns in a year.

4. Ask students to consider how the case of the snow leopard is an example of human-wildlife conflicts. They can do this together as a class or in a think-pair-share activity.

Steps

1. Tell students that they are going to read about specific issues affecting snow leopards and humans that inhabit the same land. Then they will devise sustainable solutions that protect both snow leopards and humans.

2. Ask them to articulate a working definition for sustainable solutions. (e.g., long-lasting solutions that consider the environment, society, and the economy) If a solution supports humans, but does not support snow leopards, it will not be sustainable in the long term.

3. Divide the class into groups of 4 students each.

4. Hand out the reading Goals 1–4 to each group so that each student in a group receives a different Goal.

5. Explain that each student will be working on developing a solution that meets one of the following goals:
   - Goal 1—Increase the Income of Herders
   - Goal 2—Increase the Amount of Wild Prey Available to Snow Leopards
   - Goal 3—Decrease the Number of Livestock Killed by Snow Leopards
   - Goal 4—Decrease the Illegal Hunting of Snow Leopards

6. Ask students to now get into groups with other students who have the same Goal. Thus, all of the Goal 1 students will form a large group and so on. If groups are very large (more than 4–5 students each), you may want to divide them into smaller groups so that more than one group is working on the same Goal.

7. Explain to the class that each group will be responsible for making a recommendation for how to protect snow leopards and people in Mongolia, according to the Goal they have been assigned.

8. Allow groups 15 minutes to read through their Goal together and collaborate on a sustainable solution that meets their Goal. Have students write down their agreed-upon solution so that they can share it with their original group.

9. Direct students to reunite with their original groups.

10. Once in their original groups, each student should share the Goal she or he was assigned and a conservation solution they developed with their Goal-specific group.
Activity 4: Designing Community-based Conservation Programs  continued

11. Once all 4 students in each group have shared their ideas for solutions, ask the group to come up with a single solution that meets at least 3 of the 4 Goals. Have student groups write down their solution and be prepared to share it with the class.

12. Ask each group to share their solution aloud with the class. As they share, you may want to have other students take notes about each solution in order to compare and contrast, and to consider which solution seems like the best approach.

13. Conclude with a discussion using one or more of the following questions.

Discussion Questions

1. Can you imagine a conservation scenario that neglects to involve human communities? What challenges might result?

2. Why is it essential to consider the needs of the human communities who live alongside species that conservation measures seek to protect?

3. How does community-based conservation address root causes of species extinction and biodiversity loss?

4. How can preserving biodiversity also support human cultures and communities? Economic activities? Ecosystem functions?

5. How is biodiversity connected to other issues we have discussed, such as poverty, conflict, governance, and education?

Environmental Science Extension

Have students explore different real-world conservation models designed to protect wild species and natural lands while simultaneously benefiting human communities who live in the same region. Students analyze how each model considers the needs of people, whether it appears to be sustainable long-term, and whether an alternate model would better meet the stated goals. A few models to get started include:

- Snow Leopard Trust—The Trust’s Snow Leopard Enterprises program in Mongolia is a community-based conservation model. People who live alongside snow leopards are given economic incentives not to harm the snow leopards. (http://www.snowleopard.org/programs/communitybasedconservation/sle)

- Wildlife Conservation Society—WCS works with local people and organizations around the world. Their program in Bolivia, a country where over half the national population belongs to an indigenous group, seeks to preserve cultural diversity as well as biological diversity. (http://www.wcs.org/where-we-work/latin-america/bolivia.aspx)

- Conservation International—CI supports ecotourism efforts in places with rich biodiversity. They believe that responsible tourism can help to support human economies, conserve natural resources, and educate people firsthand about the importance of conservation. (http://www.conservation.org/learn/culture/ecotourism/Pages/ecotourism.aspx)

Additional Resources


This New York Times article by Natalie Angier from July 2011 speaks about how scientists who have studied snow leopards gained knowledge of the elusive cat. Human–snow leopard conflicts have occurred because of the snow leopard’s predation of livestock such as sheep and goats.


This 6-minute segment from ABC Nightline, February 2011, chronicles the escalation of human-wildlife conflicts in India, where human settlements have encroached on lands inhabited by wild elephants.
**Goal 1: Increase the Income of Herders**

**The Reality of the Herder**
Imagine living in extremely harsh weather conditions where you may only be able to eat one meal per day. You depend on your livestock—sheep, camels, horses, yaks, or goats—to provide for your daily needs, such as food and clothing. If you made less than $1 per day, as many herders do, how would you survive? How would you keep your livestock alive?

The herders that share the same mountains with snow leopards throughout Asia live day to day without a stable income. They move with their livestock several times a year in search of land for grazing, fresh water, and seasonal foods such as berries. Many herders do not keep their livestock in pens because they move so often.

**Interactions with Snow Leopards**
Livestock animals provide herders with milk, meat, and wool. Herders’ lives can be devastated by the loss of a single livestock animal. At times, this loss is a result of disease or bad weather. Other times, when snow leopards do not have enough to eat, they may kill and eat livestock. This makes some herders so angry that they kill the snow leopards out of vengeance or for fear that the snow leopard might attack their animals again. As one herder said after her horse was killed by a snow leopard, “My husband still is quite angry about the snow leopard killing our horse, and sometimes talks about going out with his gun.”

Herders who live in snow leopard habitats survive on less than a few hundred dollars per year. When snow leopards kill just one livestock animal, a herder can lose 3% to 20% of his or her income for the year. While snow leopards are clearly an endangered species, the basic needs of herders are in danger too.

**Daily Living**
Cold, dry weather conditions force herding families to move constantly throughout the land in search of an environment appropriate for their families and their livestock. Many herders sell wool to traveling traders they meet as they journey, but they never know if or when the next trader will cross their path.

They do not own cars or motorcycles that can take them to markets to sell their products, so they have to accept whatever price is offered to them by the traveling traders.

A small number of herders are able to get a more reliable source of income by selling their wool or products made from wool to organizations that can sell them to people in distant places. They can make more money by selling high-quality finished products like rugs and sweaters made from their wool to these organizations. Selling to these organizations provides herders with different options for earning money.

**What do you think is a sustainable solution to increase the income of herders?**

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**Notes:**
2. Ibid.
Goal 2: Increase the Amount of Wild Prey Available to Snow Leopards

Sharing the Land
When you are at school or at home, do you often have to share things with your friends or your siblings? How do you decide to share what you receive? Imagine how complicated it might be to share the land you need to survive. Life is not easy where snow leopards and humans live in the same place. Daily survival is important to both species. Herders sometimes move higher in the mountains into snow leopard territory to find grassy areas for their livestock to graze. This sharing of land can lead to tension between humans and wildlife when they compete for limited resources.

Overlapping Homes
It is estimated that the number of livestock animals in Mongolia is approximately 33 million.1 Those livestock all require food. Herders move with their livestock wherever grazing land is available. When herders move into the same region as the snow leopards, their livestock inhabits the same land as the snow leopard. Sharing land can lead to competition for the same type of food that both livestock and the snow leopard’s wild prey species, such as ibex and hares, depend on. Overgrazing, which happens when there are more livestock than the grass can support, can destroy the mountain grasslands, leaving less food for all types of animals.

This decrease in food from overgrazing can make it difficult for wild prey to survive, and they are not able to compete for land with the large numbers of domestic sheep and goats. Snow leopards depend on wild prey species, including wild blue sheep (bharal), wild goats (ibex), and wild argali sheep. They also eat small prey including marmots, hares, and wild birds. When prey animals disappear, snow leopards have to find other food immediately or they will starve to death.2 Herders have been known to accidentally scare wild sheep and goats away from the mountains, making it more difficult for snow leopards to find wild prey. Some conservation organizations have worked with herders to find areas where livestock can graze and reserve other areas only for wild prey species.

Tension between Snow Leopards and Humans
If the wild prey animals which snow leopards typically consume are not available, snow leopards will consume whatever animals are nearby, including livestock.3 Since herders’ incomes depend almost entirely on their livestock animals, if they lose even one animal to a snow leopard they could retaliate by finding the snow leopard and killing it. As one herder said after her horse was killed, “My husband still is quite angry about the snow leopard killing our horse, and sometimes talks about going out with his gun.”4

What do you think is a sustainable solution to increase the amount of prey species for snow leopards so they do not have to eat livestock?

3 Snow Leopard Trust website.
4 Facing the Future, Engaging Students.
Goal 3: Decrease the Number of Livestock Killed by Snow Leopards

The Importance of Livestock
Imagine that you are a yak herder in the mountains of Central Asia trying to support your family. You want to keep your animals well fed because they are your only source of money. Unfortunately, you are unable to find grazing land to feed your livestock. The only option you have is to move higher into the mountains to find new lands for grazing. This move puts you in closer contact with the snow leopards that live high in the mountains. Losing even one livestock animal makes your life more difficult. Unfortunately, you have already lost some of your livestock to disease and harsh winters. You have also lost some because snow leopards have eaten them.

Out of fear that they will lose too many livestock, some herders try to increase their herd sizes. Unfortunately, it is difficult to make sure that all of the animals are healthy, to pay for their vaccinations, and to keep track of them in the mountains. Also, because they compete with each other for the limited grass, they can become malnourished when there is not enough grass for all of them, leaving them more susceptible to disease and predators. Smaller herds tend to be healthier, provide better meat and milk, and have thicker wool.

Many herders sell wool from their livestock to traveling traders they meet as they journey, but they never know if or when the next trader will cross their path. They have to accept whatever price is offered since they don’t have any other options.

Hunting for Food
Snow leopards are predators, and their usual diet consists of wild blue sheep (bharal), wild goats (ibex), and wild argali sheep. They also eat small prey including marmots, hares, and some birds.

When herders bring their livestock to the same areas where snow leopards live, the livestock may eat much of the grass that wild sheep, goats, and other prey also need. The amount of prey available to snow leopards decreases when the prey animals can’t find enough food to survive.

Conflicts between Wildlife and Herders
Snow leopards are opportunistic hunters, which means they attack any available animals. Therefore, if their usual prey is not available, snow leopards will eat livestock animals. Snow leopards have been known to attack livestock at night when there has not been enough protection or when children are guarding the herd. Some herders have reacted by killing snow leopards in retaliation or for fear that the snow leopard might attack their animals again.

Some conservation organizations have worked to create programs that pay herders money for any livestock they lose to snow leopards in exchange for not hurting snow leopards. They also help find ways to protect livestock from predators at night.

What do you think is a sustainable solution that can discourage snow leopards from preying upon livestock?

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2 Blomqvist and Dexcel, “In Focus.”
Goal 4: Decrease the Illegal Hunting of Snow Leopards

Making a Living
Imagine you are a herder living in the same mountains where snow leopards live. The mountain temperatures are freezing. You haven’t been able to sell much wool to make money, and you have lost some of your sheep, horses, and goats to cold temperatures and wild predators. You earn less than $1 a day, and this money has to support your entire family. Your children cannot attend school because you need them to help take care of the livestock. If you could not make money on a daily basis to provide for your family, how would you take care of them?

If herders do not earn enough money, they cannot survive. While many herders sell their wool to traveling traders they meet as they journey, they never know if or when the next trader will cross their path. They have to accept whatever price is offered since they don’t have any other options for making money. They do not have cars to travel to markets to sell their wool for a higher price. A small number of herders are able to get a more reliable source of income by selling their wool or products made from wool to organizations that can sell them to people all over the world.

Illegal Income
Some herders turn to poaching snow leopards to make money. Poaching is the illegal hunting of animals. Under Mongolia’s Wildlife Law, the fine for killing a male snow leopard is 8,000,000 tugrik (U.S. $5,825). In Nepal, this illegal trade could result in anywhere from 5 to 15 years in jail. Why would people choose to poach if it puts their lives at such extreme risk?

Consider this: catching one snow leopard can provide a herder with a lot of money—up to $100 for a cat’s body parts, which are used in traditional Asian medicines, and between $200 and $900 for the snow leopard’s pelt, or fur. That’s a lot of money to herders who typically earn just $200–$350 in a year, depending on the market rate for wool.

Why Snow Leopards?
Snow leopards are highly prized throughout Central Asia, Eastern Europe, and Russia. Each year, within the Xinjiang province of China, at least 20 to 30 snow leopards are killed and traded at a market for use in traditional Asian medicines. In Tibet, wearing clothing with tiger or leopard skin is very popular and considered a sign of wealth. Some people even want to own these animals as pets. Therefore, hunters will spend months searching for snow leopards. The money poachers can make catching just one snow leopard is far more than what they make in an entire year by herding.

Having more options for making money, or making snow leopards more valuable alive than dead, could provide herders with the stable income they need to survive.

What do you think is a sustainable solution to decrease the poaching of snow leopards?

3 Snow Leopard Trust website.
5 Snow Leopard Trust website.
Chapter 11

Oceans

CHAPTER BIG IDEAS

- Oceans support the existence of life on our planet.
- Oceans contain a diverse and unique variety of life and habitats.
- Today, marine ecosystems face threats ranging from direct over-exploitation and pollution to the unintended repercussions of human activity.
- Humans can have an impact on the oceans wherever they live.
Guiding Questions

• How do oceans support life on Earth?
• How do human actions impact Earth’s marine ecosystems?

Key Concepts

• gyres
• acidification
• phytoplankton
• stormwater runoff
• dead zones
• aquaculture

Supporting Vocabulary

• bycatch
• jurisdiction
• commons
• bioluminescence
• nutrient
• eutrophication
• bioaccumulation
• hypoxia

Service Learning Component

Service Learning Project Idea

• Question: How do you build public awareness about storm drains, including how to avoid polluting our storm drains and where they flow to?

• Hook Resource: Prevent Storm Water Pollution
  http://vimeo.com/20265934
  This 1-minute PSA helps educate the citizens of Charlottesville, Virginia about where rainwater goes and where storm drains flow. The information is relevant for any city or town with storm drains.

• Project: Students brainstorm ways to build awareness about stormwater pollution and storm drain systems. They then develop a public awareness program. Examples could include PSAs, storm drain stenciling or other signage, an educational program for grade school children, or pamphlets to distribute to the community.

• Additional Resources:
  • Video: Storm Drain Making 101
    http://www.youtube.com/watch?v=QhdUjDBq9z0
    This 7-minute video of a storm drain marking event led by the Tippecanoe County Partnership for Water Quality will teach students about the importance of educating the public about storm drains.
Website: Storm Drain Marking
http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=15
The Environmental Protection Agency provides some additional how-to for building stormwater pollution awareness.

Project Based Learning Component

Project Based Learning Idea
• Overview: Students investigate the impacts of the 2011 Japanese tsunami on the oceans.
• Driving Question: How do humans amplify the impacts of natural weather events such as tsunamis and how can we work to limit the impact a tsunami may have on our oceans?
• Hook Resource: Impacts of the Japanese tsunami on ocean life
http://theseamonster.net/2011/04/impacts-of-the-japanese-tsunami-on-ocean-life/
Blog article written by John Bruno, marine ecologist and Associate Professor at the University of North Carolina at Chapel Hill, in April 2011. Bruno briefly explores the immediate threats the Japanese tsunami posed to ocean life.

• Individual Project: Students choose a discrete impact mentioned in the hook resource (local water quality, ocean debris, oyster farms, seagrass beds, radiation contamination) and further investigate that impact. Students then draft a letter to a relevant government representative about that specific impact with a suggestion of what the government official could do to help alleviate the problem. Students could write to a local representative, federal official, Japanese official—any government entity around the world that may be able to help address the problem. Encourage students to think creatively about their potential letter recipient.
• Group Project: Student groups further investigate one impact John Bruno mentions in his blog article (local water quality, ocean debris, oyster farms, seagrass beds, radiation contamination). Groups can divide research between (1) the circumstances before the tsunami hit, (2) observed impacts since the tsunami, (3) comparison to similar weather events and their impacts, and (4) additional scientific theories. Students present their findings to the class. In conclusion, the class as a whole discusses how human activities amplified the impacts of a natural weather event and how humans can limit the devastation of a tsunami.
• Additional Resources

• Report: Effects of Tohoku Tsunami and Fukushima Radiation on the U.S. Marine Environment
  https://fas.org/sgp/crs/misc/R41751.pdf
  An 11-page report for Congress on the impacts to the United States from the Japanese tsunami drafted in 2012.

• Website: Tsunami: Disaster and Conflicts
  http://www.unep.org/tsunami/
  UNEP summation of risks associated with tsunamis and, specifically, the Japanese tsunami.

• Article: Where will the debris from Japan’s tsunami drift into the ocean?
  http://esciencenews.com/articles/2011/04/06/where.will.debris.japans.tsunami.drift.ocean
  Article from the University of Hawaii at Manoa about scientific modeling offering predictions of where ocean debris from the tsunami will arrive.

• Article: Oregon authorities demolish Japanese tsunami dock
  http://www.guardian.co.uk/environment/2012/jul/30/japan-tsunami-dock-wildlife
  Guardian news article by Bob Ward about a dock that arrived on the Oregon coast in 2012 from the 2011 Japanese tsunami.

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Summative Assessment
Chapter Test

Connections

World History connections:
History of ocean exploration; development of ocean governance; historical overfishing practices

Economics connections:
Coastal economies; commercial fishing; exclusive economic zones; economic impacts of the BP oil spill

Geography connections:
Ocean circulation; coral ecosystems; mangrove ecosystems; submarine volcano ecosystems

Civics connections:
Personal and structural solutions to oceans
# Activities in Teacher’s Guide: Suggested Sequence

## Day 1

**Reading:** *Introduction to Oceans*

**Activity 1:** *Bounty of the Oceans*—Students explore the variety of and interconnections between marine species. In small groups, students research one marine species. As a class, students work together to create a visual representation of each species’ use of the oceans and the relationships between this small sample of marine life.

## Day 2

**Reading:** *Background on Oceans*

**Activity 2:** *Van to the Ocean Floor*—Students learn about the use of underwater remote operated vehicles (ROVs) to explore the oceans as well as uncover a unique ecosystem that scientists are just beginning to learn about themselves, deep-water corals. Students use data and images collected from Lophelia II, an expedition undertaken by the National Oceanic and Atmospheric Administration, to perform their own scientific exploration from a classroom setting.

## Day 3

**Reading:** *Oceans Today*

**Activity 3:** *Nonpoint Source Pollution*—Students learn to distinguish point source pollutants from nonpoint source pollutants. They discover how nutrient pollution is affecting the oceans. Students then develop research questions and strategies for addressing the problem of low dissolved oxygen in one region, the Puget Sound.

## Day 4

**Reading:** *Pathways to Progress: Oceans*

**Activity 4:** *Who Cares about Marine Protected Areas?*—Students take on perspectives of different stakeholder groups involved in the creation of a Marine Protected Area (MPA) along the coast of their city. Stakeholder groups are encouraged to form alliances, contemplate compromise, and seek consensus. Their efforts will, hopefully, result in a final proposal for an MPA along their coastline, potentially with sections portioned off for specific uses and a list of regulations to be applied to the MPA.
Discussion Questions from the Chapter Reading

Introduction to Oceans
1. How do the oceans impact our climate?
2. Are the oceans uniform? How might one marine ecosystem differ from another?
3. What do we rely on the oceans for?

Background on Oceans
4. What are two ways we have observed and studied the oceans?
5. How do the oceans remain a mystery, and how does this mystery impact us?

Oceans Today
6. In what way have humans inadvertently undermined the sustainability of our oceans?
7. Do you believe we should drill the ocean floor to expand the supply of our energy resources?
8. What do you believe is the biggest threat to the oceans today?

Pathways to Progress: Oceans
9. What fishing practices could help alleviate the stress on already overexploited fish stocks?
10. How do our activities on land impact the sea?
Recall
Match the following words on the left with their definitions on the right.

1. Acidification occurrence where low concentrations of oxygen lead to a massive die-off of marine species
   
2. Gyres circumstance defined by a low pH and high levels of acidity
   
3. Aquaculture large-scale circular system of currents
   
4. Dead zones farming of fish and shellfish
   
Reasoning/Explanation
Complete the following multiple choice questions by choosing 1 correct answer.

5. What statement best describes why the oceans have higher heat capacity than land masses?
   a. The oceans don't experience temperatures as cold or as hot while land masses do.
   b. Most of the sun's energy is absorbed by the oceans, leaving the average temperature on land cooler than if the oceans did not exist.
   c. Ocean temperatures increase as you get closer to the surface.
   d. It requires more energy to raise the temperature of the oceans than to raise the temperature of air or land.

6. Which statement best describes how the oceans act as carbon sinks?
   a. The oceans contain mangrove swamps.
   b. The oceans absorb more carbon dioxide than they release.
   c. The oceans generate more plant life than land masses, generating more carbon dioxide.
   d. The oceans exhibit signs of acidification.

7. The Gulf Stream is:
   a. a major tide event
   b. an oceanic current
   c. a phenomenon similar to El Niño
   d. a natural wave break
8. Use the flow chart to help answer the multiple choice question below.

Which statement best replaces the X in the flow chart?

a. Today, the further development of submersibles has allowed scientists to explore areas of the oceans previously thought to lack any form of life.

b. Today, ocean exploration is the number one priority for many nations looking to expand their energy resources into deep-sea oil and gas reserves.

c. Today, ocean exploration is still limited to observation from vessels due to the high costs associated with underwater technologies.

d. Today, technological advancements have allowed scientists to rely solely on submersibles and remote operated vehicles.

9. The following methods have been developed to help regulate our use of the ocean except:

a. establishment of a high seas enforcement bureau, including a court system and international enforcement officials that police the oceans

b. creation of exclusive economic zones (EEZs), offering sovereignty to coastal communities for the waters 200 nautical miles off their coast

c. imposition of a nation's laws upon a vessel registered to that nation, despite presence on the high seas

d. ratification of international treaties to provide regulation and enforcement for fishing and other activities outside national EEZs

10. Most ocean pollution originates from:

a. shipping vessels

b. unsustainable fishing practices

c. cruise ships

d. land-based activities

11. What is the best way to describe how both aquaculture and invasive species threaten the health of our oceans?

a. Both threats harm the sports fishing industry.

b. Both threats increase the likelihood of a dead zone.

c. Both threats introduce an unnatural presence into a natural ecosystem.

d. Both threats generate nonpoint pollution.
12. Use the graphic organizer below to help answer the question.

What is the best statement to replace the X as another element attributed to the depletion of the Bluefin tuna population?

- a. Bycatch of another commercially sought-after species
- b. Limited international governance
- c. Mysterious life cycle
- d. Lack of compliance with treaties

13. Dead zones occur where:

- a. one predator species has effectively killed off all other life forms
- b. extensive algae growth leads to oxygen deprived water
- c. acidification has led to coral bleaching
- d. currents have concentrated trash in the ocean to a few central locations

14. Methods for protecting overexploited fish stocks include all of the following except:

- a. restricting the time of year a species of fish may be caught
- b. requiring fishing licenses
- c. limiting fishing to only what is needed to meet the sustenance needs of the local community
- d. setting quotas for the amount of fish caught

**Application/Complex Reasoning**

Answer the following short answer questions.

15. As discussed in the chapter, there are a variety of marine ecosystems found in the oceans.

**Part A.** Describe 2 marine ecosystems you learned about from the chapter.

**Part B.** Explain 1 way in which these two ecosystems are unique from one another.

**Part C.** Offer 1 reason humanity can benefit from one of the ecosystems you described.

16. Consider a statement made by Tom Allen, former United States congressman:

“Yet, much of what lies beneath the ocean’s surface remains a mystery, and our nation continues to rely on a confused, antiquated system of ocean governance.”

**Part A.** Expand on Mr. Allen’s statement and whether you agree with it or not.

**Part B.** Describe 1 form of ocean governance you believe to be effective and why.

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Recall (4 points)
1. Acidification—circumstance defined by a low pH and high levels of acidity
2. Gyres—large-scale circular system of currents
3. Aquaculture—farming of fish and shellfish
4. Dead zones—occurrence where low concentrations of oxygen lead to a massive die-off of marine species

Reasoning/Explanation (10 points)
5. d
6. b
7. b
8. a
9. a
10. d
11. c
12. d
13. b
14. c

Application/Complex Reasoning (6 points)
15. Part A. Answers will vary. (2 points)
   - Coral reefs, mangrove swamps, submarine volcanoes

   Part B. Answers will vary. (1 point)
   - Coral reefs are sensitive to climate change.
   - Coral reefs contain the most density of life.
   - Mangrove swamps include above-ground vegetation.
   - Mangrove swamps are on the coastline, where the sea meets the land.
   - Submarine volcanoes are found on the ocean floor.
   - Submarine volcanoes are home to creatures that don't rely on sunlight or photosynthesis.

   Part C. Answers will vary. (1 point)
   - Coral reefs are indicators of acidification.
   - Mangrove swamps are great areas for fishing.
   - Submarine volcanoes can help scientists understand what is required for life.

16. Part A. Answers will vary. (1 point)
   - Very little of our oceans have been explored in comparison with our land explorations.
   - We are still discovering new species and processes every day.

   Part B. Answers will vary. (1 point)
   - International treaties
   - Public awareness campaigns
Overview
Students explore the variety of and interconnections between marine species. In small groups, students read a factsheet about one marine species. As a class, students work together to create a visual representation of each species’ use of the oceans and the relationships between this small sample of marine life.

Inquiry/Critical Thinking Questions
• How diverse are marine species and what relationships might exist between different marine species?
• How may the removal of one species from an ecosystem affect the other plants and animals found in that ecosystem?
• What impact do marine species have on humanity?

Objectives
Students will:
• examine one marine species’ life cycle, food resources, and habitat range
• consider what resources are required to sustain a species throughout its life
• explore how much of the oceans one single organism can utilize and rely upon
• discover the interconnections between marine species

Time Required
One 60-minute class

Key Concepts
• marine species
• life cycles
• migration patterns
• habitat range
• predator/prey relationships
• symbiotic/parasitic relationships
• competitive relationships
• interconnections

National Standards Alignment
National Science Education Standards
A. Science as Inquiry
C. Life Science

National Council for the Social Studies
2. People, Places, and Environments
9. Global Connections

Activity 1: Bounty of the Oceans

National EFS Standards
2.2 Environmental Systems: Plants, Animals, and Environments

Materials/Preparation
Internet access
Handout: Marine Species Factsheet, 1 per student group
• Note: Hang onto Species Factsheet No. 10 (i.e., humans) as a backup plan if students struggle through the interconnections activity

World map
Tools: Markers/colored pencils/highlighters, for drawing on map
Tools: Five different colored thread rolls, for interconnections activity
Optional: May use markers and paper to make different colored arrows instead

Activity
Introduction
1. Let students know about the Census of Marine Life completed in 2010, an international collaboration to study the volume and diversity of marine life in our oceans. The census was a collective effort by over 2,700 scientists.¹ One of the big conclusions from the census was the interconnectedness of the oceans. Use the following example to demonstrate this big conclusion: One scientist discovered a shrimp-like creature, two-hundredth of an inch long, in the Atlantic Ocean off the coast of Africa, only to spot the same species again while in the Pacific Ocean.

2. Ask students to consider the benefits and consequences of our interconnected oceans. (If one species disappears, it may impact many other species for better or worse. The impact of

**Activity 1: Bounty of the Oceans continued**

Environmental changes and human actions are far-reaching. You can use the Additional Resource about sardines to help convey this point.

3. Another conclusion was the range of unique and diverse species that we do not know a great deal about. To demonstrate this second conclusion, show students this 2-minute video clip of one unique example of ocean life, siphonophores: [http://creaturecast.org/archives/1064-creaturecast-diving-for-jellies](http://creaturecast.org/archives/1064-creaturecast-diving-for-jellies). Tell students that siphonophores are a part of the same animal group as coral and jellyfish. What’s amazing about siphonophores is that each specimen is actually a free-swimming colony of clones. The colony begins with just one single zooid able to reproduce clones of itself asexually. Cloned zooids are created to do specific tasks such as swim, eat, or reproduce—all the clones work together to form one siphonophore. This colony of clones’ structure allows siphonophores to grow to great lengths. One species of siphonophores has been spotted reaching over 100 feet in length, making it the longest species in the world.

4. Ask students if they know of any other unique marine species.

5. Let students know that they will be reading a factsheet about one marine species to present to the rest of the class and then the class as a whole will investigate the interconnections between the marine species presented.

6. Explain that species could be connected by a predator/prey relationship, a symbiotic relationship, a parasitic relationship, a competitive relationship, or shared habitat. Ensure that students have some understanding of these various types of relationships.
   - Predator/prey relationship: one species is a food source for the other
   - Symbiotic relationship: both species provide a benefit to one another
   - Parasitic relationship: only one species benefits from the other
   - Competitive relationship: both species use and compete for the same resources; one species’ use of a resource will mean a loss to the other species
   - Shared habitat: the habitat range and migration patterns overlap, making both species vulnerable to the same environmental changes

**Steps**

1. Break students into small groups of 2-3 and distribute a different *Marine Species Factsheet* (except No. 10) to each group.

2. Offer students 5 minutes of preparation time to review their *Marine Species Factsheet* and consider what relationships their species may have with other marine species.

3. After students are given time to prepare, project the world map on the board and have each group come up to the front of the classroom, state which *Marine Species Factsheet* they were given and draw their species’ range on the world map. Each group should use a different color/pattern scheme to ensure all species can be seen. Those with small ranges could go last and use darker colors.

4. Once this short, formal introduction is completed, offer students 15 minutes to undertake a “Meet & Greet” to better get to know other groups’ marine species by interacting informally around the classroom. Let the students know that their goal should be to learn about each species and discover at least 2 other plants or animals that their species has a relationship with.

5. As the “Meet & Greet” winds down, have students post the front of their factsheets (with the image) on a blank spot along the classroom wall, forming a circle of the species.

   **Option:** Students could create a new sign of their species to post on the wall as well.

6. Once every student group has posted their species on the wall, ask the class to form a semicircle around the postings.
7. Request that each group stand before the wall, one at a time, to explain the 2 connections they found between their species and 2 other plants and animals.

8. With each connection, students may use the colored strings (or colored arrows) to show a visual representation of that connection. A different colored string or arrow should be used to represent (1) predator/prey relationships, (2) symbiotic relationships, (3) parasitic relationships, (4) competitive relationships, (5) shared (or overlapping) habitat.

Option: If students have difficulties making connections, you may choose to add Marine Species Factsheet No. 10 (human beings) to the middle of the circle. Every student should be able to make a connection between their species and the human species.

9. Once the connections are made, ask students to consider what would happen if one of these species were to go extinct. (For example, if plankton became extinct, many organisms would lose a food source). You could emphasize the point by physically removing one or two species from the wall along with the connections formed with other plants and animals.

10. To wrap up, raise some of the following discussion questions.

Discussion Questions

1. Were you surprised to learn of the range of some species? If so, why?

2. What connections between certain species did you find interesting?

3. Do you believe all of life is as interconnected as depicted in this small sample of marine life?

4. What is the human incentive to insure these interconnections continue to exist?

Civic Extension

Students take their newfound knowledge of ocean life and teach younger kids about our oceans. Students can create a 10-page booklet or a blog post about the marine species they received a factsheet about, making it a dynamic and interesting read for a 4th grade reading level.

Additional Resources

- **Website:** National Geographic's Animal Facts Database
  http://animals.nationalgeographic.com/animals/?source=NavAniHome
  Facts, photos, and videos about different animals.

- **Website:** Census of Marine Life
  http://www.coml.org/
  Census of Marine Life concluded in 2010.

- **Video:** Whale Fall (after life of a whale)
  http://vimeo.com/29987934
  This 5-minute video, produced in collaboration with a Radiolab episode called “Loops,” provides a visual representation of all the organisms that feed off a whale’s body once the whale has died and fallen to the ocean floor. The video portrays the interconnectedness and interdependence of ocean life at a very basic level.

- **Article:** Sharks, dolphins, gamefish and birds all compete for a share: Thousands of fish migrate along the South African coast for the annual ‘sardine run’
  This Daily Mirror article from June 2012 provides photos of the sardine run off the coast of Africa and a short description of all the sardine’s predators that flock to the coast of Africa for the occasion.

- **Film:** Wild Ocean: Where Africa Meets the Sea
  https://www.youtube.com/watch?v=NdCgKASo2K8
  A 9-minute film from Wild Ocean about the sardine run. The last 4 minutes are about ocean protection in general.
Atlantic Bluefin Tuna

In January 2012, one 600-pound bluefin tuna sold in a Japanese fish market for $736,000, a world record. The largest Atlantic bluefin tuna discovered was nearly 1,500 pounds.

Background
Bluefin tuna have a sleek body shape built for speed, able to swim as fast as 43 miles per hour. They are also one of the larger species of fish, reaching about 6.5 feet in length. Bluefin tuna are warm-blooded, fairly unique for a species of fish, and live to be about 15 years old.

FoodSources
Bluefin tuna are carnivorous, consuming smaller fish, crustaceans, eels, and squid. The species also filter-feed on zooplankton.

Humans have been eating bluefin tuna for centuries. High demand for Atlantic bluefin tuna, from both sports fishers and seafood consumers, caused the species to be harvested to the brink of extinction in the late 20th century. Under international management, the species is predicted to recover.

Range
Atlantic bluefin tuna travel annually between Newfoundland and Iceland to the Mediterranean Sea and the Gulf of Mexico where they spawn each year. The species’ range is indicated in the following map on the National Geographic website: http://animals.nationalgeographic.com/animals/fish/bluefin-tuna/

Blue Crabs are ten-legged crustaceans. Males display a blue tint on their pinchers for which the species gets its name.

**Background**

The average lifespan of a blue crab is 1 to 3 years. Crabs must molt their hard exterior as they grow. Male blue crabs will molt several times in their life. However, female crabs will molt only once. It is during the soft shell phase that females will mate. Females mate only once in their lifetime but store the sperm for multiple spawning, producing millions of eggs a year.

**Food Sources**

Blue crabs are omnivores, eating nearly anything they are physically able to. Their diet consists of fish, plants, mussels, snails, and even smaller blue crabs or vulnerable blue crabs that recently molted. Blue crabs play an integral role in marine ecosystems, keeping the population of their prey in control. With a decline in the blue crab population, mussel and snail populations could explode.

Humans harvest blue crab for the species’ sweet meat. Recently, the blue crab population has experienced a decline, primarily linked to environmental and habitat changes.

**Range**

Blue crabs are found in coastal lagoons and estuaries along the Atlantic side of North and South America. The species’ range is indicated in the following map on the National Geographic website: [http://animals.nationalgeographic.com/animals/invertebrates/blue-crab/](http://animals.nationalgeographic.com/animals/invertebrates/blue-crab/)

**Citation:** “Blue Crab,” National Geographic, accessed January 18, 2013, [http://animals.nationalgeographic.com/animals/invertebrates/blue-crab/](http://animals.nationalgeographic.com/animals/invertebrates/blue-crab/).
Blue Whale

A blue whale’s tongue alone can weigh as much as an elephant. Blue whales eat by taking a gigantic gulp of water and then using their tongue to spray much of the water out through their baleen—fringed plates made up of fingernail-like material at the top of the whale’s jaw. All whales are either baleen, toothed, or a combination of baleen and toothed.

Background
The average lifespan of a blue whale is 80 to 90 years. Once born, a blue whale stays with its mother for about a year. After parting with their mothers, blue whales are typically observed alone or in pairs. Blue whales weigh around 200 tons. They are the largest species to have ever lived on Earth. There wasn’t even a species of dinosaur as big as a blue whale.

Food Source
Blue whales are carnivorous, living almost entirely off a critter called krill. Blue whales eat 4 to 8 tons of krill a day. Krill are tiny shrimp-like crustaceans that live off phytoplankton. Krill are a food staple for many fish, whales, and birds.

Blue whales, on the other hand, have few predators besides the infrequent shark attack. However, the blue whale is considered endangered. Many species of whales, including the blue whale, were hunted to near extinction in the 1900s for their oil. Today, blue whales are often injured or killed from collisions with large ships.

Range
Blue whales’ habitat extends across the globe, spending their summers in polar waters and their winters near the equator. The species’ range is indicated in the following map on the National Geographic website: http://animals.nationalgeographic.com/animals/mammals/blue-whale/

Box Jellyfish possess one of the deadliest venoms in the world. The toxins found in their venom attack the heart, nervous systems, and skin cells—killing or stunning many species instantly.

**Background**
Box jellyfish live less than a year and don’t weigh much, but they can grow up to 10 feet in length. The species has up to 15 tentacles with over 5,000 stinging cells on each tentacle. Box jellyfish are unique from other jellyfish because of their ability to swim, rather than float, and their well-developed eyes.

**Food Sources**
Box jellyfish are omnivores, eating plankton, fish, crustaceans, and even other jellyfish. Their ability to swim and spot prey with their well-developed eyes have led scientists to believe they hunt their prey. One predator of the box jellyfish is the sea turtle, which is unaffected by the box jellyfish sting.

**Range**
Box jellyfish live along the coasts of Australia, New Zealand, and Southeast Asia. The species’ range is indicated in the following map on the National Geographic website: [http://animals.nationalgeographic.com/animals/invertebrates/box-jellyfish/](http://animals.nationalgeographic.com/animals/invertebrates/box-jellyfish/)

**Citation:** “Box Jellyfish,” National Geographic, accessed January 18, 2013, [http://animals.nationalgeographic.com/animals/invertebrates/box-jellyfish/](http://animals.nationalgeographic.com/animals/invertebrates/box-jellyfish/).
Green sea turtles are one of the few species on Earth old enough to have watched the dinosaur evolve, having been around for over 150 million years.

**Background**

Green turtles can live to be over 80 years old. This species is among the largest species of sea turtles in the world, weighing up to 700 pounds. Green turtles mate every 2 to 4 years in shallow waters. When females are ready to lay their eggs they crawl onto a beach, dig a hole, lay a few hundred eggs, cover the hole up, and leave. Often the females dig the nest at the same beach where they were born. Baby green turtles emerge from the eggs and dig themselves out of the sand in about 2 months. The crawl from their nest on the beach to the water will be the most dangerous part of a sea turtle’s life. Sea birds, crabs, and other predators see the migration as a prime opportunity to feed.

Green sea turtles are an endangered species, often killed by humans for their meat and eggs. Many more die from being caught in boat propellers and fish nets. Coastal development has also destroyed much of the green sea turtle’s nesting grounds.

**Range**

The green sea turtle’s range is limited to tropical and subtropical waters around the world. A group of sea turtles is called a bale. The species’ range is indicated in the following map on the National Geographic website: [http://animals.nationalgeographic.com/animals/reptiles/green-turtle/](http://animals.nationalgeographic.com/animals/reptiles/green-turtle/)

**Food Sources**

For the most part, green sea turtles are herbivores with a diet of sea grass and algae. However, many juveniles will eat invertebrates like crabs, jellyfish, and sponges.

**Citation:** "Green Sea Turtle," National Geographic, accessed January 18, 2013, [http://animals.nationalgeographic.com/animals/reptiles/green-turtle/](http://animals.nationalgeographic.com/animals/reptiles/green-turtle/)
Plankton

Plankton are a microscopic marine species. The term plankton is derived from the Greek word for “drifters.”

Background
There are a variety of plankton, broken down into phytoplankton (plants) and zooplankton (animals)—all of which drift with the ocean currents rather than swim. Some zooplankton are physically able to swim but weak swimmers. The life of a phytoplankton lasts only a few days but has a dramatic impact on the rest of the ocean. Phytoplankton can experience population spikes in a manner of days, creating what is referred to as a “bloom” or a “red tide.” Blooms are visible from space, as depicted in the image of phytoplankton on the front of this factsheet. Zooplankton will feed off these blooms and their populations will, in turn, experience a spike as well.

Food Source
Phytoplankton are plants which require light for photosynthesis, so they stay near the surface of the oceans. Zooplankton eat tiny plant cells.
While the diet of plankton species is limited, plankton are at the very bottom of the food chain and a food source for many marine species.

Range
Plankton are found in every part of the oceans—in both fresh and salt water.

Creating new habits or breaking old ones takes time and can be challenging. Having a plan in place and anticipating potential obstacles can help you be more successful with this habit change. Complete the worksheet below and return to this each week as you evaluate your progress and when you need some motivation!

**Challenge**

**Start date:** ____________________________

**End date:** ____________________________

**Habit** I would like to change:___________________________________________________________________

**Cues** (environmental and emotional factors and situations that trigger this behavior):___________________

_________________________________________________________________________________________________________

**Habitual routine:**________________________________________________________________________

_________________________________________________________________________________________________________

**Reward** (what you gain from this habit):_______________________________________________________

_________________________________________________________________________________________________________

**How does this habit relate to sustainability?**____________________________________________________

_________________________________________________________________________________________________________

**Habit** I would like to create:____________________________________________________________________

Be sure to choose a small, realistic goal for the next 30 days.

**Cues** (environmental and emotional factors and situations that you can use to remind you of your new routine):_________________________________________________________________________________________________________

**New routine:**____________________________________________________________________________

_________________________________________________________________________________________________________

**Reward** (what you will gain from this new habit):_______________________________________________

_________________________________________________________________________________________________________

**How does this new habit relate to sustainability?**_______________________________________________

_________________________________________________________________________________________________________

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**Sea Otter**

Sea otters have a thick fur coat to keep them warm and must constantly clean their coats to remain waterproof. Humans value the sea otters’ thick coats as well, hunting the species for their fur to near extinction in the early 20th century.

**Background**

Sea otters are a member of the weasel family, growing up to 4 feet long and living to be, on average, 23 years old. Sea otters do everything in the water, from eating to sleeping to giving birth. Sea otters will wrap themselves up in kelp to ensure they don’t float too far while they nap. Sea urchins, one of sea otters’ favorite meals, are also found below kelp beds.

**Food Sources**

Sea otters are carnivores, living off sea urchins, clams, mussels, crabs, squid, octopus, and fish. These critters are resourceful as well. Sea otters will place a rock on their bellies as they float and use the rock to break open the shells of clams and mussels.

**Range**

Sea otters are found in the Pacific Ocean, along the coast of Asia and North America. The species’ range is indicated in the following map on the National Geographic website: http://animals.nationalgeographic.com/animals/mammals/sea-otter/

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Creating new habits or breaking old ones takes time and can be challenging. Having a plan in place and anticipating potential obstacles can help you be more successful with this habit change. Complete the worksheet below and return to this each week as you evaluate your progress and when you need some motivation!

**Challenge start date:** __________________________

**Challenge end date:** __________________________

**Habit I would like to change:** ____________________________________________________________

Cues (environmental and emotional factors and situations that trigger this behavior): ______________________

_________________________________________________________________________________________________________

Habitual routine: ____________________________________________________________________________

_________________________________________________________________________________________________________

Reward (what you gain from this habit): ____________________________________________________________

_________________________________________________________________________________________________________

How does this habit relate to sustainability? ____________________________________________________________

_________________________________________________________________________________________________________

**Habit I would like to create:** ____________________________________________________________

Be sure to choose a small, realistic goal for the next 30 days.

Cues (environmental and emotional factors and situations that you can use to remind you of your new routine): ______________________

_________________________________________________________________________________________________________

New routine: ____________________________________________________________________________

_________________________________________________________________________________________________________

Reward (what you will gain from this new habit): ____________________________________________________________

_________________________________________________________________________________________________________

How does this new habit relate to sustainability? ____________________________________________________________

_________________________________________________________________________________________________________

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**Background**

Sea urchins may look like stationary creatures, but they are able to crawl along the ocean floor using hydraulically operated tube feet. Scientists recently discovered that sea urchins are also able to “see” by detecting light through their spines. To reproduce, female sea urchins will release several million eggs into the water. The eggs will hatch into tiny larvae that become a component of zooplankton. It will take 2 to 5 years for an egg to transform into an adult sea urchin.

**Food Sources**

Sea urchins feed on algae, invertebrates, and decaying matter such as dead fish. Sea urchins are a critical component for the marine food chain with several predators to be wary of, including crab, snails, sea otters, birds, fish, and people. When their predators begin to disappear, from overfishing for example, the urchin population spikes.

**Range**

There are 700 species of sea urchin found all around the world on the ocean floor and along rocky shores.

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**Citation:** “Photo Gallery: Sea Urchins,” National Geographic, accessed January 18, 2013, [http://ocean.nationalgeographic.com/ocean/photos/sea-urchins/#/sea-urchins11-fire-urchin_17938_600x450.jpg](http://ocean.nationalgeographic.com/ocean/photos/sea-urchins/#/sea-urchins11-fire-urchin_17938_600x450.jpg);


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**Sea Urchin**

Often referred to as the “hedgehog of the sea,” a sea urchin is covered with moveable, and sometimes poisonous, spines. Centuries ago, sea urchin ashes were used to treat baldness.
Creating new habits or breaking old ones takes time and can be challenging. Having a plan in place and anticipating potential obstacles can help you be more successful with this habit change. Complete the worksheet below and return to this each week as you evaluate your progress and when you need some motivation!

**Challenge**
- **Start date:** ____________________
- **End date:** ____________________

**Habit I would like to change:** ____________________________________________

**Cues** (environmental and emotional factors and situations that trigger this behavior):
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

**Habitual routine:**
________________________________________________________________________
________________________________________________________________________

**Reward** (what you gain from this habit):
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

**How does this habit relate to sustainability?**
________________________________________________________________________
________________________________________________________________________

**Habit I would like to create:** ____________________________________________

Be sure to choose a small, realistic goal for the next 30 days.

**Cues** (environmental and emotional factors and situations that you can use to remind you of your new routine):
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

**New routine:**
________________________________________________________________________
________________________________________________________________________

**Reward** (what you will gain from this new habit):
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

**How does this new habit relate to sustainability?**
________________________________________________________________________
________________________________________________________________________

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**Flying Fish**

Flying fish gain their name from their ability to fly, or glide, out of the water—as far as 655 feet and as high as 4 feet! The species will swim at speeds of 37 miles per hour to gain momentum to take flight.

**Background**
Scientists have discovered 40 species of flying fish. All species have evolved with a sleek body and wide fins which allow them to jump easily out of the water. Their tails also allow the fish to propel back into the air just before they hit the water, elongating their flights even further.

**Food Sources**
Flying fish are omnivores, eating a great deal of plankton. Flying fish are also prey to larger fish, including mackerel, tuna, swordfish, and marlin. Humans fish for flying fish as well. Fishers use the species’ natural attraction to light to hunt them at night using a luring light.

**Range**
Flying fish are found in warm waters throughout the oceans. The species’ range is indicated in the following map on the National Geographic website: [http://animals.nationalgeographic.com/animals/fish/flying-fish/](http://animals.nationalgeographic.com/animals/fish/flying-fish/)

**Citation:** "Flying Fish," National Geographic, accessed January 18, 2013, [http://animals.nationalgeographic.com/animals/fish/flying-fish/](http://animals.nationalgeographic.com/animals/fish/flying-fish/)
Humans have been around for 6 or 7 million years. In that time span, humans have evolved to become skilled predators and our population has surged to 7 billion. Very few species on Earth, if any, are unaffected by or unconnected to the human species.
Activity 2: Van to the Ocean Floor
Adapted from NOAA’s Ocean Explorer Lesson: Lophelia II 2010: Cold Seeps and Deep Reefs [http://oceanexplorer.noaa.gov/]

Overview
Students learn about the use of underwater remote operated vehicles (ROVs) to explore the oceans as well as uncover a unique ecosystem that scientists are just beginning to learn about themselves, deep-water corals. Students use data and images collected from Lophelia II, an expedition undertaken by the National Oceanic and Atmospheric Administration (NOAA), to perform their own scientific exploration from a classroom setting.

Inquiry/Critical Thinking Questions
• Where are deep coral reefs found in the ocean?
• What organisms are characteristic of deep-sea coral ecosystems?
• What processes lead to the occurrence of deep-sea corals?
• How do we collect data from underwater remote operated vehicles (ROVs)?

Objectives
Students will:
• discuss the benefits and disadvantages of using underwater ROVs to explore the oceans
• describe general features of the Jason II robot currently being used by NOAA’s Ocean Explorer Program
• obtain and analyze data from a Jason II mission

Time Required
One 45-minute class

Key Concepts
• deep-sea exploration
• underwater remote operated vehicles (ROVs)
• deep-water corals
• cold seep

National Standards Alignment
National Science Education Standards
A. Science as Inquiry
C. Life Science
E. Science and Technology
F. Science in Personal and Social Technology
G. History and Nature of Science

National Council for the Social Studies
2. Time, Continuity, and Change
8. Science, Technology, and Society

National EFS Standards
2.2 Environmental Systems: Plants, Animals, and Habitats

Materials/Preparation
Handout: Jason Virtual Van Inquiry Guide, 1 per student or student group
Handout: Tips for Students: Virtual Control Van Window; this handout may be distributed to the class or kept on hand for teacher’s reference
Internet access

Activity
Introduction
1. Explain to students:

• Deep-water coral communities can be found in cold seeps. Cold seeps are spots along the ocean floor where hydrocarbons (such as methane) seep out.
• Cold seeps have been located in the Gulf of Mexico, an area heavily impacted by the BP oil spill in 2009.
Activity 2: Van to the Ocean Floor  continued

2. Let students know that NOAA’s Office of Ocean Exploration and Research sponsored exploration of deep-water coral communities off the Gulf of Mexico in an effort to find where these coral reefs are, study the species present, and learn about the processes occurring in this unique ecosystem.

3. The following information could be introduced orally or given as a background reading. The facts may come in handy as students fill out the handout Jason Virtual Inquiry Guide.

- NOAA’s exploration of deep-water coral communities depends heavily on a scientific instrument known as Jason II/Medea.

- Jason II/Medea is a 2-part system: Jason II is a mobile platform that carries sonar and video imaging equipment as well as manipulator arms for collecting samples. Jason II gives scientists a ‘virtual presence’ in deep ocean waters at depths up to 6,500 meters. A 35-meter cable connects Jason II to a second ROV named Medea, which is connected to the surface ship by a 10-kilometer fiberoptic cable. This arrangement allows Medea to buffer Jason II from movements of the ship, and provides a second platform that allows scientists to observe Jason II during seafloor operations.

- The advantage of the Jason II/Medea system is that it allows much longer observation periods than are possible with manned submersibles such as Alvin; the average Jason dive is 21 hours (compared to Alvin dives which are 6-10 hours), though dives as long as 71 hours have been made on some occasions. The system is designed, built, and operated by the Deep Submergence Laboratory of Woods Hole Oceanographic Institution. See http://oceanexplorer.noaa.gov/technology/ subs/jason/welcome.html for more information.

4. Let students know they will be using the Virtual Control Van system to complete an activity today.

Steps

1. Tell students they will be conducting research and recording observations using Jason II and Medea’s data. Students can work in teams of 2-3.

2. Distribute the Jason Virtual Van Inquiry Guide handout to each student or student group.

3. Allow students 25-30 minutes with Internet access to complete the handout.

4. Once the student teams are finished, go over the correct answers as a class.

5. Conclude the lesson with the following discussion questions. For the last discussion question, students may want to check out the last Additional Resource to learn more about the BP oil spill’s effect on marine ecosystems in the Gulf of Mexico.

- The Jason II/Medea system is operated from a control van that is loaded aboard the host ship along with the ROV. Additional equipment and supplies are carried in tool and rigging vans. To make it easier for scientists and the interested public to obtain information from Jason II operations, Woods Hole Oceanographic Institution provides an online Virtual Control Van system that automatically captures information in the control van during ROV operations and makes this information immediately accessible and searchable via a web browser. The Virtual Control Van is available to scientists and the public via the Internet. For more information, visit http://4dgeo. whoi.edu/jason.
Activity 2: Van to the Ocean Floor  continued

Discussion Questions
1. What advantages do scientists have by using submersible vehicles like Jason II?
2. What proved the most difficult part of the activity for you and why?
3. What technological advancements could still be made for ocean exploration?
4. The release of hydrocarbons from the ocean floor is also known to be a hotspot for petroleum deposits that many would like to drill and extract. What effect might oil exploration have on deep-sea coral ecosystems?
5. What impact has the BP oil spill had on these unique ecosystems?

Additional Resources
- Website: Lophelia II 2010: Oil Seeps and Deep Reefs https://oceanexplorer.noaa.gov/explorations/10lophelia/welcome.html
  Website for the Lophelia II 2010: Cold Seeps and Deep Reefs expedition.
- Website: Gulf Oil Spill http://www.noaa.gov/resource-collections/gulf-oil-spill
  Webpage from NOAA’s Office of Education with links to multimedia resources, lessons and activities, data, and background information about the Gulf oil spill.
Part A. Background about ROV Jason
Use the Internet or other resources provided by your teacher to answer the following questions:

1. What is *Jason II*?

2. What is the maximum depth that can be explored with *Jason II*?

3. What instruments are normally carried aboard *Jason II*?

4. What is *Medea*?

5. What are the advantages of using *Jason II* in combination with *Medea*, rather than having *Jason II* operate alone?

6. What is the *Jason Virtual Control Van*?
Part B. Dive with Jason!

During a typical Jason II dive, a tremendous amount of data is collected from a variety of sensors including video imagery from multiple cameras, information about the location and depth of the ROV, and measurements from scientific instruments. All of this data is recorded, but unless an observer is actually inside the control van during a dive it can be very difficult to obtain a sense of the “big picture” from many different data sets.

To deal with this problem, engineers at Woods Hole Oceanographic Institution developed the Jason Virtual Control Van, which is a web-based application based on a series of snapshots that record events during a Jason II mission. During a typical Jason II dive, a member of the science team creates an electronic record of events that take place during the dive, such as when a specimen is collected, something interesting is observed, or a specific measurement is made. Each of these events is recorded in the Virtual Control Van. In addition, an automatic record of sensor readings, video displays, and navigation information is made at regular intervals (every 0.5–2 minutes). Each automatic record is called an autosnap (ASNAP), and is also recorded in the Virtual Control Van.

You will use the Jason Virtual Control Van to recreate the discovery made with Jason II during the Lophelia II 2009 Expedition to the Gulf of Mexico.


2. The dive mentioned in Dr. Fisher’s essay was made by the Jason II. Now let’s use the Jason Virtual Control Van to find out more about this discovery…

   • Open the Jason Virtual Van System home page at http://4dgeo.whoi.edu/jason/. In the lefthand menu, the headings under Jason Van System link to additional information about the system. If you click on the arrow next to a year, a list will appear of the Jason missions for that year that are included in the Jason Virtual Van system. Click on the arrow next to 2009 then click Lophelia II-3 [rb-09-05].

3. A new window appears titled ROV JASON Lophelia II-3 CruiseID: rb-09-05. The lower portion of the window is titled Jason VVan rb-09-05 Lowering Statistics. This window lists each dive (called a lowering) of the Jason II ROV during the cruise. For each lowering, the start time, end time, duration, maximum depth, and number of Virtual Van records for that dive are listed. We are interested in the lowering that took place on September 3, 2009. Scroll down the Lowering Statistics window to find the entry for Lowering J2-466.

   a. Dr. Fisher says that the entire dive lasted approximately 24 hours. Exactly how long was this dive?
   
   b. What was the maximum depth reached by the ROV during this dive?
   
   c. How many records are contained in the Jason Virtual Van for this dive?
4. Let's use the *Jason* Virtual Control Van to find out more about the *Jason II* dive in the Gulf of Mexico on September 3, 2009. Click **VirtualVan** in the lower left of the upper window. A new window will open showing the *Jason* Virtual Control Van window for the first record for the first lowering of Cruise rb-09-05.

Enter “j2-466” in the window next to the **Find** button. Press the **Find** button. The first entry in the **Event List** should be “18747. 2009/09/03 12:32:16 EVT RB-09-05 J2-466 Jason Jason in water.”

As you know from question 3, this is the first event in **Lowering J2-466**. Two of the video displays show the greenish color typical of shallow water in the Gulf of Mexico, while the third display shows the deck of the ship.

5. Using the Go to button, skip ahead to **Event 18749** using the control panel.
   a. How deep is *Jason II* at this point?

   b. How far off the bottom is the ROV? (Hint: Alt stands for altitude)

   c. Go to **Events 19748** and 18749. What is the temperature difference between both?

6. Skip to **Event 18876**.
   a. What do you see in the video displays?

   b. How far above the bottom is the ROV?

7. Skip to **Event 18960**.
   a. What does **Video Monitor 1** show?

   b. Look at all 3 video displays for the next 3 events. Can you tell what is happening?
8. Skip to Event 20612.
   a. What is happening in Video Monitor 1?

   b. How long did it take for the activity of this event to be completed?

9. What is going on during Events 20389 through 20410?

   You can see more video of this technique here:
   http://oceanexplorer.noaa.gov/explorations/09lophelia/logs/aug26/media/movies/pushcore_video.html

10. What organisms are present in Events 22441 through 22443?

11. While underwater robots such as Jason II/Medea are much less expensive to operate than human occupied submersibles, deep-sea exploration is still expensive. Why is this sort of exploration important in spite of the expense?
3a. 23 hours, 44 minutes and 1 second
3b. 502.08 meters
3c. 2165 records
5a. 480.33 meters deep
5b. 28.28 meters from the bottom
5c. 19.387 degrees Celsius
6a. Shark
6b. 3.39 meters
7a. Crab
7b. Crab eating fish
8a. Fish being eaten by a larger fish
8b. About 3 minutes and 26 seconds
9. Taking samples of coral
10. Tubeworms
11. Reasons for deep-sea exploration may include:
   • Potential for finding new sources of energy
   • Discovering pharmaceuticals and other biological products that can be useful and important for humans
   • Understanding possible connections between deep-sea coral ecosystems and other systems that are directly important to humans
Activity 3: Nonpoint Source Pollution

Overview
Students learn to distinguish point source pollutants from nonpoint source pollutants. They discover how nutrient pollution is affecting the oceans. Students then develop research questions and strategies for addressing the problem of low dissolved oxygen in one specific part of the oceans, Puget Sound.

Objectives
Students will:
- differentiate between point and nonpoint source pollution
- understand how nonpoint source pollution reaches the sea through stormwater runoff
- formulate research questions to investigate the issue of low dissolved oxygen in the Puget Sound

Inquiry/Critical Thinking Questions
- What pollutants are found in the bodies of water surrounding coastal cities, and how does the presence of these pollutants link to human activities?
- How does nonpoint source pollution reach the oceans?
- How do excess nutrients affect water quality?
- How could students help to identify and prevent sources of nonpoint source pollution?

Time Required
One 45-minute class

Key Concepts
- point source pollution
- nonpoint source pollution
- stormwater runoff
- hypoxia
- dissolved oxygen
- nutrients
- Puget Sound

National Standards Alignment
National Science Education Standards
A. Science as Inquiry
C. Life Science
F. Science in Personal and Social Perspectives

National Council for the Social Studies
2. People, Places, and Environments
5. Individuals, Groups, and Institutions
8. Science, Technology, and Society
9. Global Connections

National EFS Standards
2.1 Interconnectedness: Historical Connections
2.2 Environmental Systems: Plants, Animals, and Habitats

Materials/Preparation
Handout: Ocean Pollutants, 1 per pair of students
Handout: How to Address Hypoxia in Puget Sound, 1 per student
PowerPoint: Puget Sound Pollution: Linking Nutrients & Dissolved Oxygen
PowerPoint Access: https://www.slideshare.net/secret/fnwJ2sQ7wq0gcn

Activity
Introduction
1. Ask students about how pristine the oceans are. Do they believe the oceans are polluted? If the students live near the sea, do they go swimming or do other activities near or in the water?
2. Ask students what substances or activities could pollute the oceans. (Sometimes trash and other pollutants are emptied directly into the oceans. Other times toxic substances—including lawn pesticides, soap, heavy metals, and motor oil—travel over long distances and eventually end up washing into the oceans.)
Activity 3: Nonpoint Source Pollution continued

3. Write two headings on the board: “Point Source” and “Nonpoint Source” and ask students to think of things that could qualify as either point or nonpoint source pollution based on the definition given in their oceans chapter. Either you can write ideas on the board or have students write their ideas on the board under the relevant heading.

Note: If students are struggling, encourage them to make educated guesses based on the words “nonpoint” and “point.”

4. Group students into pairs. Give each pair a copy of the handout Ocean Pollutants, or use a projection device to display the images.

5. Ask student pairs to consider all of the images displayed and try to sort the images into point source and nonpoint source pollution.

6. Have each pair sort the images by labeling each picture either “Point Source” or “Nonpoint Source.”

7. Using the “Point Source” and “Nonpoint Source” headings already on the board, have each student pair list 1 pollutant under the heading where they think it belongs.

8. If anyone disagrees with a pair’s selection, allow students to voice their differences of opinion.

9. Let students know that nonpoint source pollution accounts for most of the pollution that reaches the oceans.

Steps

1. Ask students how they think pollutants get into our runoff to begin with. (Nonpoint source pollution is not dumped directly into the oceans. Instead, it typically involves rainwater that picks up pollutants it passes over and carries them into storm drains or culverts, which then empty into rivers and streams, which eventually empty into the oceans.)

2. Let them know that one criterion used to assess the health of a body of water is dissolved oxygen. Because aquatic organisms like fish and shellfish need oxygen to survive, measuring dissolved oxygen for a body of water tells us how well it can support life. Very low dissolved oxygen levels can create “dead zones” absent of aquatic organisms.

3. Also, let students know that you are going to go through a case study of Puget Sound with them. Puget Sound, a water body in the Pacific Northwest region of the United States, has low dissolved oxygen levels, and scientists are working to determine what activities are causing the low dissolved oxygen.

4. Before you start the PowerPoint (PPT), ask students what the word nutrients means. (Nutrients are good, right? Sure, we need nutrients like vitamins and minerals to survive, grow, and reproduce. But, like many good things, moderation is key. As the PPT explains, excess nutrients are actually considered pollution.)

5. Provide each student with a copy of the handout How to Address Hypoxia in Puget Sound so that they can read and answer questions, alongside the PPT.

6. Go through the PowerPoint, one slide at a time. Use the questions and information in the Notes section for each slide to guide the inquiry.
Activity 3: Nonpoint Source Pollution  continued

7. Provide students with 5-10 minutes to finish the handout How to Address Hypoxia in Puget Sound.
8. Ask students to share their answers to question 5 from the handout.
9. Use the following discussion questions to continue the conversation.

Discussion Questions
1. How does the health of the oceans affect your life? How does it affect your community or neighborhood?
2. What sources of nonpoint source pollution have you seen in your neighborhood? (Pet waste, litter, and motor oil could all be carried away by runoff.)
3. If scientists already know so much about hypoxia in Puget Sound, why do you think it is still happening?
4. What could you do in your neighborhood to help prevent pollution from reaching the oceans through stormwater runoff?

Science Extension
See how dissolved oxygen for a stream in your neighborhood stacks up. If your results indicate low dissolved oxygen levels, set up an observation study to determine possible contributing factors. Then, tackle one of these contributing factors. Water quality test kits can be obtained from World Water Monitoring Day (www.worldwatermonitoringday.org).

Additional Resources
- Website: Water properties: Dissolved oxygen
  https://water.usgs.gov/edu/dissolvedoxygen.html
  This U.S. Geological Survey (USGS) site serves as a primer on dissolved oxygen.
- Website: Lack of Oxygen?: Hypoxia in Pacific Northwest Waters
  http://www.nanoos.org/education/learning_tools/hypoxia/introduction.php
  The Northwest Association of Networked Ocean Observing Systems (NANOOS) provides diagrams and videos to explain how hypoxia affects the Pacific Northwest.
- Video: Underwater video of low dissolved oxygen event in Hood Canal
  http://www.youtube.com/watch?v=D1iv37Yn8bg
  This 5-minute video, filmed by Washington Department of Fish and Wildlife, documents a fish kill linked to hypoxia.
- Website: Interactive Map of Eutrophication & Hypoxia
  http://www.wri.org/project/eutrophication/map
  The World Resource Institute provides a world map indicating 762 coastal areas impacted by eutrophication and hypoxia.
Ocean Pollutants
**Teacher Master: Ocean Pollutants**

1. **Stormwater outlet:** nonpoint
2. **Lawn chemicals:** nonpoint
3. **Pet waste:** nonpoint
4. **Road runoff (motor oil, brake dust):** nonpoint
5. **Factory/oil refinery:** point
6. **Home car wash:** nonpoint
7. **Soil erosion/sediment:** nonpoint
8. **Parking lot runoff:** nonpoint

**Oceans**
How to Address Hypoxia in Puget Sound

1. Think of 1 research question that could help address the problem of hypoxia in Puget Sound.

2. How could you set up an experiment to answer your research question?

3. What resources would you need to research the answer?

4. What are 2 challenges in identifying and determining specific causes of the hypoxia in Puget Sound?
   a. __________________________________________________________________________
   b. __________________________________________________________________________

5. Based on what you know already, what recommendations (such as publicity campaigns or legislation) would you make to decrease the amount of hypoxia? List 2 things you could do and 2 things you think the government could do.

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<thead>
<tr>
<th>What I Can Do</th>
<th>What the Government Can Do</th>
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Activity 4: Who Cares about Marine Protected Areas?

Overview
Students take on perspectives of different stakeholder groups involved in the creation of a Marine Protected Area (MPA) along the coast of their city. Stakeholder groups are encouraged to form alliances, contemplate compromise, and seek consensus. Their efforts will, hopefully, result in a final proposal for a MPA along their city’s coastline, potentially with sections portioned off for specific uses and a list of regulations to be applied to the MPA.

Inquiry/Critical Thinking Questions
• What is the purpose of a MPA?
• Whose interests are at stake when developing a MPA?
• What factors should determine how a MPA functions?

Objectives
Students will:
• explore the development of MPAs
• consider one stakeholder’s perspective in the establishment of a MPA
• advocate on behalf of one stakeholder’s interest
• evaluate the final proposal for a MPA resulting from substantial community involvement

Time Required
One 60-minute class

Key Concepts
• Marine Protected Areas
• precautionary principle
• stakeholders
• consensus

National Standards Alignment
National Science Education Standards
C. Life Science
F. Science in Personal and Social Perspectives

National Council for the Social Studies
2. People, Places, and Environments
5. Individuals, Groups, and Institutions
6. Power, Authority, and Governance,
7. Production, Distribution, and Consumption
10. Civic Ideals and Practices

National EFS Standards
2.1. Interconnectedness: Relationships
2.2 Environmental Systems: Sense of Place
2.2 Environmental Systems: Plants, Animals, and Habitats
3.2 Collective Action: Working Together

Materials/Preparation
Map: Marine Protected Area: Proposed Site Map, either to project or distribute to each student group
Cards: Stakeholder Cards, different card for each student group
Handout: Marine Protected Areas: Background Information, 1 per student
Internet access, optional

Activity
Introduction
1. Screen a 4-minute film for students about Marine Protected Areas (MPAs): The National System of MPAs: An Introduction (http://www.mpa.gov/resources/multimedia/)
   Option: If you have time, there is also a second film on the same site entitled Protecting Marine Life that may enhance students’ background information and class discussion.
2. Ask students whether they have visited a Marine Protected Area. If students have, have them discuss what they observed. Often MPAs will be referred to as a park, preserve, sanctuary, or natural area. There are currently more than 1,600 individual sites in the United States alone.
3. Tell students they will be participating in a community meeting today where, in small groups, they will take on the role of different stakeholders in a community deciding whether or not to create a Marine Protected Area along their shoreline and how that MPA should be designated and managed.
Activity 4: Who Cares about Marine Protected Areas? continued

Steps
1. Divide students into 6 even groups and distribute a Stakeholder Card to each group and a Background Information handout to each student.
   Option: Distribute 1 copy of the Proposed Site Map handout to each group or project the image onto a screen.
2. Give student groups 10-15 minutes to prepare for the stakeholders’ meeting by reading over both the Background Information and their Stakeholder Card. Each group should consider what their interests are, what their ultimate goals are, and what their bottom line might be. Students could also consider what alliances they might be able to form with other stakeholders.
3. Distribute placards with the name of each stakeholder to the respective groups. All students, except for the government scientists, will turn the placards on their side or hold them up when they would like to speak during the meeting. The government scientists facilitating the meeting will call on students who have turned or raised their placard. The student group representing the government scientists will be facilitating the meeting, offering an initial proposal for a MPA to get the discussion rolling, calling on groups, and making a determination on whether agreements have been made and whether a final proposal can be reached.
4. Position tables/chairs into a semicircle facing the front of the class. Have each group sit separately in a semicircle with their placard down and facing the rest of the groups.
5. Have the student group representing the government scientists start the discussion.
6. Allow students to discuss for 30 minutes in an effort to reach agreement on a final proposed Marine Protected Area. Students may draw the management plan on the map and/or draft a list of regulations that will be applied to all or parts of the Marine Protected Area.
7. After a final proposed Marine Protected Area has been developed, or it becomes clear that consensus is unlikely, end the community meeting and wrap up the activity with a discussion using the following questions.

Discussion Questions
1. Did the class arrive at a final proposed Marine Protected Area? Why or why not?
2. Did any stakeholder achieve an ideal outcome based on their interests?
3. Did any stakeholder negotiate close to their bottom line?
4. Setting aside the interests of the stakeholder you represented, do you believe the final proposed Marine Protected Area was well developed and could prove successful? If no final proposed MPA was reached and, again, setting aside the interests of the stakeholder you represented, what would you consider a well-developed and potentially successful proposal?
5. How do the different principles that are used to create Marine Protected Areas relate to sustainability and its 3 components?

Additional Resources
- Website: National Marine Protected Areas Center
  http://www.mpa.gov/
The National Marine Protected Areas Center website is filled with helpful factsheets, videos, and case studies of current MPAs in action.
- Article: Marine reserves in Australia, California gather steam
This Washington Post article by Juliet Eilperin on the public reception of two newly developed Marine Protected Area programs in California and Australia. The article provides a glimpse of the interests at play and the praise and disappointment associated with each.
Marine Protected Area: Proposed Site Map

The City of Polis
You all live in the city of Polis, a small coastal community. The state in which Polis resides is eager to designate Marine Protected Areas along the state coastline in coordination with Presidential Executive Order 13158, which seeks to “protect the significant natural and cultural resources within the marine environment for the benefit of present and future generations by strengthening and expanding the Nation’s system of Marine Protected Areas (MPAs).”

The coastline along the city of Polis seems like the ideal fit. There are no major ports, so a MPA wouldn’t debilitate trade routes or military preparedness. Polis’ coastline is also ecologically and culturally significant. The coastline is home to a coral reef system which extends along the southern border of the city. Just a hundred feet north of the coral reef system, right at the jagged point on the southern end of the city limits, are remnants of a shipwreck from 1863. The ship is rumored to have been a part of the French military. A small cove just north of the shipwreck is a nesting site for sea turtles, but recent construction of two resorts destroyed much of the original habitat. The long stretch of beach just north of the cove is a popular spot for beach goers, surfers, snorkelers, and scuba divers. Lastly, at the north end of the city of Polis’ coastline is a marina home to commercial fishing vessels and boats used for recreational purposes. Commercial fishing occurs just south of the marina, while recreational and sports fishing are common all along the city’s coastline.

The benefits of a Marine Protected Area are well documented. Compared to open areas, subject to open exploration, Marine Protected Areas are abundant with a variety of species and a wealth of biodiversity. Also, larger specimens are often found in Marine Protected Areas, indicating that the marine life is able to live longer and reach ages of fertility more often in MPAs.

Guidelines to Consider

All Marine Protected Areas are to be designated along the following principles of purpose, intensity, and time. Use these guidelines to help determine what type of MPA is best suited for Polis’ coastline.

1. Conservation Focus: What conservation need should this MPA address, or should it address multiple conservation needs?

   a. Natural Heritage—Established and managed wholly or in part to sustain, conserve, restore, and understand the protected area’s natural biodiversity, populations, communities, habitats, and ecosystems; the ecological and physical processes upon which they depend; and, the ecological services, human uses and values they provide to this and future generations. Examples include most national marine sanctuaries, national parks, and national wildlife refuges.

   b. Cultural Heritage—Established and managed wholly or in part to protect and understand the legacy of physical evidence and intangible attributes of a group or society which is inherited and maintained in the present and bestowed for the benefit of future generations. Examples include national historic monuments.

   c. Sustainable Production—Established and managed wholly or in part with the explicit purpose of supporting the continued extraction of renewable living resources (such as fish, shellfish, plants, birds, or mammals) that live within the MPA, or that are exploited elsewhere but depend upon the protected area’s habitat for essential aspects of their ecology or life history (feeding, spawning, mating, or nursery grounds). Examples include some national wildlife refuges and many federal and state fisheries areas, including those established to recover overfished stocks, protect bycatch species, or protect essential fish habitats.
2. **Level of Protection**: What level and type of protection should this MPA be afforded?

   a. *Uniform Multiple-Use*—Consistent level of protection, allowable activities or restrictions throughout the protected area. Extractive uses may be restricted for natural or cultural resources. Uniform multiple-use MPAs are among the most common types in the U.S., and include many sanctuaries, national and state parks, and cultural resource MPAs.

   b. *Zoned Multiple-Use*—Allows some extractive activities throughout the entire site, but employs marine zoning to allocate specific uses to compatible places or times in order to reduce user conflicts and adverse impacts.

   c. *No Take*—Allows human access and even some potentially harmful uses, but totally prohibits the extraction or significant destruction of natural and cultural resources. This includes Papahānaumokuākea Marine National Monument, which allows very limited subsistence fishing activities by Native Hawaiians by permit.

   d. *No Impact*—Allows human access, but prohibits all activities that could harm the site’s resources or disrupt the ecological and cultural services they provide. Examples of activities typically prohibited in no impact MPAs include resource extraction of any kind (fishing, collecting, or mining); discharge of pollutants; disposal or installation of materials; and alteration or disturbance of submerged cultural resources, biological assemblages, ecological interactions, physiochemical environmental features, protected habitats, or the natural processes that support them. Commonly used terms for no impact MPAs include fully protected marine (or ecological) reserves, and research only zones.

   e. *No Access*—Restricts all human access to the area in order to prevent potential ecological disturbance, unless specifically permitted for designated special uses such as research, monitoring or restoration. Commonly used terms for no access MPAs include wilderness areas or marine preserves.

3. **Permanence of Protection**: Should this site require permanent protection or is there only a temporary need for protection?

   a. *Permanent*—Legal authorities provide some level of protection to the site in perpetuity for future generations, unless reversed by unanticipated future legislation or regulatory actions.

   b. *Conditional*—Protection that has the potential, and often the expectation, to persist administratively over time, but whose legal authority has a finite duration and must be actively renewed or ratified based on periodic governmental reviews of performance.

   c. *Temporary*—Designed to address relatively short-term conservation and/or management needs by protecting a specific habitat or species for a finite duration, with no expectation or specific mechanism for renewal. Examples include some fisheries closures focusing on rapidly recovering species (e.g., scallops).

4. **Constancy of Protection**: Should protections be constant?

   a. *Year-Round*—Provide constant protection to the site throughout the year.

   b. *Seasonal*—Protect specific habitats and resources, but only during fixed seasons or periods when human uses may disrupt ecologically sensitive seasonal processes such as spawning, breeding, or feeding aggregations. Examples include some fisheries and endangered species closures around sensitive habitats.
**State Government Scientists**

The State wishes to reach a general consensus around a final proposed MPA for the city of Polis and this is your mission. However, as scientists, you are well aware of the fact that 90% of the commercially sought-after fish stocks in the area are overfished near the point of extinction. The commercial fishers (along with the sports fishers) may believe the stocks are healthy because they are still catching plenty of fish, but you know better. The fish caught today are much smaller than their historical average; most fish caught haven't even reached maturity. Continuing to fish these stocks will further the population's decline.

As facilitator, you plan to start off the discussion with a conservative proposal for a MPA with a high level of continuous protection. Your hope is to start the discussion off with a conservative proposal in order to reach a middle ground that is still beneficial for the fish stocks. However, you would prefer to avoid the appearance of bias against or in favor of one stakeholder over another since you represent the government. As a government employee you understand that you should thoughtfully consider all public input.

**Coastal Recreation Enthusiasts**

You represent much of the public in the city of Polis who often visit the coastline to enjoy the views, take in some sun, and play in the waves. You are also concerned with the local community’s economic circumstances. During these tough economic times, the city and local businesses cannot afford to lose any financial revenue.

Polis has a thriving scuba diving and snorkeling community and these activities also draw in tourism and money to the city each summer. The coral reef on the south end of city limits offers an amazing experience for any novice snorkeler. You are eager to see the designation of a Marine Protected Area in hopes that this will draw in even more tourism, though you would still like to enjoy the coast and all its recreational opportunities without major restrictions.

Many tourists come visit Polis to witness the annual hatching of baby sea turtles at a local beach. While most everyone knows not to interfere with the baby sea turtles’ trek to the sea from their sandy nests, you know many get too close. Coastal development also generates light at night, confusing the hatchlings whose instinct is to follow the moonlight toward the water. You are well aware of all these obstacles but would still like to maintain tourist access to the annual hatchings in order to benefit from the tourist dollars.

As coastal recreational enthusiasts, you would like to see some protections put in place to ensure you can continue to experience sea life first-hand when you snorkel, scuba dive, surf, or wade. However, you would rather not have any of your recreational opportunities too severely restricted.
**Commercial Fishers**

You represent local commercial fishers in the area. Your ancestors have been fishing these waters for over a hundred years. The only life you know is fishing, the only skills you have are as fishers. You have noticed the size of the fish caught becoming smaller and you believe that sustainable fish quotas should be put in place to ensure your children are able to become fishers as well and carry on the tradition. However, you would like the right to keep fishing to some extent in order to support your families. You would consider some restrictions, possibly a seasonal ban, but not an all-out ban on commercial fishing.

You are bothered by the sports fishers in town who often keep their catch when they are supposed to catch and release. You would also rather have the sports fishers be restricted to areas outside prime commercial fishing grounds.

The prime fishing grounds are to the north. You have no interest in fishing near the coral reef or sea turtle nesting grounds. Those habitats support the biodiversity that helps preserve the fish stocks you seek to catch and you would support conservation efforts in those specific areas as well.

**Sports Fishers**

You represent sports fishers. As sports fishers, you would be happy to see the designation of a MPA along the coastline if it would ensure more fish, though maybe not along the whole coastline. You would be fine if catch and release requirements were put in place as well.

One thing that has bothered you is the disregard or ignorance some scuba divers and snorkelers seem to have for the designated areas they are supposed to remain in to ensure their safety and yours. If the MPA could be zoned to ensure these regulations would be enforced, you would be in favor. Also, if there was a designated area where sports fishers could fish without the presence of commercial fishers, that would be ideal.

In general, you don't know a whole lot about the value of a MPA or of any environmental or human threats facing your coastline, but you are not opposed to regulation as long as you still have access to fish, especially just north of the sea turtle cove—a favorite fishing ground for many sports fishers.
Local Environmental Advocates

You represent the environmental advocates living in Polis. You believe human activities have had a detrimental impact on the coastline and would support severe restrictions on public access to the beaches and waters along the coast. While public beach access may seem harmless, you believe beach goers have been leaving behind plastic trash and other waste that is often carried to sea with the tides. Scuba divers, snorkelers, and fishers use boats that add pollutants like gasoline to the water. Tourists often steal pieces of the rare coral as token gifts or to make into jewelry.

You also believe local fish stocks are severely depleted. You have read studies that suggest endangered species of fish, crustaceans, plants, and mammals would be best protected if left untouched for at least a decade. You’re not sure how much regulation the public will support, but you would like to propose very strict regulations and gauge public response. You are interested in protecting the coastline for its inherent value as opposed to the benefits humans derive from nature.

There is also a respected research institute less than 40 miles north of Polis that does incredible scientific work on the medicinal benefits of coral reef ecosystems. Creating a zone designated only for scientific observation may lure the institute to develop a satellite campus in Polis, adding to the economy and making Polis part of the solution rather than part of the problem.

Local Tribe

As a member of the local tribe, you represent tribal interest. Your tribe has inhabited this land for thousands of years. The oceans are a part of your identity. You conduct traditional feasts on the beach. Your fishing practices have sustained your tribe’s protein needs for as long as you can remember. Much of your traditional art and culture incorporates marine life like the sea turtle, the pelican, and the humpback whale that makes an occasional appearance off the coast of Polis on its annual migration.

When you signed a treaty with the United States in 1843 to sell your land in exchange for a small reservation, you also ensured that you maintained your rights to fish as much as necessary to provide sustenance for your tribe. These treaty-fishing rights still remain in place today. However, you have chosen not to fish in an effort to let the species rehabilitate. You wish other fishers would act as thoughtfully as your tribal members have.

You are also wary of tourists and beach goers who leave their trash behind and vandalize benches and informational signs your tribe has built and donated to the city as part of an educational campaign on the ecological value of the coast. You would be happy to have the coastline designated as a MPA, but would want to preserve your treaty rights for the day the fish stocks return to their historical levels. In exchange for the preservation of these treaty rights you would be willing to provide funding for another educational campaign in support of the new MPA, with signage and K-12 curriculum freely available to the public schools in the city of Polis.
Performance-based Assessment 2

Essential Question
How can humanity reduce its impact on the Earth?

Time Required
7-10 days

Materials
Packet: Our Collective Impact
The packet includes the following:
• Product 1: Personal Footprint Analysis (Individual), 1 copy per student
• Product 2: Country Footprint Analysis (Group), 1 copy per student
• Product 3: Presentation (Group), 1 copy per student
• Student Reflection Sheet, 1 copy per student
• Performance-based Assessment Holistic Scoring Rubric, 1 copy per student
• Student Reference Sheet for the Holistic Scoring Rubric, 1 copy per student

(Optional: Overhead: Sample Performance-based Assessment)

Ways to Introduce this Assessment
1. Explain to students that they will be completing a performance-based assessment based on the unit Our Collective Impact from the textbook. This unit includes the chapters on Population, Consumption, Climate Change, Biodiversity, and Oceans. This is an opportunity for them to both show their content knowledge and apply other skills like critical thinking, global awareness, and problem-solving.

Option: If you haven’t already completed the following activities from the Teachers’ Guides, then consider beginning with one of the following:
• Consumption Teacher’s Guide, Activity 1: Watch Where You Step—Students brainstorm the various processes and impacts associated with a given product.
• Climate Change Teacher’s Guide, Activity 2: Determining Trends—In small groups, students learn about different environmental and societal changes that have occurred since the Industrial Revolution. Each group will share trends they discern from the variable they were assigned with the rest of the class. The class will then work together to see how all of the variables might be related to one another and how each of them could relate to climate change.
• Biodiversity Teacher’s Guide, Activity 1: What Is Nature Worth?—Working in small groups, students brainstorm the services different ecosystems provide and critically analyze how ecosystem services support environmental, social, or economic systems. Students then explore the idea of determining an economic value for ecosystem services.
2. Explain to students that by the completion of the assessment, they will have researched ways countries can reduce their ecological footprint.

3. Tell students the countries with some of the largest ecological footprints include:
   - Qatar
   - Kuwait
   - United Arab Emirates
   - Denmark
   - United States
   - Belgium
   - Australia
   - Canada
   - Netherlands
   - Ireland

4. Organize students into groups of 3-4 students and assign each group one of these countries.

5. Hand students the Our Collective Impact Packet.

6. Review the driving question with students.

7. Review each product students are expected to create to see what questions they have. Explain to them that they will be assessed on these products based on the Performance-based Holistic Scoring Rubric in the back of their packets.

   **Note:** The skills being assessed are 21st Century Skills and Common Core Standards. You can also assess students on content knowledge through the National Council for the Social Studies Standards.

8. Have them review the Student Reference Sheet for the Holistic Scoring Rubric so they can comprehend the types of skills they will be assessed on.

9. Explain to students that after they hand in their 3 products, they will need to complete a Student Reflection Sheet.

   **Option:** Share the Sample Performance-based Assessment Rubric so students can understand how holistic scoring works.

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Our Collective Impact

Driving Question:

What are ways we can reduce our impact on the planet?

A conference has been called in Rio de Janeiro in 6 months. Country leaders are coming together to discuss the impacts of large ecological footprints and ways the international community can come together to make a concerted effort to decrease humanity’s impact on the Earth.

You work for a consulting organization that offers advice to countries on how they can reduce their ecological footprint. Working in groups of 3-4 students, you will offer recommendations to the country you have been assigned to consult.
Product 1: Personal Footprint Analysis (Individual)

For this product, you will:

• **Measure your own ecological footprint.**

• **Create a 1–2 page paper that addresses the following questions:**
  
a. How does your personal footprint compare to that of the average person who lives in your country?

b. What are a few areas in which you would be able to decrease your footprint?

c. What kinds of challenges might you face if you attempted to decrease your footprint in the ways you described for the above question?

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### Additional Resources

- **Website: Global Footprint Network**
  

  This website provides information about world and country ecological footprints. It also has an online footprint calculator for individuals.

- **Website: WWF Footprint Calculator**
  

  The World Wildlife Fund provides an online quiz to help individuals determine their ecological footprint.

- **Website: Tread Lightly**
  
  [https://www.treadlightly.org/](https://www.treadlightly.org/)

  Tread Lightly is a free climate change education website with resources such as an ecological calculator and a Tread Lightly Challenge.
Each member of your group will share the analysis of his or her personal footprint.

• **Analyze the ecological footprint of your group’s country by answering the following questions:**
  a. What are population patterns within this country?
  b. What are consumption trends within this country?
  c. What are infrastructure trends within this country?
  d. What are immigration patterns into this country?

• **Create a report that provides the following information for the government:**
  a. **Cover letter:** The cover letter provides key facts and statistics related to the country’s ecological footprint. This section can be 1 page.
  b. **Root causes summary:** This summary provides an explanation of why the country has a large ecological footprint. The section can be 1 page.
  c. **Overall recommendation:** This section includes your group’s overall recommendations related to what the country can do to decrease its ecological footprint. You must provide at least 1 personal solution and at least 1 structural solution that will address the issue. The sustainable solutions must be research-based.

• **Include a bibliography that provides sources for the information you found.**

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**Additional Resources**

- **Website:** National Geographic, “Pictures: Ten Countries with the Biggest Environmental Footprints”
  This resource provides visuals and descriptions of the 10 countries with the biggest environmental footprints.

- **Article:** New Footprint and Biocapacity Data Released from Space: Trends Reveal a ‘Global Auction.’
  This article by the Global Footprint Network summarizes the World Wildlife Fund’s 2012 Living Planet Report.

- **Website:** CIA World Factbook
  This website provides information on history, geography, economy, people, etc., for countries around the world.
Product 3: Presentation (Group)

Each group has been asked to share their recommendations to the country’s government task force on ecological footprint. Your group will prepare a presentation using one of the following media:

- **PowerPoint presentation**: Each member is responsible for at least 2 slides. The presentation may begin with an explanation of why the country you are consulting with has such a large ecological footprint. The slides should have graphics (e.g., tables, charts, photographs) to support the plan.

- **Podcast or vidcast**: Each member will contribute to a 5-minute mini-documentary. Group members may interview each other and provide charts, maps, tables, and other visuals to support their recommendations.

- **Posterboard presentation**: Each member will contribute to creating a poster using tables, charts, maps, and photos. The group will also deliver an oral argument for why their solutions will address the issue and are worth funding.

- **Brochure presentation**: Each member will contribute to creating a brochure using tables, charts, maps, and photos. The group will also deliver an oral argument for why the country they consulted with should follow the recommendations they shared.

**Additional Resources**

- **Website**: Microsoft Office: Create your first presentation
  This website provides information on how to create a PowerPoint presentation.

- **Website**: eHow.com: How to Make a Podcast
  In this post, Katherine Johnson provides instructions on how to make a podcast.

- **Website**: eHow.com: How to Video Podcast
  This post provides instructions on how to make a video podcast.
Student name: ____________________________________________

Instructions to Students: Prior to completing this Student Reflection Sheet, review the Performance-based Assessment Holistic Scoring Rubric and the Student Reference Sheet for the Holistic Scoring Rubric (which provides a detailed description of each skill included on the rubric). These documents will help you understand how to reflect on the quality of your work for this performance-based assessment.

Content Knowledge, Critical Thinking, and Problem-solving

1. Identify 2 skills you developed when you created the 3 products for this assessment.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

2. Were there any challenges you encountered when creating any of the products?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

3. Evaluate the quality of your research findings from the sources you used for your performance-based assessment. Explain how your findings contributed to any conclusions you reached in your performance-based assessment.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Awareness of Broader Sustainability Relationships

4. Explain how your products relate to one of the broader global issues connected to essential human needs.

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
5. Explain how any of your products could be used to inform or develop broader civic or
government sustainability policies at the local, state, federal, or global levels.


Self-evaluation and Collaboration

6. Based on the scoring rubric, how do you rate the quality of your products?


7. List specific products you created. Explain ways in which you could improve the quality
of each one.


8. Evaluate your role in your team and describe how you contributed to the completion of the
assessment.


9. Describe how you improved the collaboration between group members to successfully
complete the assessment.


Information Technology and Communication

10. What types of technology (such as computers and software packages, the Internet, and digital
video and audio equipment) did you use in the development of your products? How did these
types of technology help you research and present the products effectively?
# Performance-based Assessment Holistic Scoring Rubric

**Student Name:** ____________________________  
**Unit Title:** __________________________________________  
**Project Title:** ________________________________________  

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<tr>
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<th>Meets Expectations (3)</th>
<th>Performs Below Expectations (2)</th>
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### Evaluation of Research Findings from Sources

- **Demonstrates clear skill to evaluate the quality of findings from sources in the performance-based assessment.**
- **Demonstrates general skill to evaluate the quality of findings from sources to reach conclusions in the performance-based assessment.**
- **Demonstrates limited skill to evaluate the quality of findings from sources to reach conclusions in the performance-based assessment.**
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- **There is insufficient evidence to assess the evaluation of research findings from sources in the performance-based assessment (i.e., performance-based assessment is incomplete).**

### Global Awareness

- **Demonstrates clear understanding of global awareness in the performance-based assessment in relation to all of the targeted standards.**
- **Demonstrates general understanding of global awareness in the performance-based assessment in relation to the targeted standards, with minor gaps in breadth, depth, and/or accuracy of understanding.**
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### Civic Literacy

- **Demonstrates clear understanding of civic literacy in all of the targeted standards.**
- **Demonstrates general understanding of civic literacy in the targeted standards, with minor gaps in breadth, depth, and/or accuracy of understanding.**
- **Demonstrates limited understanding of civic literacy in the targeted standards, with substantial gaps in breadth, depth, and/or accuracy of understanding.**
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- **There is insufficient evidence to assess civic literacy in the performance-based assessment in relation to the targeted standards (i.e., performance-based assessment is incomplete).**

### Self-evaluation

- **Demonstrates clear self-evaluation of the quality of the student's work on the performance-based assessment in relation to all of the targeted standards.**
- **Demonstrates general self-evaluation of the quality of the student's work on the performance-based assessment in relation to the targeted standards.**
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| 1. Content Knowledge and Skills | The intent of Content Knowledge and Skills is to determine whether:  
  - You have learned the concepts and ideas of the course  
  - You demonstrate an understanding of the ideas and concepts of the targeted learning standards of the performance-based assessment |
| 2. Application of Content Knowledge and Skills | The intent of Application of Content Knowledge and Skills is to determine whether the performance-based assessment products and the Student Reflection Sheet submitted by you demonstrate that:  
  - You have properly applied the ideas and concepts of the targeted learning standards of the performance-based assessment to the performance-based assessment products |
| 3. Critical Thinking and Problem-solving | The intent of Critical Thinking and Problem-solving is to determine whether the performance-based assessment products and the Student Reflection Sheet submitted by you demonstrate:  
  - The use of reasoning to analyze and evaluate evidence, arguments, and alternative points of view  
  - The understanding of a problem  
  - The application of strategies or solutions for resolving the problem  
  - The application of evidence to support your conclusions  
  - The application of your understanding of an issue to a novel situation to resolve a problem |
| 4. Evaluation of Research Findings from Sources | The intent of Evaluation of Research Findings from Sources is to determine whether the performance-based assessment products and the Student Reflection Sheet submitted by you demonstrate:  
  - The skill to analyze and to determine the usefulness of findings and sources in answering the research topic  
  - The understanding of how to integrate information into a report, without plagiarism, to support arguments about the research topic |
| 5. Global Awareness | The intent of Global Awareness is to determine whether the performance-based assessment products and the Student Reflection Sheet submitted by you demonstrate:  
• The understanding of how your performance-based assessment fits within broader global issues  
• The understanding that this issue is related not only to your community or country, but to the world as a whole  
• The understanding that there is a diversity of cultures, religions, and lifestyles around the globe  
• The understanding that problems can be solved a variety of ways and that solutions must fit the needs of unique cultures and countries around the globe |
| 6. Civic Literacy | The intent of Civic Literacy is to determine whether the performance-based assessment products and the Student Reflection Sheet submitted by you demonstrate:  
• The understanding of how your performance-based assessment reflects broader civic or government policies regarding sustainability issues at the local, state, federal, and global levels  
• The recognition of your role as a citizen toward sustainability issues |
| 7. Self-evaluation | The intent of Self-evaluation is to determine whether you take responsibility for your own learning by:  
• Articulating the quality of your performance-based assessment in relation to the ideas and concepts in the targeted learning standards of the performance-based assessment  
• Using the Student Reflection Sheet to identify the strengths and weaknesses of your work  
• Suggesting ways to improve your work in the Student Reflection Sheet  
• Suggesting ways to improve your work beyond the Student Reflection Sheet |
| 8. Collaboration and Contribution | The intent of Collaboration and Contribution is to determine how much you collaborated with other students in the development and completion of the performance-based assessment, by:  
• Working collaboratively with other students  
• Designating work assignments among group members  
• Sharing responsibility for the completion of the performance-based assessment  
• Using listening and leadership skills  
• Being flexible and able to compromise to complete the performance-based assessment |
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- The skill to research and analyze information
- The skill to develop reports and make presentations |
| **10. Communication and Presentation** | The intent of Communication and Presentation is to determine whether the performance-based assessment products and the Student Reflection Sheet submitted by you demonstrate:
- The skill to clearly and effectively express your ideas and thoughts through oral, written, and nonverbal forms of communication (e.g., eye contact, facing the audience)
- The use of communication for a variety of purposes (e.g., to inform, instruct, motivate, persuade)
- The use of a variety of multimedia and technology (e.g., written reports, poster boards, video presentations, PowerPoint presentations) for presentations |
| **11. Overall Score** | The overall score for the performance-based assessment is a holistic determination rather than an accumulation of points from the previous sections. The teacher should use the ratings given in the individual skill sections to determine the overall score that the teacher believes is appropriate for your work. |
## Sample Performance-based Assessment

**Student Name:** Jane Doe  
**Unit Title:** Raising the Quality of Life of a Country  
**Project Title:** Improving the Quality of Life in Nicaragua

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<tr>
<td>(10) Communication and Presentation</td>
<td>Demonstrates clear thoughts and ideas using oral, written, and nonverbal communication skills (e.g., eye contact, facing the audience).</td>
<td>Demonstrates general thoughts and ideas using oral, written, and nonverbal communication skills (e.g., eye contact, facing the audience).</td>
<td>Demonstrates limited thoughts and ideas using oral, written, and nonverbal communication skills (e.g., eye contact, facing the audience).</td>
<td>Demonstrates minimal or no thoughts and ideas using oral, written, or nonverbal communication skills (e.g., eye contact, facing the audience).</td>
<td>There is insufficient evidence to assess communication and presentation in the performance-based assessment (i.e., performance-based assessment is incomplete).</td>
</tr>
<tr>
<td>Overall Score (Check Only One)</td>
<td>Exceeds Expectations</td>
<td>Meets Expectations</td>
<td>Performs Below Expectations</td>
<td>Performs Well Below Expectations</td>
<td>There Is Insufficient Evidence</td>
</tr>
</tbody>
</table>
Comments on Scoring Holistically

A student turned in a research report on gender equality in Nicaragua. The research report was well organized and provided a number of sources. The student also turned in, with the other students in her group, the final draft of a grant application and a PowerPoint presentation about the grant application. The grant application was well written. The students developed a plausible plan to improve the quality of life in Nicaragua, applying the concepts they learned in the unit. The student gave thoughtful responses to the questions on the Student Reflection Sheet, demonstrating an understanding of how the grant application related to the targeted learning standards and broader global sustainability issues. The student was also critical of her work and suggested ways that she could improve it. During her group presentation, the student discussed two slides of the PowerPoint. The student had difficulty using the projector and advancing the slides. The student also was noticeably uncomfortable discussing the slides and did not make much eye contact with the audience.

The teacher awarded the student a 4 for Content Knowledge and Skills, but awarded a 3 for Application of Content Knowledge and Skills. The teacher also awarded a 4 for Critical Thinking and Problem-solving, but only a 3 for Evaluation of Research Findings from Sources. For the skills Civic Literacy, Global Awareness, and Self-evaluation, the teacher awarded 4s. For Collaboration and Contribution, the teacher awarded a 3. During the presentation of the grant, the teacher noticed that the student had difficulty giving the PowerPoint presentation and was not an effective communicator. Nevertheless, based on the ratings for Content Knowledge and Skills, Critical Thinking and Problem-Solving, Global Awareness, Civic Literacy, and Self-evaluation, the teacher awarded a 3 for Overall Score.
CHAPTER BIG IDEAS

- Critically thinking about strategies to maximize quality of life can benefit human communities, ecosystems, and economies.
- Accurately measuring and monitoring progress on quality of life issues requires indicators that go beyond economic well-being.
Guiding Questions

- How do social, economic, and environmental factors contribute to a higher quality of life?
- How can addressing global issues like poverty and weak governance improve quality of life?

Key Concepts

- Gross National Happiness (GNH)
- standard of living
- Quality of life
- life expectancy
- Millennium Development Goals (MDGs)

Supporting Vocabulary

- Gross Domestic Product (GDP)
- Organization for Economic Cooperation and Development (OECD)
- Human Development Index (HDI)
- downshifting
- civic engagement

Service Learning Component

Service Learning Project Idea #1

- **Question:** What are ways we can improve quality of life in our local community?
- **Hook resource:** What Kids Can Do is a non-profit organization that works to demonstrate what young people can accomplish when given opportunities and what they can contribute to society. WKCD has a 5-minute video that speaks to the work youth have done to improve quality of life, [http://www.whatkidscando.org/](http://www.whatkidscando.org/).
- **Project:** Have students create a local service-learning project guide for young people in their community. They can research local organizations that are addressing community needs and contact them to find out what service opportunities they provide for youth. If students need general ideas to get started, they can visit Youth Service America at [www.ysa.org](http://www.ysa.org). Have students compile the information in a format that is accessible for other young people and share it through a website, local school district, or in a printed resource. If there is already an organization that has put together such a resource, students can team up with the organization to update the existing project.

- **Additional Resource:**
  - **Website:** Engaging Teens With Their Community: A Service Learning Resource [http://www.ymca.net/service-learning-resources/service-learning-resource.pdf](http://www.ymca.net/service-learning-resources/service-learning-resource.pdf) A YMCA guide full of practical service-learning tools for youth.
Project Based Learning Component

Project Based Learning Idea

• **Overview:** Students will interview adults to see how they would define quality of life and if they believe quality of life has improved since they were children. They will individually analyze this information and compare it to country-wide human development index data. In groups, they will develop digital stories that document these personal perspectives on quality of life.

• **Driving Question:** Has quality of life improved during the last several decades?

• **Hook Resource:** 200 Countries, 200 Years, 4 Minutes
  This 4-minute video by global health statistician Hans Rosling documents how countries have increased in wealth and life expectancy during the last 200 years.


• **Group Project:** In groups of 2 to 3, students will interview 1 adult to learn about their perspectives on if they think quality of life has improved over their lifetime. They will create digital stories related to these interviews.

• **Additional Resource:**
  • **Article:** Hard Facts: The World Is Getting Better
  This article by Andres Oppenheimer takes a look at how the world is becoming a better place to live in despite some of the facts and statistics we may be hearing.

**Summative Assessment**

Chapter Test

**Connections**

**World History connections:** improvements in quality of life throughout history

**Economics connections:** Gross Domestic Product (GDP); Human Development Index (HDI); Organization for Economic Cooperation and Development

**Geography connections:** happiest countries in the world

**Civics connections:** personal and structural solutions to quality of life
Activities in Teacher’s Guide: Suggested Sequence

<table>
<thead>
<tr>
<th>Day 1</th>
</tr>
</thead>
</table>
| **Reading:** *Introduction to Quality of Life*  
**Activity 1:** *Livin’ the Good Life*—Students develop indicators to measure quality of life and conduct a survey of peers and adults to obtain data for their indicators. They analyze the survey data using spreadsheet software and produce charts to demonstrate their results. Students compare their own performance as measured by the quality of life indicators against averages determined by the survey results. |

<table>
<thead>
<tr>
<th>Day 2</th>
</tr>
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</table>
| **Reading:** *Background on Quality of Life*  
**Activity 2:** *Defining Happiness*—Students individually decide what types of things positively contribute to their quality of life. They compare their ideas about quality of life to national statistics related to how Americans spend their time and determine how Americans could restructure their time to improve quality of life. |

<table>
<thead>
<tr>
<th>Day 3</th>
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</table>
| **Reading:** *Quality of Life Today*  
**Activity 3:** *What’s Your Rank?*—Students are divided into groups to research regions around the world. Based on the United Nations Human Development Index Indicators and rankings, students will analyze statistics for 5 countries within their assigned region. They will then consider regional differences in rankings and possible roots causes of these differences. |

<table>
<thead>
<tr>
<th>Day 4</th>
</tr>
</thead>
</table>
| **Reading:** *Pathways to Progress: Quality of Life*  
**Activity 4:** *In the Pursuit of Happiness*—Students will interpret the Declaration of Independence and a number of different quotes from historical figures related to happiness. They will then write a personal essay that speaks to their philosophy on the pursuit of happiness. |
Discussion Questions from the Chapter Reading

Introduction to Quality of Life

1. What is the difference between standard of living and quality of life?
2. What is the relationship between environmental health and quality of life?

Background on Quality of Life

3. What factors have contributed to an increase in life expectancy around the world during the past several decades?
4. What are the impacts, positive or negative, of working longer hours?
5. What are the positives of using GDP as an indicator to measure well-being? What are the drawbacks and limitations?

Quality of Life Today

6. While income increased in the United States between 1957 and 2002, the percentage of people who reported being happy stayed the same. Why do you think people did not report higher rates of happiness as income increased? What conclusion would you draw from this finding that would apply to your own life/plans for the future?
7. How can good governance improve quality of life?

Pathways to Progress: Quality of Life

8. How does the creation of international goals such as the Millennium Development Goals ultimately improve well-being for all people?
9. How can assessing community happiness lead to improving well-being for a community?
Chapter Assessment: Quality of Life, page 1

Recall
Match the following words on the left with their definitions on the right.

1. Gross National Happiness based on economic factors, provides us an idea of how comfortable people are and how materially wealthy they are
2. Standard of living holistic measure of well-being based on values that are easy to measure such as education, and values more open to interpretation like mental health
4. Millennium Development Goals an alternative measure of quality of life started by the king of Bhutan

Reasoning/Explanation
Complete the following multiple choice questions by choosing one correct answer.

5. Use the flow chart to answer the question:
   In the early 19th century, people worked 3,000 hours per year in the United States.
   X
   By 1929, work hours had been reduced by 600 hours.
   The trend continued for several decades but stopped during the 1970s.

Which best replaces the X in the flow chart?
   a. Work hours began to decrease through the years because the country went through a recession.
   b. Work hours began to decrease through the years because labor productivity increased.
   c. Work hours began to decrease through the years because the number of people working increased.
   d. Work hours began to decrease through the years because the country experienced economic growth.
Chapter Assessment: Quality of Life, page 2

6. Which statement best explains what research has said about the connection between income and happiness?
   a. Increased income equates to improved well-being up to a certain income level.
   b. Income has minor connections to a person's well-being; health is more significant.
   c. Stress decreases when individuals are able to earn an upper-class income.
   d. Disposable income that allows people to purchase many material goods increases happiness.

7. What is the main difference between measuring a country's Human Development Index (HDI) and measuring a country's Gross Domestic Product (GDP)?
   a. GDP measures a country's standard of living. HDI measures a country's well-being.
   b. GDP measures a country's income annually. HDI measures a country's income biannually.
   c. GDP measures how much income is generated from imported goods. HDI measures how much income is generated from exported goods.
   d. GDP measures a country's happiness. HDI measures a country's economic growth.

8. Which one of these factors has helped to increase life expectancy for women?
   a. promoting abstinence as a form of birth control
   b. providing health education classes on nursing methods
   c. promoting marriage at older ages for women
   d. banning the use of contraceptives such as birth control

9. Which of the following statements best explains why extended work hours can lead to a lower quality of life?
   a. Longer work hours lead to individuals getting sick more often.
   b. Additional income is not invested in a way that improves happiness.
   c. People choose to not eat enough food because they work so much.
   d. Family time and social connections decrease considerably.

10. The Better Life Index created by the Organization for Economic Cooperation and Development would measure all of the following except:
    a. work/life balance
    b. life satisfaction
    c. poverty
    d. education
Chapter Assessment: Quality of Life, page 3

11. What statement best illustrates what studies have found with the connection between social connections and life span:
   a. A person who has more social connections will live longer than those with no social connections because they’ll have more people who support them
   b. A person who has less social connections will live longer than those with more social connections since they won’t have to worry about other people
   c. A person who has more social connections will have higher stress levels because they will have to care for the community around them
   d. A person who has less social connections will not have to spend as much money on those around them leading to income stability

12. What is the goal of implementing a carbon tax such as Costa Rica did in 1997?
    a. The government can provide incentives to people who partake in carbon-intensive activities to stop their behavior.
    b. Businesses can pay higher taxes to continue carbon-intensive activities, therefore supporting economic growth.
    c. Stakeholders who participate in carbon-intensive activities will migrate out of the country because they cannot afford taxes, therefore improving economic growth.
    d. Citizens will pressure those who partake in carbon-intensive activities to stop doing so.

13. Which example best illustrates the concept of downshifting?
    a. a person decreasing the amount of material goods they purchase
    b. a person purchasing a car that is of less value than the one owned
    c. a person working less hours and taking less salary
    d. a person ordering a smaller portion of food for nutrition reasons

14. Studies have found that all of the following relate to how people ages 12 to 24 are happy except:
    a. technology
    b. religion/spirituality
    c. family, friends, and loved ones
    d. income/earning money
Application/Complex Reasoning

Answer the following short answer questions below.

15. According to the Gallup–Healthway poll, Denmark is one of the happiest countries in the world.
   
   Part A. Identify 2 reasons Denmark was given this ranking.
   
   According to the Happy Life Index, Costa Rica is one of the greenest and happiest countries in the world.
   
   Part B. Identify 2 reasons Costa Rica was given this ranking.

16. Part A. Why were the Millennium Goals created?
   
   Part B. Identify 2 of the goals.
   
   Part C. Explain how the 2 goals you chose relate to an improved quality of life.
Teacher Master
Chapter Assessment: Quality of Life

Recall (4 points total)
1. Gross National Happiness—an alternative measure of quality of life started by the king of Bhutan
2. Standard of living—based on economic factors, provides us an idea of how comfortable people are and how materially wealthy they are
3. Quality of life—holistic measure of well-being based on values that are easy to measure such as education, and values more open to interpretation like mental health

Reasoning/Explanation (10 points total)
5. a
7. a
9. d
11. a
13. c
6. a
8. c
10. c
12. a
14. d

Application/Complex Reasoning (6 points total)

15. Part A: Answers will vary. (1 point)
   • Denmark has a low unemployment rate
   • Government covers all the cost of health care and education
   • Denmark has the highest per capita spending on children and elderly of any country in the world
   • Denmark has a high level of trust between citizens
   • The built environment is structured in a way that emphasizes communal interaction and trust

   Part B: Answers will vary. (1 point)
   • Costa Rica has taken initiatives to ensure its environmental health. It began a carbon tax in 1997 used to pay landowners and indigenous communities money so they would not chop down trees.
   • Oil importers, water-bottling plants, and sewage-treatment plants have to pay special taxes if they want to do business in the country.
   • 90% of Costa Rica’s energy supply comes from renewable resources.

16. Part A. (1 point)
The Millennium Development Goals were created to improve the lives of the world’s poorest people.

   Part B. Answers will vary. (1 point)
   • Ending poverty and hunger
   • Ensuring all children complete primary school
   • Eliminating gender inequality in education
   • Improving child and maternal health
   • Combatting HIV/AIDS
   • Promoting environmental sustainability
   • Developing global partnerships for economic development

   Part C. Answers will vary. (2 points)
   • Ending poverty and hunger will help to improve the well-being of people. They can live each day without worrying about if they have enough money to survive or if they have enough food to eat.
   • Education is a way of ensuring people have the skills and knowledge to gain meaningful employment
   • Eliminating gender inequality can give females the opportunity to attend school when they are young and choose to work when they are older.
   • Improving child and maternal health can help to decrease the amount of deaths per year from poor health care.
   • Promoting environmental sustainability can create healthy ecosystems and conserve natural resources so that people are able to use the land for future generations.
   • Developing global partnerships for economic development can lead to governments around the world collaborating together to determine solutions to issues related to quality of life.
Activity 1: Living the Good Life?

Overview
Students develop indicators to measure quality of life and conduct a survey of peers and adults to obtain data for their indicators. They analyze the survey data using spreadsheet software and produce charts to demonstrate their results. Students compare their own performance as measured by the quality of life indicators against averages determined by the survey results.

Objectives
Students will:
• develop quality of life indicators
• develop and administer a quality of life survey
• analyze data and present the results
• understand the connection between how quality of life is measured and global issues such as inequality, poverty, and governance

Inquiry/Critical Thinking Questions
• How is quality of life measured?
• What are other ways to measure quality of life?
• How does the concept of what is necessary for a high quality life change during the course of our lives?

Time Required
Three 45-minute classes

Key Concepts
• quality of life
• indicators

National Standards Addressed
National Council for the Social Studies
1. Culture
3. People, places, and environments
4. Individual development and identity

National EfS Standards
3.1 Personal Action: Personal Change Skills and Strategies

Materials/Preparation
Day 1
Two 8.5 x 11 pieces of paper with “Agree” written on 1 and “Disagree” on the other, posted on opposite sides of the room

Overhead or Document Camera: Quality of Life Categories

Overhead/Handout: Quality of Life Survey

Handout: Excel Instruction Sheet, 1 copy per student

Students will need basic competency with spreadsheet applications (e.g., Microsoft Excel). You may need to review how to enter data and perform basic summing and averaging functions before beginning this exercise.

Day 2
Handout: Quality of Life Survey, make 7 copies of the completed Quality of Life Survey for each student in the class (1 copy for each student to complete during class, and 6 for each student to administer outside of class). You may decide that students will conduct more or less than 6 surveys outside of class, but the quantity of surveys per student should remain an even number to ensure that survey data from their peers and adults is represented equally.

Handout: Excel Instruction Sheet for each student

Day 3
Prior to class, cut and paste the data from the students’ Excel sheets so that all the students’ survey results are combined in 1 master sheet.

Calculate the average of the data for each indicator, combining the data for “Peer and Adult,” “Peer only,” and “Adult only” (i.e., add all numbers together for each indicator and divide by the total number of respondents).

Print out a copy of the results and bring to class.
Create and expand the following table on the board or overhead (or if you have access to an LCD projector you can display the actual Excel chart), including all of the survey indicators and the data from each set of respondents.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Average Peer/Adult</th>
<th>Average Peer</th>
<th>Average Adult</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Activity—Day 1

Introduction

1. Share the following statement with students, “The 40-hour work week should be reduced to 32 hours.”

2. Tell students they will debate the statement standing by the “Agree” sign if they agree with the statement or by the “Disagree” sign if they do not agree with the statement. Give them the following rules (use an overhead or write these on the board):
   • Everyone must take a side
   • Everyone should be prepared to state their reason for agreeing or disagreeing with the statement
   • Anyone can switch sides if they are convinced by the opposing side
   • No one can speak a second time until everyone else has spoken once
   • Be convincing but respectful of others when making your arguments

3. Have the students stand up and take a side (Note: If everyone takes the same side, ask a few students to try taking the other side and demonstrate how one might argue for that side).

4. Going back and forth from side-to-side, have students state their reasons for agreeing or disagreeing with the statement.

5. After the debate ask the class, “If everyone in the world had a high quality of life, how do you think the world might be different than it is today?” (Encourage students to think about quality of life as a positive concept, not just a lack of negative aspects. For example, the World Health Organization defines health as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.”)

Steps

1. Ask the class to brainstorm general categories of things in their lives that strongly influence their quality of life.

2. Either use the categories that they come up with or display the overhead, Quality of Life Categories.

3. Give the class the following information and instructions.
   • You are going to develop indicators (measurements) to evaluate quality of life based on these categories. You will develop and administer a survey to peers and adults asking for data on the indicators you develop.
   • In groups of 2 to 3 students, each group will come up with an indicator for 1 of these broad quality of life categories.
   • Students can choose this indicator either from the pre-prepared list or from the list created by the class.
   • The indicators must be measurable in units of time or quantities and should fit into the formula Number of _____ per _____. For example, if an important element of quality of life is Relaxation, how would you measure that? (e.g., number of hours per week you do after-school activities, or number of days you take a vacation per year)
   • Consider how easy or difficult it will be for the people you survey to provide data for the indicators. For example, an indicator of Recreation...
Activity 1: Living the Good Life? continued

could be the number of milliseconds a person spends playing sports every day, but not many people can tell you how many milliseconds they spend doing anything!

4. Break the class into groups of 2 to 3 students, and assign each group one of the quality of life categories. Tell the groups they will have about 10 minutes to come up with their indicator and write it on a piece of paper. Circulate around the groups and assist where necessary.

5. Have each group tell you the indicator they came up with and write it on a transparency of the survey. Check that the indicator is something measurable in units of time or quantity, and that a person being surveyed could provide an answer easily. Check that the indicator will fit into the formula Number of ____ per ____.

6. Explain to the whole class that you will create a final survey based on their indicators and then the students will survey peers and adults to assess their quality of life as defined by these indicators.

7. Show the transparency of the indicators and conclude Day 1 with the following reflection questions.

Discussion Questions

1. Why did you choose the indicator you did to define your quality of life category?

2. Can you think of other indicators for the categories written on the transparency? (Note: Do not change the original indicators given by the groups, as you will use those indicators for the survey portion of the exercise. Be sure that the students do not attack each other’s ideas; explain that there are many different ways to measure quality of life.)

3. How do you think people might adjust their lives to be in line with one or more of these indicators? (For example, if it was socially accepted that a quality of life measurement for Relaxation is the number of vacation days taken annually then people might adjust their balance between work and vacation time.)

Activity—Day 2

Steps

1. Tell the class that they are going to take a survey themselves and then administer the same survey to peers and adults to gather data for their quality of life indicators.

2. Explain that by collecting data, the class will be able to estimate the average performance in quality of life for their community, as well as determine how their personal quality of life compares against the community average.

3. Give each student 1 copy of the Quality of Life Survey you have prepared with their indicators and have them complete it in class. Tell them to be as accurate and honest as possible with the data they provide. Be sure they write their name on their survey, as you will be handing it back to them later.

4. Collect the surveys and tell the students they will get their surveys back later so they can compare their performance against the community average.

5. Pass out the remaining 6 surveys and the Excel Instruction Sheet Handout. Go over the Survey and Excel Instructions.

6. Tell the students to be aware of problems they may encounter when conducting their surveys that could make the data they collect less accurate. Typical issues to be aware of when conducting a survey include:

- Are the people they are surveying being honest?
- Are people being surveyed in groups, instead of individually (people tend to adjust their answers based on what they hear their peers saying)?
- Do people understand the questions?
- Do people have enough information to give an accurate answer?
Activity 1: Living the Good Life? continued

7. Ask the class to think of reasons why inaccurate data could be harmful if it is used to make important decisions.

8. Give them about 2 to 4 days to conduct their surveys, enter the data in Excel, and turn in their Excel documents to you.

Activity—Day 3

Steps

1. Ask the students how their surveying went, and if they think the data they collected is accurate.

2. Ask if they noticed any significant differences between responses from peers and adults.

3. Tell the students that you have combined all of their data, and that you now have averages for their community’s performance in each quality of life category. Ask them how they would determine the average, or explain how you obtained the averages.

4. Tell the students you are going to give them back the personal surveys they completed earlier so they can compare their responses to the community averages.

5. Give each of the students their own Quality of Life Survey.

6. Have the students look at their personal surveys and compare their performance against the averages of the other survey respondents (adults and peers).

7. Bring the class together for discussion.

Discussion Questions

1. What is one benefit of using indicators like the ones you developed to measure quality of life?

2. Do you think this process accurately measures quality of life? What worked and what was difficult about the process?

3. Are these indicators of quality of life sustainable? If everyone on the planet measured well-being by these indicators, what would the impact be on the environment, the economy, and society?

4. How does quality of life differ between your peers and the adults you surveyed? How do you think your own ideas about quality of life will change as you age?

5. What could you and/or other people do differently to change or improve your/their quality of life?

6. How is our government currently involved in guaranteeing basic quality of life (minimum wage, national parks, etc.)? Should they be more involved? Less involved?

Additional Resource

• Book: Take Back Your Time: Fighting Overwork and Time Poverty in America
This book is the official handbook of the national movement behind “Take Back Your Time Day.” It looks at the consequences of the typical American work day both personally and societally. (John de Graaf, Editor, Berrett-Koehler Publishers, Inc., San Francisco, 2003.)
Quality of Life Categories

• Family
• Recreation
• Creative Pursuits
• Work/Earning Money
• Friends
• Health
• The Environment
• Rest/Relaxation
• Spiritual Pursuits
• Volunteering/Helping Others
## Quality of Life Survey

**Survey Administered by (your name)_____________________________**

**Person being surveyed is:**
- [ ] Peer (Age 18 or younger)
- [ ] Adult (Older than 18)

<table>
<thead>
<tr>
<th>Quality of Life Category</th>
<th>Indicator</th>
</tr>
</thead>
</table>
| Family                   | Number of ______________________ per ________  
Answer: |
| Recreation               | Number of ______________________ per ________  
Answer: |
| Creative Pursuits        | Number of ______________________ per ________  
Answer: |
| Work/Earning Money       | Number of ______________________ per ________  
Answer: |
| Friends                  | Number of ______________________ per ________  
Answer: |
| Health                   | Number of ______________________ per ________  
Answer: |
| The Environment          | Number of ______________________ per ________  
Answer: |
| Rest/Relaxation          | Number of ______________________ per ________  
Answer: |
| Spiritual Pursuits       | Number of ______________________ per ________  
Answer: |
| Volunteer/Helping Others | Number of ______________________ per ________  
Answer: |
Survey and Excel Instructions for “Livin’ the Good Life?”

**Step 1—Administer Quality of Life Survey:**

- Each student will survey 3 different peers outside of this class (under the age of 18) and 3 different adults (e.g., parents, teachers, relatives, etc.) using the Quality of Life Survey developed by your class.

- Survey responders do not need to give their name, but you will need to check the “Peer” or “Adult” box on the survey form.

- Explain to the survey responders that your class has developed some quality of life indicators and that you would appreciate them taking 5 minutes of their time to answer some questions (Note: Be sure that they have not already been given the survey by another student in your class).

- While administering the surveys, be sure to keep the units of measurement constant for each indicator. If an indicator is “hours of sleep per day,” make sure that hours per day is the measurement consistently used for that indicator, and not hours per week, per month, etc.

- If someone cannot answer a question, record that as N/A for “Not Available.”

- Record their answers legibly, since you will need to type it into the Excel sheet later.

**Step 2—Create Excel Spreadsheet and Input Survey Data:**

- Create an Excel document like the one in the example below and save it on your computer.

- Enter the data from your surveys into the Excel spreadsheet. Enter peer or adult in the left hand column and their response under each category as shown in the example below. For example, the sample data filled in below represents data from one surveyed peer and one surveyed adult (this data is just an example; the categories and indicators your class came up with may produce completely different kinds of numbers).

- If you have surveys with some unanswered indicators, DO NOT enter 0 in that category on the Excel sheet. Write N/A, like in the example under the “Creative Pursuits” category. Only use 0 if their answer is actually 0.

<table>
<thead>
<tr>
<th>Categories</th>
<th>[Your names]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondent Type (Peer or Adult)</td>
<td>Family</td>
</tr>
<tr>
<td>Peer</td>
<td>5</td>
</tr>
<tr>
<td>Adult</td>
<td>7</td>
</tr>
</tbody>
</table>

**Step 3—Submit Excel Spreadsheet:**

- After you have entered all your data, save the spreadsheet and either e-mail or hand in to your teacher on a flash drive.
Activity 2: Defining Happiness

Overview
Students individually decide what types of things positively contribute to their quality of life. They compare their ideas about quality of life to national statistics related to how Americans spend their time and determine how Americans could restructure their time to improve quality of life. Students also evaluate their own progress toward “the good life” and how their personal consumption habits impact their progress.

Objectives
Students will:
• identify factors that improve quality of life
• evaluate how time use and personal choices impact quality of life

Inquiry/Critical Thinking Questions
• What factors contribute to quality of life?
• How closely do our lifestyles reflect our personal values?
• Do our consumption choices contribute positively to our quality of life?

Time Required
One 45-minute class

Key Concepts
• quality of life
• consumption

National Standards Addressed
National Council for the Social Studies
1. Culture
4. Individual development and identity
5. Individuals, groups, and institutions
7. Production, distribution, and consumption
10. Civic ideals and practices

National EfS Standards
2.4 Social and Cultural Systems: Social Justice
3.1 Personal Action: Personal Change Skills and Strategies

Materials/Preparation
Handout: Pick 5, 1 per student (plus 1 displayed by an overhead or document camera)
Blank sheets of paper, 1 per group of 2 to 4 students
Graph: How Americans Spend Their Time, displayed with an overhead or document camera
(Optional) Computer access for showing Story of Stuff segment

Activity
Introduction
1. Ask students to think about what the term “quality of life” might mean. Discuss student ideas, and develop a working definition that everyone can agree on. (One basic definition is “the level of well-being and physical conditions in which people live.”) You may want to ask students to consider how “quality of life” and “happiness” are related and how they could be different.

2. Give each student a Pick 5 handout. Ask them to circle or otherwise choose 5 of the options listed on the handout that they think are most essential to have a good quality of life. Tell students not to put their names on these handouts to remain anonymous.

3. Collect the handouts.

4. Tally student responses for each choice on the Pick 5 overhead displayed where students can see it. Place a tally mark in each box for each vote that choice receives.

5. Discuss the results with students:
   • Which choices received the most votes?
   • What do those choices say about students’ values?
   • How do you think these choices compare to the average U.S. youth?
   • Would your choices look different if you were 30 years older?
   • Do you spend your time and energy according to the things you think will improve quality of life?
Activity 2: Defining Happiness  continued

Steps

6. Divide students into groups of 2 to 4 students.  
   Pass out a blank sheet of paper to each group.

7. Ask students to determine how a person could  
   divide 8 hours of daily “free time” to reflect the  
   class’ quality of life goals, according to the Pick 5  
   results. Instruct each group to draw a pie chart  
   to indicate roughly how those 8 hours should be  
   divided, keeping in mind the class’ top 5 values.  
   (Note: 8 hours of “free time” is based on a 24-  
   hour day with 8 hours of sleep and 8 hours of  
   work/school time.)

8. Allow groups to share ideas from their pie graphs.

9. Display the graph, How Americans Spend Their  
   Time, on an overhead or with a document  
   camera.

10. Use the following questions for a class discussion  
    related to the graph:
    • How does your group’s pie chart compare to  
      the graph, How Americans Spend Their Time?
    • According to the graph, what is the main ac-
      tivity Americans do outside of work and sleep?  
      (watch TV) Does this surprise you?
    • How does American time use compare to your  
      ideas about quality of life? Do you think the  
      ways in which we spend our time contribute  
      positively to our quality of life?

11. Continue the discussion with the following  
    reflection questions, or use one or more of the  
    questions as a prompt for journaling.

Discussion Questions

1. Do you actively try to achieve the 5 things you  
   said are most essential to your quality of life?  
   (Note: You may want to point out that some  
   “down time” can be beneficial. Many of the goals  
   are long-term in nature, meaning you might not  
   spend time on them every day.)

2. Why might some people not be able to spend  
   time or money on things that would improve  
   their well-being?

3. How do spend your time related to the 5 things  
   you said were most important for a good quality  
   of life? How does the money you spend relate to  
   these 5 things? How could you spend your time  
   and/or money differently to better meet your  
   quality of life goals?

4. How might consumption contribute to a better  
   quality of life for some people while reducing the  
   quality of life for others?

5. People whose basic needs are not met may  
   not even consider the quality of life categories  
   discussed in this activity. What are things each  
   of us can do to help provide all people with the  
   opportunity to live “the good life”?

Writing Extension

Ask students to eliminate 1 hour of television time  
each day for a week and to write a daily journal entry  
about those missing 7 hours. Did students feel they  
were missing out on something by losing an hour of  
TV time each day? How did they spend their extra  
hour each day? Did anything positive happen as a  
result?

Additional Resources

• Website: The Center for a New American Dream  
  www.newdream.org
  The Center for a New American Dream strives  
  to help Americans consume responsibly to pro-
  tect the environment, enhance quality of life, and  
  promote social justice.

• Article: The Economics of Happiness  
  www.washingtonpost.com/wp-dyn/content/  
  article/2009/12/31/AR2009123101153.html
  This article by Carol Graham poses questions  
  around national well-being such as whether hap-
  piness should supplant economic growth as part of  
  government policy.
In your opinion, which 5 of the following options are most essential to a good quality of life?

<table>
<thead>
<tr>
<th>democratic government</th>
<th>good physical and mental health</th>
<th>healthy natural environment</th>
<th>spending time with family and friends</th>
</tr>
</thead>
<tbody>
<tr>
<td>monetary wealth</td>
<td>having a nice home</td>
<td>volunteering or helping others</td>
<td>participating in local or national politics</td>
</tr>
<tr>
<td>spirituality/religion</td>
<td>being famous</td>
<td>living in a clean and safe neighborhood</td>
<td>time for watching television</td>
</tr>
<tr>
<td>time for hobbies and recreation</td>
<td>travel and vacation time</td>
<td>participating in community events</td>
<td>education</td>
</tr>
<tr>
<td>being able to buy nice things</td>
<td>a rewarding job</td>
<td>saving money for retirement</td>
<td>peace and security</td>
</tr>
</tbody>
</table>
How Americans Spend Their Free Time

Educational activities
Helping nonhousehold members
Caring for household members
Watching TV
Purchasing goods/services
Socializing/communicating
Socializing
Housework
Non-TV leisure

Notes:
• This graph excludes time spent working and sleeping.
• Housework includes home, lawn, and garden care.
• Non-TV leisure includes sports and exercise, reading and working on the computer for personal enjoyment, listening to and playing music, and playing games.
• Socializing/communicating includes both face-to-face socializing and communicating by telephone, mail, and email.
• Purchasing goods/services includes shopping and all other activities related to buying goods and services.
Activity 3: What’s Your Rank?

Overview
Students are divided into groups to research regions around the world. Based on the United Nations Human Development Index Indicators and rankings, students will analyze statistics for 5 countries within their assigned region. They will then consider regional differences in rankings and possible roots causes of these differences.

Objectives
Students will:
• identify how the United Nations Human Development Index is used to measure well-being
• analyze regional trends in human development
• determine root causes for differences in rankings across regions

Inquiry/Critical Thinking Questions
• How is well-being measured in different countries?
• Why might certain countries have higher Human Development Index rankings than others?
• Is the Human Development Index an appropriate tool to measure quality of life?

Time Required
One 60-minute class

Key Concepts
• human development
• indicators

National Standards Addressed
National Council for the Social Studies
4. Individuals, groups, and institutions
6. Power, authority, and governance
10. Global connections

National EFS Standards
2.3 Economic Systems: Alternative Indicators and Indexes of Progress

Materials/Preparation
Handout: Regional cards, 1 card per group of 2 to 3 students (you may need create more groups and duplicate more cards based on size of class)
Handout: Rankings in your Region, 1 per group of 2 to 3 students
Internet access
Overhead: Quote by Robert Kennedy

Activity
Introduction
1. In a place where all students can see, share the following quote from Robert Kennedy: “…the gross national product does not allow for the health of our children, the quality of their education, or the joy of their play. It does not include the beauty of our poetry or the strength of our marriages; the intelligence of our public debate or the integrity of our public officials. It measures neither our wit nor our courage; neither our wisdom nor our learning; neither our compassion nor our devotion to our country; it measures everything, in short, except what makes life worthwhile. And it tells us everything about America except why we are proud that we are Americans.”

2. Have students think, pair, and share about what Robert Kennedy meant by this quote. What exactly was Robert Kennedy trying to say?

3. Ask students to brainstorm other ways they would measure human progress within a country aside from gross national product.

4. Explain to students that the United Nations Human Development Index (HDI) is one way countries are ranked by level of human development. Human development measures education, access to resources, decision making abilities, and enjoying a long and healthy life. It’s a comparative measure of life expectancy, literacy, education, and other measures of quality of life.
**Activity 3: What’s Your Rank? continued**

**Steps**

1. Explain to students that they will be divided into groups of 2 to 3 based on a given world region.
2. Hand out 1 regional card to each group of students.
3. Hand out the *Regional Rankings* handout to each group of students.
4. Give students 20 to 25 minutes to complete the information on this handout. They will need access to the Internet.
5. After they have completed the information, explain to them they will share this information with the other groups.
6. Have each group create a 3 to 4 minute presentation in which they can share information aloud from the handout about the countries in the region they researched.
7. Lead students in a discussion using the following questions.

**Discussion Questions**

1. What do you notice about different regions and their rankings? Are there any general conclusions you can draw?
2. Why might some regions tend to have higher Human Development Index rankings than others? What root causes relate to these regional differences?
3. What are possible strategies for improving the HDI of different countries?
4. What are ways countries could work together to improve their HDI?

**Economics Extension**

Have students research different measures of “progress” beyond economic indicators like GDP or GNP (examples include the Happy Planet Index, Gross National Happiness, and Better Living Index). Which measures align closely with the goal of ensuring that we will have a sustainable future? Which ones seem most rigorous, and which seem weaker as assessment tools? Which ones are being used by governments to improve well-being?

**Additional Resources**

- **Report:** *The Happy Planet Index 2.0*
  
  
  Read about how different countries stack up according to the Happy Planet Index, developed by the New Economics Foundation. This index shows how certain nations with high life satisfaction use the planet’s resources.

- **Lecture:** *Nic Marks: The Happy Planet Index*
  
  [http://www.ted.com/talks/nic_marks_the_happy_planet_index.html](http://www.ted.com/talks/nic_marks_the_happy_planet_index.html)
  
  This TED talk given by statistician Nic Marks asks why we measure a nation’s success by economic productivity instead of happiness and well-being.

- **Website:** *Happy Planet Index*
  
  
  The Happy Planet Index measures what matters: sustainable wellbeing for all. It tells us how well nations are doing at achieving long, happy, sustainable lives.
# Regional Cards

<table>
<thead>
<tr>
<th>Region 1: Northern Africa</th>
<th>Region 2: Southern Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egypt</td>
<td>Mozambique</td>
</tr>
<tr>
<td>Liberia</td>
<td>South Africa</td>
</tr>
<tr>
<td>Morocco</td>
<td>Zimbabwe</td>
</tr>
<tr>
<td>Tunisia</td>
<td>Swaziland</td>
</tr>
<tr>
<td>Algeria</td>
<td>Botswana</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Region 3: Northern Europe</th>
<th>Region 4: Central America</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>El Salvador</td>
</tr>
<tr>
<td>Switzerland</td>
<td>Nicaragua</td>
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<tr>
<td>Netherlands</td>
<td>Guatemala</td>
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<tr>
<td>Germany</td>
<td>Costa Rica</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Panama</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Region 5: Southeast Asia</th>
<th>Region 6: Middle East</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thailand</td>
<td>Iran</td>
</tr>
<tr>
<td>Cambodia</td>
<td>Iraq</td>
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<tr>
<td>Philippines</td>
<td>Saudi Arabia</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Syria</td>
</tr>
<tr>
<td>Malaysia</td>
<td>Jordan</td>
</tr>
</tbody>
</table>
Regional Ranking

Group members: ____________________________________________________________

Region researched: _______________________________________________________

Directions: Visit the following website: http://hdr.undp.org/en/. Click on the “countries” tab to research the specific countries within your region. Record information from your research on this handout.

1. Complete the table below:

<table>
<thead>
<tr>
<th>Country</th>
<th>HDI Ranking</th>
<th>Life Expectancy</th>
<th>Education Index</th>
<th>Gender Index</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

2. What trends do you notice about the countries within your region?

_______________________________________________________________________________________

_______________________________________________________________________________________

_______________________________________________________________________________________

3. Are there any countries that are outliers based on the data? Which countries are outliers, and in what way? What factors to you think are causing these countries to be significantly different than the other countries in the region?

_______________________________________________________________________________________

_______________________________________________________________________________________

_______________________________________________________________________________________

4. Are any indicators particularly low within any country in your region? If so, what do you think are underlying problems or root causes contributing to this low index?

_______________________________________________________________________________________

_______________________________________________________________________________________

_______________________________________________________________________________________
Activity 4: In the Pursuit of Happiness

Overview
Students will analyze the Preamble of the Declaration of Independence. They will then read a number of different quotes from people throughout history related to happiness. They will interpret what these quotes mean in small groups and choose one which resonates with them the most. They will write an opinion essay that speaks to their personal philosophy on the pursuit of happiness.

Objectives
Students will:
• consider the meaning of a passage within the Declaration of Independence
• interpret different statements related to happiness made by a number of historical figures
• write a personal essay that defines their philosophy on the pursuit of happiness

Inquiry/Critical Thinking Questions
• How involved should a government be in ensuring its citizens are happy?
• What are different ways people define happiness?

Time Required
Two 60-minute classes

Key Concepts
• happiness
• quality of life

National Standards Addressed
National Council for the Social Studies
1. Culture
4 Individual development and identity

National EFS Standards
3.1 Personal Action: Personal Change Skills and Strategies

Materials/Preparation
Handout: copies of the Preamble of the Declaration of Independence, 1 per pair (the Declaration can be found online)
Handout: In the Pursuit of Happiness, 1 per pair
Overhead: Writing a Opinion Essay

Activity
Introduction
1. Ask students about the significance of the Declaration of Independence. (Congress adopted this declaration on July 4, 1776. The thirteen American colonies were no longer considered part of the British Empire.)

Steps
1. Break the class into pairs. Distribute a copy of the Preamble of the Declaration to each pair.
2. Give students a few minutes to read the Preamble.
3. Read the following part of the declaration to everyone: “We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights that among these are Life, Liberty, and the pursuit of Happiness.”
5. Ask if students believe that the government enforces this pursuit of happiness. If so, how? If not, why?
6. Explain to them that throughout history, people have addressed what happiness means in a number of different ways.
Activity 4: In the Pursuit of Happiness  continued

7. Tell them that they will work with their partner and receive multiple quotes from famous historical figures related to happiness. They will interpret what each of these quotes mean.

7. Pass out the handout, *In the Pursuit of Happiness*, to each pair.

8. Give them 15 to 20 minutes to complete the questions on the handout.

   **Option:** Have students briefly research who each of the historical figures mentioned on the handout are to provide more context as to why they may have spoken out about happiness in the way they did.

9. After they have completed the handout, ask individuals to consider which quote resonates with their own philosophy on the pursuit of happiness.

10. Explain to students it is their turn to share their ideas about happiness. They will write an essay on what they believe the pursuit of happiness means to them in their own lives.

11. Go through the overhead, *Writing an Opinion Essay*, with students. You can display this using a white board or document camera, or you can distribute copies to students.

12. Allow students the remainder of the period to write. Students can publish their essays in a school newspaper, blog, or website.

**Discussion Questions**

1. Why might different cultures or people from different times in history have different perspectives on happiness?

2. What are ways that a government can ensure that its citizens are happy?

3. What are strategies or actions you can take to set yourself up for a happy life?

4. What are structural solutions that can support people in pursuing happiness?

**Additional Resources**

- **Film:** *Happiness Is*
  
  
  This documentary directed by Andrew Shapter shares stories of Americans throughout the country in an attempt to discover what it means to be happy. It looks at the myths and truths related to one following the “pursuit of happiness” in America.

- **Book:** *And the Pursuit of Happiness*
  
  The book investigates democracy and how it works. Author and illustrator Maira Kalman reflects on Alexis de Tocqueville’s *America*, looks at a Bronx middle-school student council, and considers the cost of war to brave American service men, all in search of what it means to live in a democracy. (New York: The Penguin Press, 2010).
**In the Pursuit of Happiness**

**Directions:** In your group, read the following historical figures' philosophies on happiness. Write 2 to 3 sentences about what you think each quotes means.

<table>
<thead>
<tr>
<th>Quote</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Our greatest happiness does not depend on the condition of life in which chance has placed us, but is always the result of a good conscience, good health, occupation, and freedom in all just pursuits.” —Thomas Jefferson</td>
<td>____________________________________________</td>
</tr>
<tr>
<td>“Our obligation is to give meaning to life, and in doing so to overcome the passive, indifferent life.” —Elie Wiesel</td>
<td>____________________________________________</td>
</tr>
<tr>
<td>“I slept and dreamt that life was joy. I awoke and saw that life was service. I acted and behold, service was joy.” —Rabindranath Tagore</td>
<td>____________________________________________</td>
</tr>
<tr>
<td>“Happiness lies in the joy of achievement and the thrill of creative effort.” —Franklin Roosevelt</td>
<td>____________________________________________</td>
</tr>
<tr>
<td>“If one speaks or acts with a pure mind, happiness follows like a shadow.” —Buddha</td>
<td>____________________________________________</td>
</tr>
<tr>
<td>“Life is short, and it’s up to you to make it sweet.” —Sadie Delany</td>
<td>____________________________________________</td>
</tr>
</tbody>
</table>
Writing an Opinion Essay

What Is it?
An opinion essay presents an author’s point of view on a particular subject, supported by reasons and examples.

What is the purpose?
To share with an audience your beliefs about a given topic.

How should it be written?
- Up to 1000 words
- Includes an introduction, body, and conclusion
- Includes a thesis or claim that states your belief
- Uses a compelling voice

Tips:
- Hook your readers at the very beginning
- Include strong examples that support your opinion
- Write with style and clarity
Chapter 13

Governance

CHAPTER BIG IDEAS

- Good governance is a critical support structure for building sustainable communities and nations.
- Governance is the overall process a group uses to make and implement decisions.
- Governance includes government, as well as the private sector and civil society.
Guiding Questions
- How are governance and sustainability connected?
- What are aspects of good governance?

Key Concepts
- governance
- government
- civil society
- private sector
- resource curse
- nation-state

Supporting Vocabulary
- nationality
- local governance
- transparency
- accountability
- rule of law

Service Learning Component

Service Learning Project Idea
- **Question:** How can youth make sure their concerns are heard by their municipal government?
- **Hook Resource:** Seattle Youth & Families Initiative, Our Community Coming Together
  [http://www.youtube.com/watch?v=AITIA-i4jwE](http://www.youtube.com/watch?v=AITIA-i4jwE)
  This 6-minute video shows a model for including community members in a decision-making process (in this case, a 5-year vision for the Seattle School District).

- **Project:** Students contact their municipal government and ask if there is a youth council operating in their city. If there is, they find out if their neighborhood or school is represented by the council and meet with their representative to find out what they currently do. Students can also express the issues they are concerned about. Common functions for these councils are: planning youth events for the city, gathering teen opinions, advising the mayor or city council on youth issues, and informing teens about opportunities available to them through the city. Students can ask how they can help with these activities. If youth are not well represented in decisions made by city government, students can contact the mayor to ask what it will take for youth to take their place in governance.

- **Additional Resources:**
  - **Website:** The City of Boston Mayor’s Youth Council
    Website for one of the largest and most respected youth councils in the United States
  - **Guide:** Building Effective Youth Councils: A Practical Guide to Engaging Youth in Policy Making
    [http://www.forumfyi.org/node/127](http://www.forumfyi.org/node/127)
    A guide by the Forum for Youth Investment designed to help states and localities create or strengthen their youth councils. It incorporates advice and lessons from people in the field who have started or currently staff youth councils across the country.
• **Toolkit:** *Create a Youth Council*
  
  **http://www.nalc.gov.uk/Toolkits/Create_a_Youth_Council/Create_a_youth_council.aspx**
  
  A document from a U.K.-based organization that presents the why and how of youth council creation, as well as case studies.

**Project Based Learning Component**

**Project Based Learning Idea**

- **Overview:** Students analyze how effective they think governance is within their school by surveying different stakeholders at the school.

- **Driving Question:** How confident are people in the governance of your school?

- **Hook Resource:** *Gallup poll of national confidence in U.S. public schools*
  
  Brief summary: **http://www.gallup.com/poll/149093/Parents-Americans-Positive-Local-Schools.aspx**
  
  Have students look through this 2010 Gallup poll, focusing on the questions that address school governance.

- **Individual Project:** Students write an essay about what they think an effective school’s governance looks like.

- **Group Project:** In small groups, students research the effectiveness of governance at their school. Using the Gallup questions, along with any other questions they deem important for their school, students poll their fellow students, their parents, and other community members. Students will then graph the results and write a press release for local and school newspapers, comparing their polling numbers to the national averages from the Gallup poll. Students arrange a meeting with teachers, school administrators, other students, parents, community members, and district administrators to discuss the results and what is being done well to run the school, as well as what can be done to help correct any problems and make the public more aware and involved in school governance.

**Additional Resources:**

- **Website:** *Education Revolution*  
  **http://www.educationrevolution.org/demschoolgov.html**
  
  The website of the Alternative Education Resource Organization (AERO) describes ways to give all participants in education a voice in school governance.

- **Website:** *Governance of K-12 Public Schools*  
  **http://www.edsource.org/sys_governance.html**
  
  This website gives an overview of the governance of public schools in California, useful as a starting point for students to examine the governance of their own school.
• Website: Fundamentals of Polling
  http://www.ropercenter.uconn.edu/education/polling_fundamentals.html#
  This website provides a basic introduction to public opinion polling and interpreting results.

Summative Assessment
Chapter Test

Connections

World History connections:
Development of the nation-state; structure of international and local governance; history of the United Nations

Economics connections:
Resource curse; corruption and political influence; economic development; transparency in resource extraction

Geography connections:
Resource depletion; colonial rule; empires

Civics connections:
Personal and structural solutions to governance issues
# Activities in Teacher’s Guide: Suggested Sequence

## Day 1

**Reading:** *Introduction to Governance*

**Activity 1: Three Faces of Governance**—Students create a national energy policy via cooperation and negotiation among the three faces of governance: the *state* (government), *civic organizations*, and the *private sector*. In groups representing each of these areas, students work to accomplish their individual policy goals while negotiating and forming coalitions with other groups to strengthen their overall energy policy. Policy proposals are presented, and one plan is selected to become a national energy policy.

## Day 2

**Reading:** *Background on Governance*

**Activity 2: Uncursing Resources?*—After reading about the “resource curse” in the accompanying text, students consider two case studies of oil-rich countries: Norway and Angola. They then form groups and discuss whether or not these countries are “cursed” by their own natural resource wealth. Students analyze what has led the countries to where they are today.

## Days 3-4

**Reading:** *Governance Today*

**Activity 3: Governance in the Classroom*—Students examine the connections between governance and outcomes by changing a rule in their classroom for one week and monitoring the outcome. After experiencing the modified rules, they reflect on how the rule change was made and whether it affected the classroom in the way they thought it would.

## Day 5

**Reading:** *Pathways to Progress: Governance*

**Activity 4: The Tip of the Iceberg*—Students research an uprising or revolution, selecting from a list prepared by the teacher. After finding several news articles, students use an “iceberg model” to analyze the patterns and underlying governance structures that underlay the event.
Discussion Questions from the Chapter Reading

**Introduction to Governance**

1. What “governance” do you experience directly at school and at home? Who makes the decisions and how are they carried out? Do you have a voice in this governance?

2. What is an example of how the three sectors of governance could effectively work together?

**Background on Governance**

3. Why did the nation-state begin to develop more prominence in the 20th century?

4. Is effective international governance possible? What would it require to be able to hold decision-making power over much or all of the world’s population?

5. What are the benefits of local decisions? What are some problems that local decision-making can cause?

**Governance Today**

6. The various aspects of good governance are interrelated. Which aspect do you believe is the most important to begin with, in order to achieve the others? How can this be done?

7. Describe how a lack of transparency in the Nicaraguan government led to corruption.

**Pathways to Progress: Governance**

8. What are personal and structural ways of addressing governance?

9. Which of the examples of good governance given in the chapter could be applied in your school, city, state, or country?
Recall
Match the following words on the left with their definitions on the right.

1. Governance   a political unit that exercises control and sovereignty over a defined geographic area and provides a socio-cultural identity for its people

2. Nation-state   the situation describing a country that has an abundance of natural resources but does not experience economic growth or development

3. Resource curse   the traditions, institutions, and processes that determine how power is exercised, how citizens are given a voice, and how decisions are made on issues of public concern

4. Civil society   a set of voluntary, non-governmental associations formed by people around a common interest, including groups such as labor unions, churches, and charities

Reasoning/Explanation
Complete the following multiple choice questions by choosing 1 correct answer.

5. A city council working with input from landowners and a church to build low-cost housing in a particular neighborhood is most likely an example of:
   a. transparency
   b. accountability
   c. patrimonialism
   d. local governance

6. The country of Botswana, where 4 out of 5 citizens are confident about their government, is an example of good governance because of its:
   a. colonial history
   b. economic growth
   c. strong rule of law
   d. regular elections
Chapter Assessment: Governance,  page 2

7. Which example below best demonstrates the concept of resource curse?
   a. a country that lacks enough natural resources to properly support its people
   b. a country that is rich in natural resources, but because of weak governance remains poor
   c. a country that is surrounded by neighboring countries rich in natural resources, but without any of its own
   d. a country that is rich in natural resources, but unable to export any of these resources because of trade barriers

8. Which best replaces X in the flow chart?

   \begin{center}
   \begin{tikzcd}
   \text{International cooperation begins in the 19th century when countries first established international organizations to work on communication and security issues.} & \text{The International Peace Conference is held in the Netherlands in 1899 to determine how to prevent wars and establish rules of warfare.} & X & \text{At the turn of the 20th century, the United Nations creates the Millennium Development Goals which prioritize how the world can attain a sustainable future.}
   \end{tikzcd}
   \end{center}

   a. The United Nations attempts to become a strong international presence during the 20th century, but without much success.
   b. In the mid-20th century, the United Nations begins as an international governance body and supports the transition of many countries from colonial rule to independence.
   c. The United Nations starts out in the early 20th century as an international organization that provides financial aid to governments in need.
   d. The United Nations becomes the first international body during the 20th century that is allowed to take government leaders to criminal court.

9. Which statement best describes how empires typically ruled territories?
   a. Empires ruled through hierarchical power structure. Those who had power subjugated those under power.
   b. Empires ruled through democracy. All those who lived in an empire had equal voice.
   c. Empires ruled through collaborative governance. They would seek guidance from other ruling empires and make decisions that would benefit all.
   d. Empires ruled through minimal presence. They allowed for nations and ethnic groups to mostly govern themselves.
10. All of the following are determinants of good governance except:
   a. inclusion of different voices
   b. transparency
   c. strong judicial rule
   d. accountability

11. What is 1 way in which colonial rule was a precursor to weak governance in some countries’ cases?
   a. Colonial governments used part of a native population to help rule the whole.
   b. Colonial governments ruled countries under a dictatorship.
   c. Colonial governments took complete control over natural resources in colonized countries.
   d. Colonial governments never allowed native populations to have any control when they ruled.

12. When the U.S. Supreme Court ruled that segregation of black and white people in public places was illegal in the Brown v. Board of Education 1954 case, which statement best illustrates what this decision meant around the country?
   a. When the Supreme Court made the ruling, each of the 50 states could decide how they wanted to proceed with this decision.
   b. Since the Supreme Court represents the Judicial Branch, any decision made at this level of government took precedence over any ruling from the 50 states.
   c. Each of the 50 states had the ability to contest this decision made by the Supreme Court if it had enough support from citizens that still favored segregation.
   d. The Supreme Court’s decision represented what the country felt was a disgrace of United States history.

13. Which of the following examples demonstrates how civil society can strongly influence governments?
   a. mass protest by citizens around the country who influence government to change their policy on health care
   b. representative of an environmental organization who lobbies for fuel-efficient vehicles
   c. election organization that helps to increase the amount of wealthy voters in an area
   d. business representative who advocates for more environmental regulations for local businesses
14. Which statement below best explains 1 of the benefits of local governance?
   a. Local governance gives government leaders an opportunity to create their own kinds of laws without much national oversight.
   b. Local governance allows for more contact between decision-makers and people directly affected by these decisions.
   c. Local governance allows for national policies to actually work at local levels in successful ways.
   d. Local governance allows for all different kinds of people to have a voice more so than at the national level.

Application/Complex Reasoning
Answer the following short answer questions.

15. There are a number of factors that help to create good governance.
   Part A. Identify 1 of these factors.
   Part B. Explain how this factor supports good governance.

17. Waangari Maathai, a Nobel Peace Prize winner who is famous for planting trees to improve environmental conditions in Kenya, once said:

   “When you have bad governance, of course, these resources are destroyed: The forests are deforested, there is illegal logging, there is soil erosion. I got pulled deeper and deeper and saw how these issues become linked to governance, to corruption, to dictatorship.”

Use this quote and what you learned from the chapter to answer the questions below.
   Part A. What is the connection between weak governance and sustainability?
   Part B. What is an example of a solution that can help to create strong governance?
Recall (4 points)

1. Governance—the traditions, institutions, and processes that determine how power is exercised, how citizens are given a voice, and how decisions are made on issues of public concern

2. Nation-state—a political unit that exercises control and sovereignty over a defined geographic area and provides a socio-cultural identity for its people

3. Resource curse—the situation describing a country that has an abundance of natural resources but does not experience economic growth or development

4. Civil society—a set of voluntary, non-governmental associations formed by people around a common interest, including groups such as labor unions, churches, and charities

Reasoning/Explanation (10 points)

5. d  
6. c  
7. b  
8. b  
9. a

Application/Complex Reasoning (6 points)

15. Part A. Answers will vary. (1 point)
   • Rule of law
   • Transparency
   • Accountability
   • Inclusion of different voices

   Part B. Answers will vary. (1 point)
   • Rule of law—Allows for the consistent application of legal rules to all people.
   • Transparency—Allows for people to see what is occurring. The information is both understandable and easily accessible.
   • Accountability—Ensures people are responsible to someone or a group of people. Therefore, when they make decisions, they are making them on behalf of the interests of people and this can translate to good governance.
   • Inclusion of different voices—Allows for the consent of a broad cross-section of people within a country.

16. Part A. Answers will vary. (2 points)
   • Weak governance can lead to a country’s economy being run by foreign interests or illegal activities at home.
   • Weak governance can lead to a loss of civic engagement.
   • Weak governance can lead to inefficient management of a natural resource, and eventually to overexploitation and resource depletion.

   Part B. Answers will vary. (2 points)
   • Collaboration between government, civil society, and the private sector
   • International governance that provides relief to countries fighting global issues
   • Local governance that allows for more contact between decision-makers and people directly affected by their decisions.
Activity 1: Three Faces of Governance

Overview
Students create a national energy policy via cooperation and negotiation among the three faces of governance: the state (government), civic organizations, and the private sector. In groups representing each of these areas, students work to accomplish their individual policy goals while negotiating and forming coalitions with other groups to strengthen their overall energy policy. Policy proposals are presented, and one plan is selected to become a national energy policy.

Objectives
Students will:
- understand how the three parts of governance—the state (government), civic organizations, and the private sector—work together to create policy
- experience the process of finding common interests and building coalitions with other organizations
- recognize the difficult choices policymakers face in balancing the short- and long-term costs and benefits of their decisions
- understand the role governance plays in other global issues

Inquiry/Critical Thinking Questions
- How are government policies determined, and who has a say in creating policy?
- What considerations should be taken into account when developing energy policies?
- How are government policies connected to other global issues?

Time Required
One 60-minute class

Key Concepts
- governance
- civic engagement
- sustainable policies
- energy policy

National Standards Addressed
National Council for the Social Studies
5. Individuals, Groups, and Institutions
6. Power, Authority, and Governance
7. Production, Distribution, and Consumption
8. Science, Technology, and Society
9. Global Connections
10. Civic Ideals and Practices

National Science Education Standards
F. Science in Personal and Social Perspectives

National Efs Standards
2.4 Social and Cultural Systems: Human Rights
2.4 Social and Cultural Systems: Peace and Conflict
2.4 Social and Cultural Systems: Social Justice
2.4 Social and Cultural Systems: International Summits, Conferences, Conventions, and Treaties
2.4 Social and Cultural Systems: Multilateral Organizations
3.1 Personal Action: Personal Action: Personal Responsibility
3.1 Personal Action: Personal Action: Accountability
3.2 Public Discourse and Policy
3.2 Collective Action: Local and Global Responsibility
3.2 Collective Action: Community-based and Societal-level Decision-making

Materials and Preparation
Agree and Disagree signs: Two 8.5 X 11 pieces of paper with “Agree” written on one and “Disagree” on the other, posted on opposite sides of the room
Overhead: Questions for Energy Policy
Cards: Policy Position Cards, 1 copy per class, cut into cards
Handout: Strategy Worksheet, 8 copies per class (1 per group)
Tools: Eight large (legal size) pieces of blank paper, and colored pens or pencils
Tools: Blank name tags, 1 per student
Tools: Tape to attach name tags to shirts

Governance
Prior to class, divide the students into groups as follows:

<table>
<thead>
<tr>
<th>The State (Government)</th>
<th>Civic Organizations</th>
<th>Private Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>President: Teacher</td>
<td>Friends of the Environment: 3-4 students</td>
<td>Coal industry: 3-4 students</td>
</tr>
<tr>
<td>Department of Environmental Protection: 2 students</td>
<td>Citizens for Economic Growth: 3-4 students</td>
<td>Nuclear power industry: 3-4 students</td>
</tr>
<tr>
<td>Department of Energy: 2 students</td>
<td>Rural Homeowners Association: 3-4 students</td>
<td>Wind power industry: 3-4 students</td>
</tr>
</tbody>
</table>

Activity 1: Three Faces of Governance continued

**Activity Introduction**

1. Do a sides debate to introduce this lesson.
2. Explain to students that they will debate a statement you will provide by standing by the *Agree* sign if they agree with the statement or by the *Disagree* sign if they do not agree with the statement.
3. Give them the following rules to guide the debate:
   - Everyone must take a side.
   - Everyone should be prepared to state their reason for agreeing or disagreeing with the statement.
   - Anyone can switch sides if they are convinced by the opposing side.
   - No one can speak a second time until everyone has spoken once.
   - Be convincing but respectful of others when making your arguments.
4. Read the following statement to students: “Once people have elected their political leaders, there is not much else they can do to participate in the governing of their country.”
5. Going back and forth from side to side, have students state their reasons for agreeing or disagreeing with the statement.

**Steps**

1. Tell the class they are going to draft a policy that will determine the future of the small country of Loma. Some of the students will represent the interests of the private sector, some of them will represent different civic organizations, and some will represent the state (government).
2. Arrange students into the 8 groups specified above. Have each group assign a note-taker and a reporter.
3. Pass out the *Policy Position Cards* (1 per group), name tags, a large piece of paper, and pens. Have each student write the name of their group on a name tag and attach it to his or her shirt.
4. Give groups about 5 minutes to create a sign with a logo that represents their group. Have them tape the signs up in their group’s area.
5. Begin the meeting by reading the following statement:

   *I’d like to welcome you and thank you for coming to this important meeting. As you may be aware, the population and economy of Loma is growing rapidly. As President, I have decided we need a plan that will ensure a steady supply of energy to sustain our growth. I have invited representatives from civic organizations and the private sector to participate in the planning process alongside my Department of Environmental Protection and*
Activity 1: Three Faces of Governance  continued

Department of Energy. I hope the final plan that I select will address Loma's need for plentiful energy, while also considering environmental and quality of life concerns. Your job today will be to recommend to me an energy plan for our country. I will give more consideration to a plan that includes the widest number of interests and points of view.

6. Show and go over the Questions for Energy Policy overhead. The Policy Position Cards contain each group's position on each of the issues. However, these may be compromised during negotiations to produce an energy plan with broad support.

7. Pass out and go over the Strategy Worksheet (1 per group). Tell students this will be used to help them form their strategy, and to identify potential allies, obstacles, and points of negotiation.

8. Give them about 10 minutes to complete the worksheet. Circulate and help groups that are having difficulty.

9. Next, tell students they will have 10 minutes to form coalitions with other groups that will agree to submit a plan together, and negotiate on the 4 issues required in the energy plan. Remind them that plans that are supported by more groups will get more consideration from you, especially plans that include a broad range of interests. Groups can belong to more than 1 coalition, and have their interests represented in more than 1 plan. They cannot talk to you directly during negotiations, but can discuss their ideas with the Department of Environmental Protection and Department of Energy.

10. Be sure to circulate during the exercise and make sure students are participating and reaching out to other groups to negotiate and form coalitions. Encourage students to speak with groups that would not appear to be likely partners, and try to find 1 or 2 issues they might agree on. Encourage students in the government department groups to sit in on negotiations and get their interests heard as well. Do not let groups lobby you directly during the exercise. Tell them to talk to your government department staffers.

11. About 7-8 minutes through the exercise, announce that you are going to hold a cabinet meeting with your Department of Environmental Protection and Department of Energy. If there is anything the groups want to get across to the President, they should tell the department staffers right away.

12. Call over the students in the Department of Environmental Protection and Department of Energy groups and tell the rest of the groups to continue negotiating while you meet. Meet with the department groups for 1-2 minutes and take notes on which groups they have spoken with, and their opinions on which groups they think have good ideas. You will reference this when making your final policy decision at the end of the exercise.

13. Call attention to the entire class and instruct groups to gather together in their coalitions, or get together with their original group if they did not form a coalition. If a group is part of more than 1 coalition, have them split their members between the coalitions.

14. Tell the coalitions (newly formed groups) that they now have about 5 minutes to finalize their plan and complete question 5 on their Strategy Worksheet, and choose a representative to present the plan.

15. Call the meeting to order and ask the representative from each coalition to present their plan, going through their proposal for each of the 4 issues on the Policy Position Cards. During the presentation, you may want to ask the group these questions:

- What could be some of the negative side effects of the plan (e.g., pollution, high cost to consumers)?
- Is this plan affordable?
- Is this plan sustainable? (Will the plan meet the needs of people today and ensure that the needs of future generations will also be met? How does it affect the environment, the economy, and society?)
Activity 1: Three Faces of Governance  continued

16. After all the coalitions have presented, choose the plan to be submitted to the legislature and explain your reasoning behind the choice to the class. The following can be reasons for choosing a plan, and will also prompt a good follow-up discussion:
   • The plan with the broadest support
   • The plan that seems most sustainable over time
   • The plan that can be implemented most quickly and inexpensively
   • The plan recommended by your department staffers

17. Bring the class back together for a discussion of the following questions.

Discussion Questions
1. Were you satisfied with the final decision that was made? Why or why not?
2. Which part of Loma’s population will benefit from this policy? Which will be burdened?
3. Did you end up working with any groups that you did not think you would have anything in common with at first?
4. Were some members of the group more willing to compromise than others? How did you resolve differences within the group?
5. What could be some of the consequences of a policy that is created without any input from either the private sector or civic organizations?
6. Do you feel that your real political representatives represent your concerns? Why or why not? What do you think you can do to get your interests heard by lawmakers?

Additional Resources
• Website: iCivics
  http://www.icivics.org/About
  iCivics is a web-based education project that teaches students civics and inspires them to be active participants in democracy.

• Website: Institute on Governance
  https://iog.ca/about/
  This organization looks to advance better governance in the public interest. It does so by exploring, developing, and promoting principles, standards, and practices that underlie good governance in the public sphere.

• Website: National Priorities Project
  http://nationalpriorities.org/about/mission/
  This website helps to make federal budget information transparent and accessible to citizens so they know how their tax dollars are spent.
Questions for Energy Policy

• How will energy be produced?

• Where will energy production facilities be located?

• What should be done about pollution from the energy source?

• How will the energy facilities be paid for?
## Three Faces of Governance Policy Position Cards

<table>
<thead>
<tr>
<th>Department of Environmental Protection</th>
<th>Department of Energy</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Energy should be produced in the way that is least harmful to the environment</td>
<td>- Energy should be produced in the most affordable and quickest way possible</td>
</tr>
<tr>
<td>- Energy facilities should be located away from water sources and natural habitats</td>
<td>- Energy facilities should be located in both rural and urban areas</td>
</tr>
<tr>
<td>- Energy facilities should be state regulated to prevent pollution</td>
<td>- The energy industry should voluntarily agree to pollute as little as possible</td>
</tr>
<tr>
<td>- Coal and nuclear industries should pay the costs of developing their facilities, but the government should give subsidies to wind power, since it is less harmful to the environment</td>
<td>- Energy facilities that can produce the most power quickly and cheaply—primarily coal-burning plants—are more likely to be subsidized by the government</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Friends of the Environment</th>
<th>Citizens for Economic Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Energy should be produced in a way that is least harmful to the environment</td>
<td>- Energy should be produced in a way that is most affordable for businesses and consumers</td>
</tr>
<tr>
<td>- Energy facilities that generate pollution should be located away from water sources and should not destroy natural habitats</td>
<td>- Energy facilities should be located wherever land is most affordable</td>
</tr>
<tr>
<td>- The energy industry should be heavily regulated by the state to prevent pollution</td>
<td>- The energy industry should voluntarily agree to pollute as little as possible</td>
</tr>
<tr>
<td>- The government should offer subsidies to the wind power industry and not offer any subsidies to the coal and nuclear industries</td>
<td>- Energy facilities should pay for themselves, but some government subsidies are acceptable if they lead to cheap and plentiful energy for consumers and businesses</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rural Homeowners Association</th>
<th>Coal Power Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Energy should be produced in a way that is low-cost to rural families and does not heavily damage our land</td>
<td>- Coal is a cheap, quick, efficient energy source, and because of new technology, it does not produce much pollution</td>
</tr>
<tr>
<td>- Facilities should be located in or near cities since they use more energy</td>
<td>- We want to locate plants wherever it is most cost-effective and provides enough space to build our facilities</td>
</tr>
<tr>
<td>- There should be some pollution regulation, but it should not overburden the industry unnecessarily</td>
<td>- We want to self-regulate our pollution—we don’t need the state to regulate us</td>
</tr>
<tr>
<td>- Rural landowners should not have to pay increased taxes for energy facilities since urban people will be using more energy</td>
<td>- We would like government subsidies, but can get by without them if we are allowed to produce the bulk of Loma’s energy</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wind Power Industry</th>
<th>Nuclear Power Industry</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Wind power is the cleanest energy source and the most sustainable</td>
<td>- Nuclear power is a clean and reliable source of energy; as coal reserves begin to run out, nuclear power is the best long-term energy solution</td>
</tr>
<tr>
<td>- We need to build plants in flat rural areas where there is a lot of wind</td>
<td>- We need to build our reactors in rural areas that are near water sources and open space</td>
</tr>
<tr>
<td>- We do not produce pollution, so we do not need to be regulated by the state</td>
<td>- We will accept some routine safety checks, but we do not need state regulation for pollution prevention because we will build our facilities to the highest standards</td>
</tr>
<tr>
<td>- We will need some government subsidies to build our facilities; however, once a facility is constructed it will generate a long-term inexpensive source of energy</td>
<td>- We need government subsidies to build our plants and dispose of and store our waste</td>
</tr>
</tbody>
</table>
Strategy Worksheet for Three Faces of Governance

Group members: __________________________________________________________

Four Issues Facing Loma’s Energy Policy

1. How will energy be produced?
2. Where will energy production facilities be located?
3. What should be done about pollution from the energy source?
4. How will the energy facilities be paid for?

Name of Your Organization/Entity: ______________________________________

1. Your Position: Read your position card and discuss the 4 questions above. You should be able to answer each question based on the position stated on the card. Write the information down as a quick reference for negotiations.

_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

2. Potential Allies
Which other groups do you think share a similar view of what Loma’s energy policy should be? Are there groups that may agree with you on some but not all 4 issues of the energy policy?

_____________________________________________________________________
_____________________________________________________________________

3. Potential Obstacles
Which groups may have different views than you on what Loma’s energy policy should be?

_____________________________________________________________________
_____________________________________________________________________

4. Prioritize Objectives
Of the 4 issues in the energy policy, rank them from 1 (being most important and non-negotiable) to 4 (being least important and something you would be willing to compromise on).

1. _________________________________________________________________
2. _________________________________________________________________
3. _________________________________________________________________
4. _________________________________________________________________
5. **Final Plan** (complete this *after* the negotiations)

With what group(s) have you formed a coalition?

_______________________________________________________________________________________

a. How will energy be produced?

_______________________________________________________________________________________

_______________________________________________________________________________________

b. Where will energy production facilities be located?

_______________________________________________________________________________________

_______________________________________________________________________________________

c. What should be done about pollution from the energy source?

_______________________________________________________________________________________

_______________________________________________________________________________________

d. How will the energy facilities be paid for?

_______________________________________________________________________________________

_______________________________________________________________________________________

Activity 2: Uncursing Resources?

Overview
After reading about the “resource curse” in the accompanying text, students consider two case studies of oil-rich countries: Norway and Angola. They then form groups and discuss whether or not these countries are “cursed” by their own natural resource wealth. Students analyze what has led the countries to where they are today.

Objectives
Students will:
• understand how resources harm governance in some countries, but not in others
• consider the role of governance in managing collective wealth
• think critically about attempts to change governance of resources to benefit a country as a whole

Inquiry/Critical Thinking Questions
• Are some resources more prone to “cursing” a country than others?
• What is the relationship between education and the governance of natural resources?

Time Required
One 60-minute class

Key Concepts
• resource curse
• natural resources

National Standards Addressed
National Council for the Social Studies
1. Culture
3. People, Places, and Environments
5. Individuals, Groups, and Institutions
6. Power, Authority, and Governance
7. Production, Distribution, and Consumption
9. Global Connections

National Science Education Standards
F. Science in Personal and Social Perspectives

National EFS Standards
2.4 Social and Cultural Systems: Peace and Conflict
2.4 Social and Cultural Systems: Social Justice
3.2 Collective Action: Public Discourse and Policy
3.2 Collective Action: Local and Global Responsibility
3.2 Collective Action: Community-based and Societal-level Decision-making

Materials and Preparation
Handout: Norway, 1 per student
Handout: Angola, 1 per student
Handout: Curses and Answers, 1 per group of 3-4 students

Activity
Introduction
1. Ask the class to recall what is meant by a resource curse. What are its main effects, both economically and in terms of governance? (A few have access to wealth, but this does not trickle down to citizens)
Activity 2: Uncursing Resources? continued

Steps
1. Explain to the class that today they will be considering two case studies of countries with oil wealth: Angola and Norway.
2. Pass out the case study handouts for Angola and Norway. Instruct students to read the case studies, circling words that look like causes or contributors to the resource curse and underlining words and phrases that look like effects—especially when these causes or contributors relate to governance. Tell them that they will have about 15 minutes to read both case studies.
3. Have students form groups of 3–4, and distribute 1 Curses and Answers worksheet to each group. Instruct the students to complete the worksheet as a group, using the case studies and the textbook (They can also use Internet resources, if available).
4. Circulate among groups, listening to their ideas and helping groups that are struggling to answer the questions on the worksheet.
5. After 20 minutes, bring the class back together to discuss what they learned by addressing the questions on the worksheet. It is not necessary to address every question on the worksheet, but close with a discussion of the final question about the applicability of Norway’s experience to Angola’s problems.

Additional Resources

• Article: Ending the Resource Curse
  http://www.nytimes.com/2009/05/19/opinion/19iht-edyumkella.html?_r=2
  In this New York Times article, Kandeh K. Yumkella writes about the impacts of the resource curse on countries that export these resources. He then speaks to potential solutions, such as the ‘Green New Deal’ and the ‘Natural Resource Charter,’ that identify ways to make the impacts of this curse less severe.

• Film: Sweet Crude
  http://www.sweetcrudemovie.com/
  This 2008 90-minute documentary by director Sandy Cioffi looks at the story of Nigeria’s Niger Delta and the human and environmental consequences of 50 years of oil extraction. With 80% of the revenues having gone to 1% of the population, the impacts have been significant.
Case Study: Norway

Norway is the 15th leading exporter of crude oil. The country’s production of 2,350,000 barrels per day places it just below Iraq and Venezuela, and just ahead of Libya, Nigeria, Angola, and Algeria.¹ Oil was discovered off-shore in the 1960s, and production began in the 1970s. Thirty years later, Norwegians have one of the highest per capita incomes of any people and one of the most equal distributions of wealth. Norway is considered one of the least corrupt countries anywhere in the world.²

Most of the 5 million people living in Norway share a common ethnic heritage and speak the same language. Seventy-eight percent of the country belongs to the national Lutheran Church; no other religious group claims more than 2% of the population. There are about 600,000 immigrants in the country, but even these people come primarily from the ethnically and religiously similar Sweden and Germany.³

After being ruled by Danish and Swedish kings for centuries, Norway gained formal independence in 1905, under its own king, Haakon VII. Today, it is ruled by a constitutional monarchy, in which one of Haakon's descendants still rules in name, though the people choose their actual leaders in parliamentary elections held every four years. The monarchy does represent a potent source of national unity, however, because of the royal family's role in the struggle for independence.⁴

The government is highly transparent and accountable, due in part to a well-developed court system based on centuries of common law practice and the constitution. The ministers can be removed through impeachment by the legislature and five members of the Supreme Court; the justices of this court can also be impeached by the same means. The press is also highly independent and critical of crimes by public officials, especially the misuse of public funds.⁵

Most Norwegians feel that the revenue from petroleum is and should be shared equally among the country's population, both present and future. Toward that end, decisions on how to gather and use revenue from oil are also made through the government, which profits from oil revenue in three ways: 1) taxes on private oil companies' sales of petroleum; 2) permit fees for private companies to explore new regions for oil deposits; and 3) direct income from the partially state-run oil company, Statoil.

The net income from oil is placed in the Government Pension Fund, 60% of which is invested in the stock market and in real estate. These investments are carefully monitored by the press, as well as an Ethics Committee (which is run by the Ministry of Finance) that has banned investing in companies that deal in cluster munitions, nuclear weaponry, human rights abuses, or tobacco. The remainder of oil revenues, along with high taxes of around 45% of a person's income, allow for very high levels of state spending on social services: medical insurance is provided for all citizens, and education through the university level is free for all citizens.⁶

Much of the oil in Norway is extracted by Norwegian workers, providing many jobs. The home-grown petroleum industry has also been forced to develop its own extraction technology in many cases, which has led to the creation of off-shoot industries in metallurgy and electronics.

⁵ "Background Note: Norway," U.S. Department of State.
Case Study: Angola

Angola is the 17th leading producer of crude oil, having pumped an average of just under 2 million barrels per day in 2010.\(^1\) The value of this amount of oil was somewhere around $70 billion and accounted for about 85% of Angola’s national income. Thanks in part to its oil wealth, Angola’s national income has risen quickly over the past decade compared to its neighbors.

Oil was discovered offshore in 1955, and much larger reserves were found in 1966.\(^2\) During the same period that oil was discovered, three separate rebel organizations began fighting for independence. Angola had been ruled by Portugal for 300 years, a period which had witnessed extensive slavery and a forced labor system that was not abolished until 1961. Each rebel organization had a base in one of the colony’s three major ethnic groups, each occupying a different region and speaking a different, though related, language. When the Portuguese government in Lisbon was overthrown in a 1974 coup, the new administration granted Angola independence, handing over ruling authority to a coalition of the three organizations.

However, these three organizations refused to rule together and their differences spiraled into a civil war in which each faction received arms and support from a different Cold War power. Periods of fighting alternated with negotiations and peace accords for the next 25 years. During this period, 4.7 million Angolans had to flee their homes to other parts of the country and another 600,000 crossed borders to become refugees. By 2011, two-thirds of these refugees had returned home.\(^3\)

Official power has been held by one party for the past 30 years, during which corruption has been rampant. Between 1999 and 2002, for example, $2.4 billion disappeared from government bank accounts, while the finance minister attempted repeatedly to make $50 million deposits abroad. The first post-war elections were held in 2008, but merely continued the decades-long rule of President Jose Eduardo dos Santos. Using oil profits, dos Santos has built a patrimonial system that ensures the military, government ministers, and his own party remain dependent on his good favor, but never gain enough power to emerge as rivals to his unchecked authority. The governors of each of the country’s eighteen provinces, for example, are appointed and removed by the president at his discretion. Angola’s courts are weak and operate in only a small fraction of the country’s municipalities. Unsurprisingly, Angola is near the bottom of most international rankings of transparency and good governance.\(^4\)

The state oil company, Sonangol, is the majority owner of all the country’s oil fields. However, all of these fields are operated by outside companies such as Chevron and Exxon, which import engineers with the technical knowledge necessary to extract the petroleum. The revenues from these fields have been huge, more than all of the development assistance offered to Africa as a whole in 2009. Most Angolans see none of this money, however; the country has one of the lowest per capita incomes in the world. They also have a life expectancy of about 41 years, as the country’s hospitals can rarely afford supplies and medicine and one out of every four children dies before his or her fifth birthday. Neither has the oil wealth led to job creation, as 80% of the population survives only on whatever food they can grow themselves.\(^5\)

4 Ibid.
Curses and Answers

Group members: ________________________________

1. Fill out the following Venn diagram to illustrate the similarities and differences between Norway and Angola.

[Diagram]

2. How would you describe the governance of each country prior to the discovery of oil?

_______________________________________________________________________________________

_______________________________________________________________________________________

_______________________________________________________________________________________

3. Explain how Angola’s resource wealth has impacted its problems with child mortality, inequality, poverty, civil war, and corruption.

_______________________________________________________________________________________

_______________________________________________________________________________________

_______________________________________________________________________________________

4. Norway’s government has several programs intended to help other oil-rich countries, including Angola, follow its example. Do you think that such programs are useful, in light of the two countries’ differences and similarities?

_______________________________________________________________________________________

_______________________________________________________________________________________

_______________________________________________________________________________________
Activity 3: Governance in the Classroom

Overview
Students examine the connections between governance and outcomes by changing a rule in their classroom for one week and monitoring the outcome. After experiencing the modified rules, they reflect on how the rule change was made and whether it affected the classroom in the way that they thought it would.

Objectives
Students will:
• connect governance with outcomes
• actively engage in a decision-making process

Inquiry/Critical Thinking Questions
• Did the change contribute to “good” governance in your classroom?
• Where in the outside world can you see governance similar to what you experienced in the exercise?

Time Required
Two 60-minute classes, 1 week apart

Key Concepts
• good governance
• rule-making

National Standards Addressed
National Council for the Social Studies
1. Culture
3. People, Places, and Environments
5. Individuals, Groups and Institutions

National Science Education Standards
F. Science in Personal and Social Perspectives

National EFS Standards
3.2 Collective Action: Public Discourse and Policy
3.2 Collective Action: Community-based and Societal-level Decision-making

Materials and Preparation
Handout: Governance in the Classroom (2 pages), 1 per student
Handout: Policy Review, 1 per student

Activity—Day 1

Introduction
1. Have students brainstorm a list of ways governance happens in their school, particularly within any given classroom. Who determines the “rules” that will govern the class? Is it the same in every class? What happens when people act outside the classroom norms?
2. List these types of governance somewhere all students can see.
3. Tell students that, today and in the following week, they will engage in the governance of their classroom.

Steps
1. Pass out the worksheet Governance in the Classroom.
2. Break students into groups of 3–4.
3. Ask groups to take 10 minutes to describe the usual governance of the classroom and note this on their worksheets. Remind them that there is more than one type of decision that is made in the classroom (lesson topics, amount of homework, what their grades are based on, when students may talk and may not, etc.) and that these decisions are not all made in the same way. Encourage them to identify how they participate in decision-making processes. Circulate as they work, especially helping groups who are stuck on “the teacher decides everything” to think more creatively about how they influence the classroom. Explain that each group needs to come up with 2 possible changes to the rules of the classroom, which they honestly believe would improve their education. These need to be serious—nothing frivolous like chewing gum, being tardy, etc.
4. At this point they may begin discussing rule changes. As they work, they should note on their worksheet what the change will be, how it will be implemented, and why it should be considered. (If a group approaches you asking to propose more than 2 changes, you can let them do so.)
Activity 3: Governance in the Classroom  continued

Circulate to help students come up with rule changes that they reasonably believe could improve their education.

5. After about 20 minutes (or less if groups seem to be finishing), tell each group to choose 1 of their 2 rule changes to present to the class for a final vote.

6. Give each group 2-3 minutes to present their proposed change to the classroom rules. Use your “veto” power if any of the proposals are unreasonable, frivolous, or distracting, and ask the group that proposed it to present one of their other ideas.

7. When all groups have presented, tell students that they must vote for 2 proposed rule changes. Count votes via hands, or collect secret ballots.

8. Rank the proposals in order of voting (i.e., top vote-getter is #1, etc.).

9. Notify the class that, as of today, the top 2 rules will be in effect for a 1-week trial period.

10. Ask students to track, on their worksheets, when the rule comes into play during the upcoming week and to note what its effects are. (Throughout the week when one of the new rules is invoked, give students a couple minutes at the end of the class to take notes in order to track the rule change.)

11. Set a date for a “policy review” 1 week later, when the results they track will be examined.

Activity—Day 2 [the following week]

Steps

1. Remind students that the day of the policy review has come.

2. Ask students to get out their worksheets and break into their groups from the week before.

3. Pass out the Policy Review worksheet to each student, and instruct them to work in their groups to answer the questions.

4. After 20 minutes (less if most groups are finished), bring the class back together.

5. Give each group 2-3 minutes to state whether or not they think the rules should be kept and what adjustments they would like to see, if any.

6. Move into the following discussion questions as a class.

Discussion Questions

1. How would you describe the decision-making process you experienced in this exercise? Was it transparent, accountable, effective, and in other ways exemplary of good governance?

2. Did anyone break the new rules in the exercise? If so, what effect did this have on confidence in the decision-making process?

3. Think back to the examples of governance mentioned in the text. Which of these did your classroom governance most resemble?

4. How did participating in this exercise help you understand how governance operates in the real world? How do you think this example of governance differs from other instances of decision-making?

5. What are ways you can be involved to ensure good governance is practiced at your school?

Additional Resource

• Film: Please Vote for Me
  http://www.pbs.org/independentlens/pleasevoteforme/
  This 2007 film, directed by Weijun Chun and part of the Independent Lens series on PBS, looks at a third grade classroom in a city in central China. For the first time, students have been asked to elect their class monitor, a role the teacher has typically chosen. The class monitor holds a powerful position, helping to control students, punishing those who disobey, and keeping students on task.
Group members: _________________________________________________________________

You are being given a chance to change how your classroom works in an attempt to improve your own education. Please take this opportunity seriously and do not make any frivolous or distracting suggestions. Your ideas should be proposed in a way that will make a discernible difference within a **1-week trial period**.

1. **Describe the current classroom governance**, especially ways in which you currently participate in it.

   _________________________________________________________________
   _________________________________________________________________
   _________________________________________________________________
   _________________________________________________________________

2. Identify 2 rules you would like to change in the classroom. Complete the chart below.

   **Rule change #1:**
   
   Implementation strategy:
   
   Rationale (reason for proposing):
   
   Expected outcome:
   
   **Rule change #2:**
   
   Implementation strategy:
   
   Rationale (reason for proposing):
   
   Expected outcome:
**Directions:** On this page, record each time one of the new rules your class instituted comes into play throughout the week and what the actual effects (intended and unintended) are on the classroom.

<table>
<thead>
<tr>
<th>Rule #1</th>
<th>Rule #2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description of rule:</strong></td>
<td><strong>Description of rule:</strong></td>
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<td></td>
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<tr>
<td>1st use of rule (day and time):</td>
<td>1st use of rule (day and time):</td>
</tr>
<tr>
<td>Why was the rule used?</td>
<td>Why was the rule used?</td>
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<tr>
<td>What were its immediate effects?</td>
<td>What were its immediate effects?</td>
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<tr>
<td>2nd use of rule (day and time):</td>
<td>2nd use of rule (day and time):</td>
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<tr>
<td>Why was the rule used?</td>
<td>Why was the rule used?</td>
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<tr>
<td>What were its immediate effects?</td>
<td>What were its immediate effects?</td>
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<tr>
<td>3rd use of rule (day and time):</td>
<td>3rd use of rule (day and time):</td>
</tr>
<tr>
<td>Why was the rule used?</td>
<td>Why was the rule used?</td>
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<tr>
<td>What were its immediate effects?</td>
<td>What were its immediate effects?</td>
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<td></td>
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<tr>
<td>Overall impact of rule:</td>
<td>Overall impact of rule:</td>
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</tbody>
</table>
Policy Review

It has been 1 week since the rule changes you voted on have gone into effect. The time has come to decide whether these rules should continue, be adjusted, or be ended as quickly as possible. In your groups, work through the following questions to reach your conclusion, referring to page 2 of your Governance in the Classroom worksheet as necessary.

Rule Change #1

1. Did you vote for this rule a week ago?

2. Did the rule change work as intended? Why or why not?

3. Were there any unintended consequences? If so, do you have any guesses why these were not foreseen?

4. What adjustments, either to the rule itself or to its implementation, could help the rule function as intended?

5. Would you support the continuation of this rule, either as is or with the adjustments listed above?

Rule Change #2

1. Did you vote for this rule a week ago?

2. Did the rule change work as intended? Why or why not?

3. Were there any unintended consequences? If so, do you have any guesses why these were not foreseen?

4. What adjustments, either to the rule itself or to its implementation, could help the rule function as intended?

5. Would you support the continuation of this rule, either as is or with the adjustments listed above?
Activity 4: The Tip of the Iceberg

Overview
Students research an uprising or revolution, selecting from a list prepared by the teacher. After finding several news articles, students use an “iceberg model” to analyze the patterns and underlying governance structures that underlay the event.

Objectives
Students will:
• analyze several news articles using the iceberg model
• identify connections among news articles
• determine root causes that underlie popular events
• discuss governance in the context of current events

Time Required
One 60-minute class

Key Concepts
• root causes
• iceberg model
• governance structures

National Standards Addressed
National Council for the Social Studies
2. Time, Continuity, and Change
3. People, Places, and Environments
5. Individuals, Groups, and Institutions
7. Global Connections

National Science Education Standards
F. Science in Personal and Social Perspectives

National EfS Standards
2.4 Social and Cultural Systems: Peace and Conflict
2.4 Social and Cultural Systems: Social Justice
3.2 Collective Action: Public Discourse and Policy
3.2 Collective Action: Community-based and Societal-level Decision-making

Materials and Preparation
Article: One sample news article on a recent revolution or uprising to model activity on document camera
Overhead: Iceberg Model
Tools: Butcher paper, 1 sheet per group
Tools: Marking pens, colored, 3–4 pens per group
Internet access

Activity
Introduction
1. Ask the students to name some political revolutions or examples of uprisings. How did each one influence the governance of those who participated in it?
2. Tell them that they are going to explore the structures behind these events by analyzing some news articles using a tool called the iceberg model.

Steps
1. Share with the class your sample news article about a recent revolution or uprising.
2. Ask students to paraphrase the sample article.
3. Use the overhead Iceberg Model to lead a class discussion about the relationship between the event, patterns on the national or international level, and underlying economic, political, and social forces that propelled those patterns to prominence in the news.
4. Explain that when we read about uprisings in the news, they are portrayed as events—newsworthy, exciting, and dramatic things. Such events are like the tip of an iceberg, which is only about 10% of its total mass. The remaining 90% is underwater and never seen, but this is the part of the iceberg that is pushed against by ocean currents that determine the direction in which the whole iceberg floats.
5. In the news, these uprisings were witnessed as dramatic isolated incidents—the forces that create and shape them (“what happens “underwater”) were not often revealed. However, when we see a series of similar events, such as the uprisings, we are seeing the emergence of a pattern. Patterns underlie events, so they are shown just below the tip in the iceberg model.

6. Finally, deep beneath the surface are the underlying structures or root causes that drive the events and patterns, just as the underlying ice mass drives the tip of the iceberg. Governance is part of these underlying structures, as are economic, political, environmental, and social forces. However, these underlying structural causes are typically not addressed directly in news stories. Ask students what effect this has on how we understand an event and how we perceive the people who are involved in the event.

7. Go back to the sample news article, and together with the students use the iceberg model to analyze it.

- Ask them to notice where in the article they can identify references to broader patterns. Which other countries experienced uprisings around the same time? What forms did they take in each country? What provoked them? What were the government responses? Are they ongoing or recurring now?

- Does the article discuss any root causes of this pattern? What are some possible root causes of these patterns, especially in terms of governance? For example, are these events related to poverty, education, religion, or ethnicity? Which of the aspects of good or bad governance (transparency, rule of law, corruption, etc.) can be seen as causes?

8. Before moving on, be sure students understand how to use the iceberg model to analyze a news article in terms of the events, emerging patterns, and underlying causes.

9. Arrange the class into groups of 3–4 students and assign each group a revolution to research from among a list that you prepare.

10. Tell the class that each group needs to find 4 articles on the uprisings in their assigned country. These articles must:

- be from reputable news sources
- span at least 2 months in their publication dates

11. In their groups, have the students read the articles and use the iceberg model to analyze the uprising and look for patterns and root causes, especially ones that have to do with governance. Have students discuss similarities to uprisings in other countries. Then have them brainstorm, discuss, and list on a separate piece of paper all of the root causes they can think of that might contribute to the event.

12. Give each group 1 sheet of butcher paper and 1 set of pens.

13. Have each group create an iceberg diagram for their country’s uprising by gluing or taping one or more articles onto the top of the paper, listing and/or drawing the patterns they have noticed, and finally listing and/or drawing the underlying root causes. Their final diagram should have a shape similar to an iceberg with the news articles at the top (the event), the pattern below, and the underlying causes at the bottom.

14. Have each group present their iceberg model to the class. Discuss how the events of the uprisings presented connect to each other through similar underlying causes, such as type of government, economic conditions, good/bad governance, international intervention, etc.

15. Conclude with the following discussion questions.
Activity 4: The Tip of the Iceberg  continued

Discussion Questions

1. How did using the iceberg model to analyze the news articles help in your understanding of the uprisings, their causes, and their connections?

2. How does the iceberg model fall short as an analysis tool? In other words, are there aspects of the uprisings that would not fit this model?

3. What was the most surprising thing you found in your analysis?

4. How important was governance in each case? Can we explain these uprisings mainly through problems of governance, or do other factors seem far more important?

5. What can we do to address the underlying structural problems of the events and patterns you studied?

Additional Resources

- **Curriculum Resource:** Egypt in the News
  This lesson was created by the Choices Program, which teaches high school students about history and current issues. It helps students to identify the causes of the demonstrations in Egypt, the roles of traditional and social media in the uprising, and the U.S. response to events in Egypt. It is the first of a series of lessons including “After Mubarak” and “Protests, Revolutions, and Democratic Change.”

- **Slideshow:** Unpredictable Uprisings
  This New York Times slideshow presents several historical photos that document uprisings and revolutions that made impacts throughout the world.
Iceberg Model
Chapter 14 Health

Chapter Big Ideas

- Health is a vital component of a sustainable community. Without good health, people may not be able to contribute to society or the economy.
- There are discrepancies in health between nations and within cities.
- Health issues impact people in many different ways; multifaceted solutions can support long-term improvement in health.
- Social determinants do not necessarily determine the health of any one person, but act powerfully on the overall health of a community.
- Industrialization has solved many health problems, extending life expectancy in much of the world but has also created new challenges to human health.
Guiding Questions
• How are socioeconomic status and health connected?
• What personal and structural solutions improve health by addressing root causes of illness and disease?

Key Concepts
• social determinants of health
• public health
• germ theory of disease
• pathogen
• chronic disease
• pandemic
• acquired immune deficiency (AIDS)
• global health

Supporting Vocabulary
• life expectancy
• plague
• pasteurization
• fertility rate
• slum
• body mass index
• antiretroviral drug

Service Learning Component
Service Learning Project Idea
• Question: How can you help raise public awareness about the nature of HIV/AIDS, how it is transmitted, and how it can be controlled?

• Hook Resource: HIV & AIDS Quiz
  https://www.avert.org/learn-share/quizzes
  An online quiz, offered in three levels of difficulty, provides links for more information on questions missed and highlights the various factors involved in AIDS treatment and prevention.

• Project: Students research the ways in which HIV/AIDS is transmitted; how it can be prevented; the stages of the disease; and how it can be treated at each stage. They participate in World AIDS Day on December 1st by raising awareness and money, and by educating others about the disease and what can be done about it. If the project does not coincide with World AIDS Day, students host a school wide education event about HIV/AIDS and let other students know how they can prevent its spread and help those who are suffering from the disease.

• Additional Resources:
  • Website: World AIDS Day
    http://www.avert.org/world-aids-day.html
    AVERT’s website with suggestions for how to participate and links to further educational resources.
  • Website: World AIDS Day
    https://www.worldaidsday.org/
    U.S. government website with national statistics, locations of testing centers, and activities for raising awareness that focus on social media.
Creating new habits or breaking old ones takes time and can be challenging. Having a plan in place and anticipating potential obstacles can help you be more successful with this habit. Be sure to choose a small, realistic goal.

<table>
<thead>
<tr>
<th>Habit</th>
<th>Date:</th>
<th>Cues</th>
<th>New Behavior</th>
<th>Challenge</th>
<th>Project Based Learning Component</th>
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**Project Based Learning Component**

**Project Based Learning Idea #1**

- **Overview:** Students identify a chronic illness of concern in their community, research ways to prevent the illness, and create marketing materials for a public health campaign.
- **Driving Question:** How can your community live healthier and reduce the incidence of chronic diseases?
- **Hook Resource:** *Children with Type 2 Diabetes*  
  A 2-minute video from the Medical University of South Carolina on the recent rise of “adult-onset” diabetes in children.
- **Individual Project:** Students research chronic diseases that affect people in their community. They write an essay or blog post about how to improve health and well-being in their community through changes in nutrition, exercise, or other behavior (e.g., stop smoking). They share the blog post or present the essay to a local health organization.
- **Group Project:** Students research chronic diseases that affect people in their community. They design a set of marketing materials (print, radio, and TV ads) for a campaign to improve health and well-being through changes in nutrition, exercise, or other behavior (e.g., stop smoking). Marketing materials should focus on an illness that affects a large portion of the community, targeting the highest risk population.

**Additional Resources**

For learning more about the causes of chronic diseases:

- **Article:** *Food Desert Locator*  
  The U.S. Department of Agriculture’s Food Desert Locator allows students to find food deserts on a map. Students can learn more about food deserts by clicking on the “Documentation tab.”
- **Website:** *Kaiser Permanente Santa Rosa Center*  
  [http://kpsantarosa.org/fitness/overcomingobstacles](http://kpsantarosa.org/fitness/overcomingobstacles)  
  The non-profit healthcare provider offers ideas for how to overcome obstacles to exercise.

For learning more about the health consequences of chronic diseases:

- **Website:** *Diet Related Diseases*  
  [http://www.four-h.purdue.edu/foods/Diet-Related%20Diseases.htm](http://www.four-h.purdue.edu/foods/Diet-Related%20Diseases.htm)  
  A short introduction to what health conditions can result from poor nutrition.
- **Website:** *Obesity: Halting the Epidemic by Making Health Easier*  
  The Centers for Disease Control and Prevention’s site provides information about the health consequences of obesity and how to fight obesity.
Creating new habits or breaking old ones takes time and can be challenging. Having a plan to trigger the new behavior (e.g., stop smoking). Marketing materials should focus on an illness that affects a large portion of the community, targeting the highest risk population.

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    A short introduction to what health conditions can result from poor nutrition.
  - **Website:** *Obesity: Halting the Epidemic by Making Health Easier*
    The Centers for Disease Control and Prevention’s site provides information about the health consequences of obesity and how to fight obesity.
Project Based Learning Idea #2

- **Overview:** Students investigate the historical treatment of mental health issues, including denial of the condition, mental institutions, prescription medications, and naturopathic medicines.

- **Driving Question:** How should mental health issues be treated?

- **Hook Resource:** The History of Mental Health: From "Skull Drills" to "Happy Pills"

  Article written by Allison Foerschner for Student Pulse, an online academic student journal, on the history of mental health care.

- **Individual Project:** Students research one specific mental health disorder and how that disease has been treated throughout history along with any social stigmas surrounding the disease. They write an analytical essay on the historical treatment of that particular disorder, concluding with their own opinion of how best to treat or work with someone afflicted with the mental health disorder.

- **Group Project:** Students research two mental disorders and treatment of both disorders throughout history. They create a presentation that compares and contrasts the treatment of the disorders, considering the reasons behind similarities and differences of treatment (potentially linked to technological advancements or unique stigmas). In conclusion, they offer analysis on whether one mental disease has been addressed more effectively and appropriately than the other using evidence to support this conclusion.

- **Additional Resources**
  - **Website:** Mental Health Center
    WebMD offers in-depth facts on the types, symptoms, and treatment of mental health disorders.
  - **Website:** Mental Illness
    The American Psychiatric Association offers background information on common mental health disorders.

**Summative Assessment**
Chapter Test

**Connections**

**World History connections:**
History of public health; urbanization and the development of slums; industrialization and modern medicine; global disease control

**Economics connections:**
Inequality of social determinants of health; pandemics and economic activity; costs of health care and sickness; markets and scientific development; chronic diseases and affluence

**Geography connections:**
Human migration; pandemics; regional health disparities; travel, trade, and spread of disease

**Civics connections:**
Personal and structural solutions to health issues
Activities in Teacher’s Guide: Suggested Sequence

Days 1 and 2

**Reading:** *Introduction to Health*

**Activity 1: Changing Minds**—Students examine personal habits in an effort to improve health. Using the example of handwashing, they take on the role of public health planners and design a blueprint for changing the habits of their school. Students discuss the challenges that people face trying to change habits related to health and the sources of their own health habits, such as upbringing, choices, and environment.

Day 3

**Reading:** *Background on Health*

**Activity 2: Rural vs. Urban Health**—Students consider the health concerns of communities in urban and rural settings, specifically after a migration from a rural to urban setting, which often occurs during the industrialization of a nation. Ultimately, students begin to place health within a social, economic, and geographic context.

Day 4

**Reading:** *Background on Health* continued

**Activity 3: Pandemic!**—Students are introduced to the history of global pandemics and evaluate the possible public health responses to a flu pandemic today. Based on the World Health Organization’s handling of the 2009 swine flu pandemic, students design a response to a rapidly spreading, deadly flu. This activity gives perspective on one of the biggest accomplishments of modern public health, the ability to mitigate the effects of pandemic disease, as well as revealing the limitations of the modern global health system.
Day 5

Reading: *Health Today*

Activity 4: *Life: The Long and Short of It*—Students compare life expectancy, a common indicator of good health, among several countries and discuss possible explanations for the differences. Students also examine the connection between per capita expenditures on health care and life expectancy.

Day 6

Reading: *Pathways to Progress: Health*

Activity 5: *In Sickness and in Health*—Students create a diagram to illustrate the various factors contributing to the Latino paradox—the discovery that recent immigrants to the U.S. from Latin America are, on average, healthier than much wealthier segments of the United States population. This activity emphasizes the connections between health and other aspects of life. In the end, students will understand that the health of individuals depends in many ways on the people around them and the social circumstances.
Discussion Questions from the Chapter Reading

**Introduction to Health**
1. What does the narrative about Jason reveal in terms of solving public health problems?
2. Where did you get your health habits (diet, exercise, hygiene)? What or who influences your health behaviors?
3. What makes us healthy, aside from the absence of disease?

**Background on Health**
4. What groundwork for modern health practices was built during ancient or medieval times? What lessons can we learn from ancient health care?
5. How are improvements in health connected to a falling fertility rate?

**Health Today**
6. How would living in poverty put stress on a person's body? What illnesses or injuries might be induced by poverty?
7. What factors could contribute to the lower than average life expectancy of black males in Washington, D.C.?
8. Is it accurate to speak of obesity as a pandemic?
9. In what ways do chronic diseases like obesity, cancer, and diabetes differ from diseases like malaria and TB? What are the differences and similarities, in terms of who they affect and how they spread?

**Pathways to Progress: Health**
10. What diseases do you fear? Which do you not? How does this reflect your own experiences and those of community? How does it impact your thinking and behavior?
11. How might our mental health contribute to our general health?
Chapter Assessment: Health, page 1

Recall

Match the following words on the left with their definitions on the right.

1. Germ theory  a disease-causing organism such as bacterium or a virus
2. Pathogen  spread of illness through germs and bacteria
3. Chronic disease  a disease in which immune system is weakened and therefore less able to fight infections
4. Acquired Immune Deficiency Syndrome  a disease that lasts a long time such as heart disease or diabetes

Reasoning/Explanation

Complete the following multiple choice questions by choosing 1 correct answer.

5. The health of an individual is often a reflection of the health of a community because individuals within a community typically:
   a. pass germs freely
   b. share a common environment
   c. have similar genetic backgrounds
   d. have fairly similar incomes

6. A public health professional might address a health problem by:
   a. researching the effectiveness of a drug in treating illness
   b. diagnosing an illness or disease
   c. prescribing medicine and exercise to a patient
   d. teaching a class on how to change one’s lifestyle

7. What is an effective, low-cost method for reducing the spread of malaria?
   a. vaccinations
   b. regular handwashing
   c. mosquito nets
   d. educational campaigns
8. What statement best describes historic trends in health?
   a. Only in the last century have significant breakthroughs in medicine occurred.
   b. Civilizations have been working toward healthy habits and development of medicines for thousands of years.
   c. Communities all over the world had theories on health, but it wasn't until the discovery of germs that communities were able to effectively address the spread of disease.
   d. Some societies worked to develop sanitation practices and build hospitals for the ill, while others considered illness a part of natural selection.

9. One effect of increased life expectancy has been:
   a. an increase in fertility rates
   b. a rise in the global population
   c. improved detection of pandemics
   d. a rise in the number of plagues

10. Use the graphic organizer below to help answer the question.

What is the best example to replace X and Y as additional social determinants of health?
   a. Gender; Culture
   b. Standardized Test Scores; Number of Siblings
   c. Gender; Number of Siblings
   d. Culture; Standardized Test Scores
Chapter Assessment: Health,  page 3

11. Which statement best explains how someone might die from diarrhea?
   a. Viral infection from contact with a carrier will result in liver failure.
   b. Genetic abnormality may result in excessive stomach acid production.
   c. Lack of access to nutritious food and clean water will lead to a high fever.
   d. Contamination of food with fecal matter may result in rapid dehydration.

12. Which of the following statements best explains how income can be a determinant of health?
   a. Poor people are more likely to engage in risky behaviors.
   b. Disease rates are highest in countries with low per capita income.
   c. Unemployed people may not be able to afford nutritious food.
   d. An economic recession leads to higher rates of disease transmission.

13. Why was the H1N1 influenza (or swine flu) outbreak in 2009 considered a pandemic?
   a. the virus killed many people
   b. the virus affected people in many countries
   c. the virus was undetectable by physicians until it was too late
   d. the virus spread from one species to another

14. Use the photograph below to help answer the following question.

   ![Photograph of slum conditions](image)

   All of the following statements explain how the slum conditions depicted in the photograph may undermine a person's health **except**:
   a. Structures are grouped closely together and many people will share one structure, facilitating the spread of germs.
   b. Slums often lack sanitation so human waste often goes untreated.
   c. Structures are built out of whatever materials were available and often in areas prone to landslides and floods.
   d. Slums are often inhabited by migrants from rural areas who are unable to afford better housing.
**Application/Complex Reasoning**

Answer the following short answer questions.

15. Life expectancy is a statistic that gives us a snapshot of the overall health of a population in one number. Provide an argument for whether life expectancy is an accurate and complete way to judge a person's health. Use at least 2 examples to support your response.

16. Provide evidence for both of the following statements:
   - **Part A.** *Health is mostly a product of personal choices.*
   - **Part B.** *Health is mostly determined by social factors.*

   Be sure to address age, family, personal networks, economic circumstance, as well as use specific examples in your response.
Recall (4 points)
1. Germ theory—spread of illness through germs and bacteria
2. Pathogen—a disease-causing organism such as bacterium or a virus
3. Chronic disease—a disease that lasts a long time such as heart disease or diabetes
4. Acquired Immune Deficiency Syndrome—a disease in which immune system is weakened and therefore less able to fight infections

Reasoning/Explanation (10 points)
5. b
6. d
7. c
8. c
9. b
10. a
11. d
12. c
13. b
14. d

Application/Complex Reasoning (6 points)
15. Answers will vary. (2 points)
- The average will not indicate whether there is a high infant mortality rate in that country, though a high infant mortality rate will significantly alter the average.
- The average does not reflect quality of life.
- The average neglects what will likely cause death; such knowledge could help a member of the population avoid early death.

16. Part A. Answers will vary. (2 points)
- Eat nutritious foods.
- Stay fit.
- Wash hands with soap.
- Follow directions for medicines.

Part B. Answers will vary. (2 points)
- Genetic factors can influence health.
- People may not have a choice about the physical environment in which they live.
- Low income can impact the health choices one has.
- Families may not have access to nutritious food or health care.
Activity 1: Changing Minds

Overview
Students examine personal habits in an effort to improve health. Using the example of handwashing, they take on the role of public health planners and design a blueprint for changing the habits of their school. Students discuss the challenges that people face trying to change habits related to health and the sources of their own health habits, such as upbringing, choices, and environment.

Objectives
Students will:
• appreciate the various factors that influence health decisions and shape health habits
• consider the difficulty of changing habits and behaviors of community members
• creatively design solutions to address a public health problem in their own schools

Inquiry/Critical Thinking Questions
• What cultural behaviors could negatively impact a community’s health?
• What are effective ways to change public health behaviors?

Time Required
Two 60-minute classes

Key Concepts
• public health education
• behavioral change

National Standards Addressed
National Council for the Social Studies
1. Culture
3. People, Places, and Environments
4. Individual Development and Identity
10. Civic Ideals and Practices

National Science Education Standards
F. Science in Personal and Social Perspectives

National Efs Standards
2.4 Social and Cultural Systems: Global Health
3.1 Personal Action: Change Skills and Strategies
3.2 Collective Action: Community-based and Societal Level Decision-making
3.2 Collective Action: Organizational and Societal Change Skills and Strategies

Materials/Preparation
Handout: Handwashing Survey, 1 per student
Handout: Public Health Campaign, 1 per group of 3-4 students
Tools: Board/chalk or projector/markers
Optional background reading:


Activity—Day 1

Introduction

1. Ask students to guess what the two leading causes of death for children in the developing world are. *(The correct answers are diarrhea, which kills by causing severe dehydration and respiratory diseases, such as pneumonia.)*

2. Ask students what they know about the causes of these diseases. *(The main cause of diarrhea is contamination of food or water with fecal matter. Mainly bacterial agents like Giardia lamblia cause respiratory disease.)*

3. Explain to the class that these diseases aren’t nearly as deadly for people with regular access to clean water, high-quality sanitation, and sewage services, as well as clinics and antibiotics. For example, although 4,600 people are hospitalized for diarrhea associated with Giardia infections in the U.S. each year, deaths from this disease in the U.S. are very rare. *(Handwashing with Soap website, accessed October 29, 2012, https://globalhandwashing.org/about-handwashing/why-handwashing/).*

4. Ask students to consider what is the simplest and most effective way to prevent the transmission of bacteria, like Giardia, from one person to another. *(Handwashing can prevent the contact of fecal matter with the mouth. Handwashing is also effective against respiratory disease. While vaccines can do a lot to prevent respiratory disease, they are costly and require a lot of organization to distribute. Further, they require medical professionals to return to a community every year or two to inoculate those who could not receive a vaccine in previous years.)*

Steps

1. Ask students when they should wash their hands. Record their answers on the board, under one of these two headings: “Wash Hands Before” and “Wash Hands After.” If they do not name one of the situations listed below,³ then bring this situation up and ask them if they should wash their hands before/after that activity.

   Wash hands before:
   - Preparing food
   - Eating
   - Treating wounds or giving medicine
   - Touching a sick or injured person
   - Inserting or removing contact lenses

   Wash hands after:
   - Preparing food, especially raw meat or poultry
   - Using the toilet
   - Changing a diaper
   - Touching an animal or animal toys, leashes, or waste
   - Blowing your nose, coughing or sneezing into your hands
   - Treating wounds
   - Touching a sick or injured person
   - Handling garbage or something that could be contaminated, such as a cleaning cloth or soiled shoes

2. Tell students that people often think they wash their hands more often than they actually do. One study found that while 94% of people said they wash their hands after using the bathroom, only 68% actually did. You can also let them know that high school students tend to wash their hands less often after using the bathroom than middle school or even elementary students.⁴

3. Ask students if they wash their hands *(with soap, for at least 20 seconds, and while taking care to get under the fingernails)* in every one of the situations they listed earlier. Ask students to honestly answer whether they wash their hands every time they go to eat, especially if it is in the cafeteria.

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Activity 1: Changing Minds  continued

4. Distribute 1 copy of the Handwashing Survey to each student. Decide on one of two different ways to implement the survey:
   Survey Option A:
   • Ask students to take the survey anonymously.
   • Collect the completed surveys.
   • Tally up student responses, and bring compiled results to class the next day.
   Survey Option B:
   • Ask students to give the survey to a peer and bring back the completed survey the next day.

Activity—Day 2

Introduction

1. Share results from Day 1’s survey.
   a. If you chose Survey Option A, display the compiled results (or pass out printed copies of the summary).
   b. If you chose Survey Option B, ask students to share answers from the surveys their peers completed. As they call out answers, tally up responses in a visible place.

Steps

1. Divide students into groups of 3–4, and distribute a copy of the handout Public Health Campaign to each group.
2. Have students complete the worksheet in their groups.
3. After about 30 minutes, bring the class back together and move into discussion using the questions below.

Discussion Questions

1. Where did you learn about handwashing as a child?
2. What do you know about handwashing that you believe many others might not know (such as the germ theory of disease)? Why would it be more difficult to convince people to wash their hands without this knowledge?
3. How might you communicate behaviors to promote cleanliness and health to people who cannot read? What about people from a different culture, who may not be familiar with these behaviors?
4. Why do people who know that handwashing is a good idea still not always wash their hands? What does this tell us about knowing something versus putting it into practice? How might that affect your messaging, if you were a public health educator?
5. What would be a cheap, effective way to promote handwashing in your school?
6. What public health billboards, commercials, and other advertisements do you remember seeing? Did they have an impact on your behavior or thinking?

Communications Extension

As a class, pool ideas and determine which approach will be the most effective at changing school handwashing behaviors for the least cost. Ask students to consider what resources they would need to bring their campaign to life. Talk to administrators at your school or district to see if they can help provide these resources. Then, bring it to life!

Before bringing the campaign to life, have students measure/estimate current rates of handwashing. After implementing the campaign, students again measure/estimate rates of handwashing to determine the success of the campaign. If the campaign is unsuccessful, have students brainstorm reasons why that might be the case, and make changes as appropriate.

Additional Resource

• Website: The Centers for Disease Control and Prevention
  https://www.cdc.gov/nccdphp/dnpao/initiatives.html
This website hosts a variety of public health campaigns. Students can view the messaging and techniques used in these campaigns for ideas.
Handwashing Survey

Gender of respondent:  □ MALE  □ FEMALE

1. Should people wash their hands more often? Why?
   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________

2. What form of advertisement are you more likely to pay attention to?
   □ printed materials (flyers, magazines, newspapers)
   □ radio
   □ online
   □ other: ____________________________

3. Which of the following do you think prevents people from washing their hands more often at school:
   □ not enough time between classes
   □ groups of students hang out in bathrooms, making other people leave as quickly as possible
   □ bathrooms/sinks are not located in convenient places
   □ inadequate supplies of soap or hand towels
   □ other: ____________________________

4. What would you say to your friends if you wanted to encourage them to wash their hands more often?
   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________
   __________________________________________
One common way people pass disease to one another is through the transfer of bacteria and viruses. This often occurs through skin-to-skin contact, or when one person leaves germs on an object that another person then touches. The most common transfer occurs through our hands, which come into direct contact with other people and objects most frequently. This makes handwashing the simplest and most effective way to keep disease from spreading and people from getting sick.

Most people at your school probably know the importance of handwashing, but many may fail to wash their hands anyway. One study of a high school found that only about 32% of females and 8% of males washed their hands after using the bathroom. High school students in general tend to wash their hands less than elementary or middle school students.

The goal of this activity is to determine how a public health professional could improve handwashing at your school. In developing a plan, consider the following questions:

1. Do people really know why they should wash their hands? Would a campaign to educate people help?

2. What type of messaging (for anything) works best for you and your friends? Where do you see/hear it? What does it say?

3. Based on your answers, where would public health education be most effective for students at your school? (Be sure to think of all possibilities here: online, through texts, etc.)

4. Would public reminders get people to wash their hands more frequently? What should those reminders be like to attract people's attention? (Again, think creatively about using any media you think will be effective.)

5. Are there situational or social factors that work against handwashing, such as short passing periods or groups that hang out in bathrooms, making other people leave as quickly as possible?

6. How could these social obstacles to handwashing be removed?

7. Are existing handwashing facilities located in places that people can easily access? Are they sufficiently stocked with soap, water, towels, etc.?

8. How could you improve facilities to increase handwashing?
9. Considering your answers to the previous questions, which ideas can be used to create solutions that produce the greatest change in health behavior?

10. Which of these solutions seems the easiest and most cost-effective?

Imagine that you are a public health worker. Your job is to increase rates of handwashing at school in an effort to prevent the spread of illness. Use your answers on the previous page and the table below to design a handwashing campaign that you think would be effective at raising the rates of handwashing within your school community.

<table>
<thead>
<tr>
<th>Your Campaign’s Approach</th>
<th>The Reasons for Your Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Will education about how handwashing relates to disease be part of your campaign?</td>
<td></td>
</tr>
<tr>
<td>2. What other information or messages would encourage people to wash their hands?</td>
<td></td>
</tr>
<tr>
<td>3. What sort of messaging would you use?</td>
<td></td>
</tr>
<tr>
<td>4. Where would you place/show/broadcast the messaging for your campaign?</td>
<td></td>
</tr>
<tr>
<td>5. How would you remove social obstacles to handwashing?</td>
<td></td>
</tr>
<tr>
<td>6. How would you remove physical obstacles to handwashing?</td>
<td></td>
</tr>
</tbody>
</table>
Activity 2: Rural vs. Urban Health

Overview
Students consider the health concerns of communities in urban and rural settings, specifically after a migration from a rural to urban setting which often occurs during the industrialization of a nation. Ultimately, students begin to place health within a social, economic, and geographic context.

Objectives
Students will:
• consider the differences between urban and rural health problems
• appreciate health as more than the absence of disease

Inquiry/Critical Thinking Questions
• How do health concerns in rural and urban communities reflect how people relate differently to each other in these two settings?
• What resources have developed in response to the health problems of the urban poor?
• What characteristics of life in urban areas affect human health, either positively or negatively?

Time Required
One 45-minute class

Key Concepts
• urbanization
• public health
• urban/rural poor

National Standards Addressed
National Council for the Social Studies
2. Time, Continuity, and Change
3. People, Places, and Environments
7. Production, Distribution, and Consumption
8. Science, Technology, and Society

National Science Education Standards
F. Science in Personal and Social Perspectives

National EfS Standards
2.3 Economic Systems: Poverty
2.4 Social and Cultural Systems: Global Health

Materials/Preparation
Handout: Rural Village, 1 per student
Handout: Big City, 1 per student (both handouts could be copied onto either side of a piece of paper to create one handout)
Tools: Board/chalk or projector/markers
Activity 2: Rural vs. Urban Health  continued

Activity

Introduction

1. Ask the class to define urbanization. Write responses on the board. (Urbanization, most technically, refers to a process in which an increasing proportion of an entire population lives in cities and the suburbs of cities. However, this usually occurs through internal migration within a country, so answers such as “people moving from the countryside to cities” are generally correct.)

2. Follow up by asking the class where they think rapid urbanization (versus a slow trickle of people into cities) first occurred, when it occurred, and what else was happening at the time that might have caused it. (While people have been moving into cities for millennia, rapid urbanization is essentially tied to industrialization. Both first occurred in the 19th century, mainly in Europe, the United States, and Japan. Industrialization connects to urban migration both as a “push” factor, as feudal peasants were pushed off lands by lords converting farmland into pasture for raising more sheep to produce wool for the booming textile industry; and as a “pull” factor, as urban factories created a demand for labor in cities.)

3. Ask students where in the world urbanization is occurring today, and what is causing people in these places to move to cities. (Most of the urbanization in the industrialized world has already occurred—urban populations are still growing faster than rural ones in the United States, for example, but the overall distribution of the population has hovered around 75% urban and 25% rural since the 1970s. In the industrializing/developing world, though, the number of people living in cities is growing far faster than the number of people living in the countryside. The answer to the second part of the question—“what is causing people to move to cities”—is thus a search for industrial rather than rural work. The classic example of the farm boy moving to the big city is basically true.)

4. Tell the class that today they will be considering what the move from rural to urban life means for people’s health.

5. Break students into groups of 2–3, and distribute the Rural Village handout to each student.

Steps

1. Tell the class that this handout describes a typical community in a nonindustrialized/industrializing country where most people still depend primarily on agriculture to make a living. Their job is to brainstorm answers to 2 questions:

a. What health problems are common in rural village life? (Consider sanitation, water, exercise, diet, environmental hazards, etc.)

b. What resources are available to deal with these problems? (Consider education, investments in infrastructure, access to health care and medicine, etc.)

2. Students should work together with members of their groups to think through and discuss answers to the questions.

3. After about 15 minutes, tell the class that prices for farm products have dropped by half, and they all have to move to their national capital if they want to make enough money to buy basic necessities. However, since they have little money, they cannot afford much in the city and will have to make do with what housing they can find.

4. You could remind them that they can remain on their farms if they only want to feed, clothe, and house themselves and their families, but this means they will have no money for any outside goods, including cell phones, or services, including health care.

5. Distribute the Big City handout. Tell the class that this handout describes an urban center in the same country as the rural village.

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Activity 2: Rural vs. Urban Health  continued

6. Tell students to read through the handout and consider the same questions as they did for the rural village:
   a. What health problems are common in city life for the poor? (Consider sanitation, water, exercise, diet, environmental hazards, mental and emotional stress, workplace hazards, isolation/depression, etc.)
   b. What resources are available to deal with these problems? (Consider health education, investments in infrastructure, access to health care and medicine, food resources, etc.)

7. After another 15 minutes bring the class back together for discussion. Ask students what their answers were to the questions, for both rural and urban settings, and what the main differences between the two were.

8. In the course of the discussion, move into the following questions.

Discussion Questions
1. Is the move from the countryside to cities a healthy one in the short term? What about in the longer term?
2. How do you think having a larger social network in the big city would change a person’s health outcomes?
3. How would you characterize the quality of life in each setting? Which situation would you rather live in and why?
4. The field of public health developed to address the health problems associated with urbanization in Europe and the United States in the 19th century, a process similar to urbanization in developing countries today. What new challenges does urbanization present for human health, and what old problems does it intensify?
You live in a community of about 3,000 people, most of whom are farmers. The fields are divided by household. Except for a few dozen immediate neighbors, most people live within a 10-minute walk from your house. There are a few small shops within walking distance of your home, but for bigger items you have to travel to the nearest city, which takes a full day roundtrip. There are some public houses nearby, where people (mostly men) gather for conversation and refreshments.

No one goes hungry in the village, primarily because the people here grow many types of fruit, vegetables, and grains throughout the year. It is also possible to grow some high-value foods for sale, which allows you to buy supplies from the shops and from merchants at the weekly markets. Merchants sell spices, salt, and other things to add to food, such as vinegar. Merchants also sell tea and sugar, and everyone drinks tea at least four or five times a day. At these markets there are also butchers that slaughter to order on the spot.

The other reason no one goes hungry is that their neighbors refuse to allow it. Families care for one another in times of poverty, and everyone at least has bread, eggs, and whatever fruit or vegetable is in season. People drop in on one another for meals regularly and without warning, and hosting each other is simply part of village hospitality. Everyone knows everyone else. While there are rivalries and jealousy, when the chips are down the village takes care of its own.

The canals that irrigate the fields run through the village, but most of each household’s water comes from a well below their house. During the summer many people get serious diarrhea, which is caused by something in the well that grows better in warmer temperatures. People wash and cook with this water, but they usually bathe each week at a community bath house up the street. All water washes back into the canals after it is used.

Children are usually born at home with a traditional birth attendant or midwife as the only medical professional. There are pharmacies where you can buy modern medicine, but it is expensive and the pharmacists can’t always diagnose an illness properly. The instructions for the medicines are also in a foreign language, which you can’t read well enough to understand the medical terminology. The nurse in your village, who is the only medical professional for the ten villages in the region, doesn’t speak your language. She travels between villages and typically visits your village a couple of times a month.

Disposal of trash and human waste is up to individual households. Most people burn it or toss it some distance from human settlements. This isn’t too much of a problem because there is a lot of open space around your village, but occasionally the waste ends up in the fields and pollutes the land and water resources. Rules of public shame sometimes drive people to dispose of waste in out-of-the-way places, like the ruins of old houses.

1. What health problems are common in rural village life?
   Consider sanitation, water, exercise, diet, environmental hazards, etc.

2. What resources are available to deal with these problems?
   Consider education, investments in infrastructure, access to health care and medicine, etc.
Moving from the village, you came to the national capital of 4 million to find work. You knew a couple of people already living in the city and sought them out when you arrived. They have helped you find work at the same plant where they work, though work is irregular and you do not know whether you’ll have work each day. You don’t know many people, even near where you stay.

The only place that you can afford to sleep is in “informal housing”—a part of the city filled with shacks built out of whatever materials are available such as corrugated tin, cinderblocks, and plywood. Your friends already live there and the three of you share a room in one of the better structures in the neighborhood, though it doesn’t have a toilet or running water. You’ve been told by locals to watch out during rainstorms because the low sections of the informal housing area usually flood and the high sections are prone to landslides. The houses here aren’t built to resist any sort of disaster, so the destruction from a storm is usually widespread. Fires are also a serious danger due to the building materials and the lack of firefighters.

There are some government-built public toilets, but not nearly enough for all the people nearby. These toilets are often in very poor condition due to inadequate maintenance and the fact that the water supply often shuts off for hours or days at a time. It makes more sense to use open public spaces, despite the shame of doing so; about half of the people in this part of the city do just that. This means that most of the human waste in the neighborhood is untreated and uncontained.

Only a tiny portion of people get their water from the public water system. The rest of your neighbors depend on illegal hook-ups, water vendors, scooping out of drains, or communal taps fed by wells. These taps aren’t maintained and the water is often very dirty. You suspect the dirty water is the reason that many people are suffering from diseases in the neighborhood.

Most people can afford a regular diet of staple grains, but they consider eggs, milk, meat, fish, and fruit to be luxury items and buy them no more than once a week. Even then, the quality of these items is highly questionable, since they have to be brought in from outside the city. Once they reach the poorer parts of town, these foods have been exposed to street animals and pests, which carry many diseases.

There are high-quality health services available in the city, but the public hospitals and clinics are all outside the part of town you live in. There are a couple nonprofit and faith-based clinics in your part of town, but the lines for services are long. These clinics charge small user fees, which aren’t always manageable for everyone. Only a couple people might be willing to care for you if you got sick, and then they would still have to go to work for most of the day. All in all, moving to the city has not been what you dreamed it would be.

1. What health problems are common in city life for the poor?

   Consider sanitation, water, exercise, diet, environmental hazards, mental and emotional stress, workplace hazards, isolation/depression, etc.

2. What resources are available to deal with these problems?

   Consider health education, investments in infrastructure, access to health care and medicine, food resources, etc.
Activity 3: Pandemic!

Overview
Students are introduced to the history of global pandemics and evaluate the possible public health responses to a flu pandemic today. Based on the World Health Organization’s handling of the 2009 swine flu pandemic, students design a response to a rapidly spreading, deadly flu. This activity gives perspective on one of the biggest accomplishments of modern public health, the ability to mitigate the effects of pandemic disease, as well as revealing the limitations of the modern global health system.

Objectives
Students will:
• investigate past pandemics and the current system in place for handling a pandemic
• apply critical problem-solving skills in a group

Inquiry/Critical Thinking Questions
• What are the characteristics of a pandemic?
• What sorts of pandemics have occurred in the past?
• What are examples of present-day pandemics?

Time Required
One 60-minute class

Key Concepts
• pandemic
• epidemic
• seasonal versus pandemic flu

National Standards Addressed
National Council for the Social Studies
2. Time, Continuity, and Change
3. People, Places, and Environments
5. Individuals, Groups, and Institutions
7. Global Connections

National Science Education Standards
F. Science in Personal and Social Perspectives

National EfS Standards
2.4 Social and Cultural Systems: Global Health
2.4 Social and Cultural Systems: Appropriate Technology
3.2 Collective Action: Community-based and Societal Level Decision-making
3.2 Collective Action: Public Discourse and Policy
3.2 Collective Action: Organizational and Societal Change Skills and Strategies

Materials/Preparation
Handout: The Swine Flu Pandemic of 2009, 1 per student

Activity
Introduction
1. Ask the class if anyone (or anyone they know) has been diagnosed with the flu. Follow up by asking what their symptoms were and what they did to deal with those symptoms. Write these on the board as they report them.
2. Ask if anyone has read about the swine flu (H1N1) or knows what the symptoms are. (fever, vomiting, chills, fatigue)
3. After the responses start to slow down, ask the class to look at the board and brainstorm what behaviors might contribute to the spread of the flu virus. (examples include: going to school/work sick, coughing near others, not washing hands)
4. Based on their ideas about what helps flu spread, ask students to brainstorm actions that would help prevent its spread. (examples include: staying home from school, hospitalization or seeing a doctor, taking medication, and vaccination)
5. Ask the class to think about how behaviors related to both spreading and preventing illness are related to public health. (Recall that public health seeks to protect the health of a community, through education and prevention.)
6. Explain to the class that while seasonal flu mutates only a little from year to year, pandemic flu (like swine flu) is always a new form of disease. Each year, specific characteristics of pandemic flu are unknown when it is first discovered (these include: the rate of spread; resistance to drugs; ease of developing and producing a vaccine; symptoms and their severity; and the mortality rate of those infected). These unknowns make pandemic flu potentially much more dangerous than seasonal flu, as past outbreaks have shown.

Note: You may want to define pandemic (an outbreak of disease that reaches across the globe).

7. Tell the class that today they will be studying the methods that public health agencies have developed to deal with outbreaks of pandemic flu.

**Steps**

1. Distribute the handout *The Swine Flu Pandemic of 2009* to each student. Give students about 10 minutes to read through the first part of the handout. Tell them not to answer the questions on the handout just yet.

2. Review the main points of the handout together as a class. What was the pandemic? Was it severe? How did the world respond?

3. Divide the class into groups of about 3-4. Each group will work through the questions on the handout.

4. With about 10 minutes left in class, bring the students back together for discussion of the questions on the handout.

5. Conclude with the following discussion questions.

**Discussion Questions**

1. In addition to the various responses mentioned in the handout, how else might a government respond to a flu epidemic?

2. How could different responses work together? Do any of the responses work against each other?

3. Could a global flu pandemic today cause as much devastation as the pandemics of the past? What advances in medicine and public health have made this less likely?

4. What tensions are there between economic and public health objectives? Which should a government prioritize in a crisis?

**Additional Resources**

- **Website:** Timeline: World History of Pandemics
  This resource offers a short recap of major pandemics between 412 B.C.E. to 2009, by Mike Adams, editor of NaturalNews.com.

- **Website:** The 2009 H1N1 Pandemic: Summary Highlights, April 2009-April 2010
  [http://www.cdc.gov/h1n1flu/cdcresponse.htm](http://www.cdc.gov/h1n1flu/cdcresponse.htm)
  The CDC’s synopsis of the 2009 outbreak of swine flu and the world’s response.
Public health planning for a flu pandemic depends on knowing the nature of the virus being fought—especially how fast it spreads and how deadly it is. H5N1 (the avian flu pandemic of 2003) was very deadly for humans—about 6 out of every 10 people who caught it died—but only rarely did it make the jump from birds to humans, or from one human to another. Thus, it killed often but spread slowly, reaching only a few countries.

Based on its past experience with the deadly avian flu, the World Health Organization (WHO) responded to H1N1 (the swine flu outbreak of 2009) by attempting to contain the virus’ spread, mostly by giving people antiviral drugs (medicine used to cure or control viral infections). Whereas that approach would be effective for viruses like the avian flu that spread slowly, it was ineffective in dealing with a rapidly transmitted swine flu. The swine flu spread to several countries within only a few days. WHO then declared a high-level emergency pandemic alert based on how widespread the disease had become and called for mass vaccinations worldwide.

The vaccine was developed quickly, within 32 days of when the virus was identified. But, getting the vaccine to people all over the world proved problematic, as many countries had no plan in place for vaccinating large numbers of people. Distribution of the vaccine was slowed down by several things, including the processes of making legal agreements with vaccine manufacturers and getting regulatory approvals in each country. Also at play was a delay in translating WHO’s guidance into all of the languages of WHO members.

External communications were also a problem. Once WHO had declared a worldwide pandemic of the highest level, it cut off regular press contact, leaving the world to panic. Most importantly, WHO declared a global pandemic but never explained clearly that this meant only that the disease had gone global. WHO charted only how many people were infected without commenting on the severity of the disease (i.e., how many people were being hospitalized or dying).

The effect was to leave national governments on their own to make public statements about the severity of the swine flu. Government predictions tended to be overly drastic, in hindsight. The U.S., for example, predicted up to 90,000 deaths in that country alone, when only about 12,000 deaths actually occurred. To put that number in perspective, anywhere from 3,000 to 49,000 people die from seasonal influenza in the U.S. each year.

The initial outbreak of swine flu documented in Mexico appeared severe. Fifty-eight people were hospitalized between March to June 2009; 41% of those people died. Yet, the overall mortality rate of people who got H1N1 was not nearly that high. Most people who contracted H1N1 did not have to be hospitalized.

The U.S. government’s response to the pandemic was unique to other nations. Although it did distribute many antiviral drugs (like Tamiflu) and provide vaccinations to limit the disease’s spread, the government ignored advice to close the border with Mexico and shut down schools to prevent the flu from spreading. The government stayed in constant contact with the press and the public and was able to deal with many rumors very effectively in order to prevent a panic. Since the actual severity of the swine flu proved to be low, the U.S. government’s approach turned out to be an appropriate response.

2 Ibid.
3 Ibid.
6 “Report of the Review Committee on the Functioning of the International Health Regulations (2005) and on Pandemic Influenza A (H1N1),” World Health Organization.
The Swine Flu Pandemic of 2009, page 2

1. How did WHO attempt to limit the worldwide spread of the swine flu?

2. How did the U.S. respond to the swine flu outbreak?

3. Do you think the U.S. responded appropriately to the swine flu, or just got lucky?

4. How could the U.S. have responded differently, and what would the costs have been?

5. Which response do you think was the better approach, and why?

6. How would your answer change if the swine flu turned out to be deadlier?

7. WHO concluded in 2011 that the main lesson from H1N1 is that the world is not well-prepared for another flu pandemic. Based on what you’ve read about pandemics, what should be done when new (and possibly deadlier) forms of pandemic flu are discovered?
Activity 4: Life: The Long and Short of It

Overview
Students compare life expectancy, a common indicator of good health, among several countries and discuss possible explanations for the differences. Students also examine the connection between per capita expenditures on health care and life expectancy.

Objectives
Students will:
• identify the many factors that affect life expectancy
• compare life expectancy rates for a variety of countries

Inquiry/Critical Thinking Questions
• Why do people in some countries live longer than people in other countries?
• What factors contribute to long life expectancy?

Time Required
One 30–45 minute class (45 minutes if students undertake additional research)

Key Concepts
• life expectancy
• global health
• national health expenditures
• health care

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments

National Science Education Standards
F. Science in Personal and Social Perspectives

National EFS Standards
2.4 Social and Cultural Systems: Global Health

Materials/Preparation
Handout: Life Expectancy Country Cards, 1 card per student (if you do not use all 30 cards, be sure that you still include a range of life expectancies in the ones you do use)

Handout/overhead: Top 34 Countries for Life Expectancy, 1 per student, or display with an overhead or document camera

Tools: Sheets of blank 8.5 x 11 paper, 1 per student

Activity
Introduction
1. Begin by asking the class why they think people in some countries live longer than people in other countries.

2. Ask students to define life expectancy. (Life expectancy is the average number of years, for an entire population, that an individual born today would be expected to live if current mortality rates continued—i.e., how long individuals in a certain population are expected to live if the conditions affecting life do not change.)

Steps
1. Give each student 1 Life Expectancy Country Card and 1 sheet of blank paper.

2. Have students transfer the information on their card to the blank paper so it is large enough for the class to read.

3. Tell students to look at their Life Expectancy Country Card and then stand in a line in order of longest to shortest life expectancy as you ask: “Is there anyone who will live to be over 80? Over 70? Over 60? Over 50? Over 40? Over 30?” Have students form a half-circle so all country cards are visible to the rest of the class and/or have them read aloud their country and life expectancy.

Option: Have students identify their country on a map.

4. Either continue with the following lesson extension, or conclude with the following discussion questions.
Activity 4: Life: The Long and Short of It  continued

**Student Research Option**

1. Give each student, or show as an overhead, *Top 34 Countries for Life Expectancy*.

2. Have students review the information and answer the following questions:
   - Who spends the most on health care per person? Who spends the least?
   - What could account for such a long life expectancy in Japan, considering its per capita health expenditures are lower than many of the other of the top countries?
   - Why do you think the United States has a shorter average life expectancy than other countries on the list?
   - Why might Costa Rica be tied with the U.S. for life expectancy if the U.S. spends more than 6 times the amount of money that Costa Rica spends on health care?

3. Conclude with the following discussion questions.

**Discussion Questions**

1. Why do you think there is such a large gap in life expectancy between countries (consider total range is from 47 to 83 years)?

2. Do you think life expectancy is a good way to measure health?

3. Aside from health care expenditures, what other characteristics of a country might correlate with life expectancy?

4. Identify some possible characteristics of the countries with long, mid-range, and short life expectancies.

5. If we only look at life expectancy as an indicator of a country’s health, what other information might we be missing?

**Additional Resources**

- **Film:** *Rx for Survival: A Global Health Challenge*
  http://www.pbs.org/wgbh/rxforsurvival/
  From vaccines to antibiotics, clean water to nutrition, bioterror threats to the HIV/AIDS pandemic, this 6-part series tells the stories of global health champions and the communities they strive to protect. (PBS, 2006, 360 minutes)

- **Book:** *Mountains Beyond Mountains*
  A true story of Paul Farmer, a doctor who sets out to diagnose and cure infectious diseases and to bring the lifesaving tools of modern medicine to people in Haiti. (Tracy Kidder, Random House, 2003)

- **PowerPoint:** *Life Expectancy*
  The nonprofit Gapminder, which helps people to visualize health-related statistics, has a short PowerPoint that explains how life expectancy is calculated, using Sweden and Burundi as examples.

- **Website:** *The Human Development Report*
  http://hdr.undp.org/
  The Human Development Report (HDR), a project of the United Nations Development Program (UNDP), provides data and statistics on human development, including life expectancy and literacy rates.

- **Website:** *NationMaster*
  www.nationmaster.com
  NationMaster provides country statistics on all sorts of things, from life expectancy to educational attainment. You can compare health statistics between countries using an online tool.
<table>
<thead>
<tr>
<th>Country</th>
<th>Life Expectancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>83 years</td>
</tr>
<tr>
<td>Australia</td>
<td>82 years</td>
</tr>
<tr>
<td>Norway</td>
<td>81 years</td>
</tr>
<tr>
<td>Korea</td>
<td>80 years</td>
</tr>
<tr>
<td>United States</td>
<td>79 years</td>
</tr>
<tr>
<td>Cuba</td>
<td>78 years</td>
</tr>
<tr>
<td>Panama</td>
<td>77 years</td>
</tr>
<tr>
<td>Croatia</td>
<td>76 years</td>
</tr>
<tr>
<td>Venezuela</td>
<td>75 years</td>
</tr>
<tr>
<td>China</td>
<td>74 years</td>
</tr>
<tr>
<td>El Salvador</td>
<td>72 years</td>
</tr>
<tr>
<td>Jamaica</td>
<td>71 years</td>
</tr>
<tr>
<td>Thailand</td>
<td>70 years</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>69 years</td>
</tr>
<tr>
<td>Russia</td>
<td>68 years</td>
</tr>
<tr>
<td>Nepal</td>
<td>67 years</td>
</tr>
<tr>
<td>Madagascar</td>
<td>65 years</td>
</tr>
<tr>
<td>Tuvalu</td>
<td>64 years</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>63 years</td>
</tr>
<tr>
<td>Haiti</td>
<td>62 years</td>
</tr>
<tr>
<td>Cambodia</td>
<td>61 years</td>
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<tr>
<td>Kenya</td>
<td>60 years</td>
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<tr>
<td>Rwanda</td>
<td>59 years</td>
</tr>
<tr>
<td>Benin</td>
<td>57 years</td>
</tr>
<tr>
<td>Liberia</td>
<td>56 years</td>
</tr>
<tr>
<td>Tanzania</td>
<td>55 years</td>
</tr>
<tr>
<td>Cameroon</td>
<td>51 years</td>
</tr>
<tr>
<td>Mozambique</td>
<td>49 years</td>
</tr>
<tr>
<td>Afghanistan</td>
<td>48 years</td>
</tr>
<tr>
<td>Malawi</td>
<td>47 years</td>
</tr>
</tbody>
</table>

Life expectancy numbers are averaged for both sexes, 2009.
### Top 34 Countries for Life Expectancy

<table>
<thead>
<tr>
<th>Country</th>
<th>Life Expectancy in 2009 (years)</th>
<th>Health care expenditure per capita in 2008 ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>83</td>
<td>2,817</td>
</tr>
<tr>
<td>San Marin</td>
<td>83</td>
<td>3,690</td>
</tr>
<tr>
<td>Andorra</td>
<td>82</td>
<td>3,128</td>
</tr>
<tr>
<td>Australia</td>
<td>82</td>
<td>3,365</td>
</tr>
<tr>
<td>Iceland</td>
<td>82</td>
<td>3,583</td>
</tr>
<tr>
<td>Israel</td>
<td>82</td>
<td>2,093</td>
</tr>
<tr>
<td>Italy</td>
<td>82</td>
<td>2,836</td>
</tr>
<tr>
<td>Monaco</td>
<td>82</td>
<td>5,750</td>
</tr>
<tr>
<td>Singapore</td>
<td>82</td>
<td>1,833</td>
</tr>
<tr>
<td>Spain</td>
<td>82</td>
<td>2,941</td>
</tr>
<tr>
<td>Switzerland</td>
<td>82</td>
<td>4,815</td>
</tr>
<tr>
<td>Canada</td>
<td>81</td>
<td>3,867</td>
</tr>
<tr>
<td>Cyprus</td>
<td>81</td>
<td>1,838</td>
</tr>
<tr>
<td>France</td>
<td>81</td>
<td>3,851</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>81</td>
<td>5,996</td>
</tr>
<tr>
<td>Netherlands</td>
<td>81</td>
<td>4,233</td>
</tr>
<tr>
<td>New Zealand</td>
<td>81</td>
<td>2,655</td>
</tr>
<tr>
<td>Norway</td>
<td>81</td>
<td>5,207</td>
</tr>
<tr>
<td>Sweden</td>
<td>81</td>
<td>3,622</td>
</tr>
<tr>
<td>Austria</td>
<td>80</td>
<td>4,150</td>
</tr>
<tr>
<td>Belgium</td>
<td>80</td>
<td>4,096</td>
</tr>
<tr>
<td>Finland</td>
<td>80</td>
<td>3,299</td>
</tr>
<tr>
<td>Germany</td>
<td>80</td>
<td>3,922</td>
</tr>
<tr>
<td>Greece</td>
<td>80</td>
<td>3,010</td>
</tr>
<tr>
<td>Ireland</td>
<td>80</td>
<td>3,796</td>
</tr>
<tr>
<td>Malta</td>
<td>80</td>
<td>4,197</td>
</tr>
<tr>
<td>Republic of Korea</td>
<td>80</td>
<td>1,806</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>80</td>
<td>3,222</td>
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<tr>
<td>Chile</td>
<td>79</td>
<td>1,088</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>79</td>
<td>1,059</td>
</tr>
<tr>
<td>Denmark</td>
<td>79</td>
<td>3,814</td>
</tr>
<tr>
<td>Portugal</td>
<td>79</td>
<td>2,578</td>
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<td>Slovenia</td>
<td>79</td>
<td>2,420</td>
</tr>
<tr>
<td>United States of America</td>
<td>79</td>
<td>7,164</td>
</tr>
</tbody>
</table>

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Activity 5: In Sickness and in Health

Overview
Students create a diagram to illustrate the various factors contributing to the Latino Paradox—the discovery that recent immigrants to the U.S. from Latin America are, on average, healthier than much wealthier segments of the United States population. This activity emphasizes the connections between health and other aspects of life. In the end, students will understand that the health of an individual depends in many ways on the people around them and the social circumstances.

Objectives
Students will:
• identify the factors that contribute to physical health
• analyze interconnections among lifestyle, health, society, and economy
• discover underlying contributors to a healthy life

Inquiry/Critical Thinking Questions
• What are health impacts of a typical U.S. diet and lifestyle?
• What is surprising about the Latino Health Paradox?
• Where do we get our ideas about wealth and health?

Time Required
One 60-minute class

Key Concepts
• Latino Health Paradox
• systems dynamics
• interconnections

National Standards Addressed
National Council for the Social Studies
2. Culture
3. People, Places, and Environments
5. Individuals, Groups, and Institutions

National Science Education Standards
F. Science in Personal and Social Perspectives

National EFS Standards
2.4 Social and Cultural Systems: Global Health
3.2 Collective Action: Community-based and Societal Level Decision-making

Materials/Preparation
Tools: Large sheets of butcher or chart paper, 1 per group of 3–4 students
Tools: Colored marking pens, 3–4 per group
Data projector with Internet access to show three 1-minute clips from Unnatural Causes, Episode 3: “Becoming American” (http://www.unnaturalcauses.org/episode_descriptions.php?page=3)

Optional: Articles about the Latino Paradox—photocopy one or more for students, or arrange for Internet access to read the articles

Activity
Introduction
1. Ask students to think about what the term health means. (WHO defines health as “a state of complete physical, mental, and social well-being.”)
Activity 5: In Sickness and in Health  continued

2. Follow up by asking them what you need to be healthy. Push them to get beyond medical answers (such as doctors and medicine, which are intended primarily to help the sick) and start thinking of things like sleep, effective ways to deal with stress, healthy food—perhaps even things like friends/family and hope for a better future.

   - Option: Distribute copies of one or more of the news articles to add to the information from the video, or have students read the articles online.

4. Go over the definition of the Latino Paradox Health with students. (Recent Latino immigrants to the U.S. are in better health than U.S. residents, despite large economic disparities.)

5. Let students know that they will be creating a connection circle to brainstorm the possible contributors to the Latino Paradox Health.

Steps
1. Break students into groups of 3.
2. Ask student groups to start by making a list of variables from the video (and the article) that seem to be related to the Latino Paradox Health—not just variables related to causes (e.g., social networks) but also consequences (e.g., death rates). If students can make a convincing case for including another variable not mentioned in the article or video, they may do so. Each group should list at least 6 factors. (examples include: rates of disease for Latino immigrants, child mortality, access to health care, strength of family ties, availability of ways to deal with stress, sense of belonging in a community, availability of healthy and nutritious meals, availability of care for children and the sick, hope for the future, leisure time for exercise, access to education)

3. If students are not familiar with variables, explain to students that a variable is anything that can increase or decrease in amount. Variables should not be qualitative, such as “good health” but should be quantifiable, such as “mortality rate.”

4. Tell students that they will use their lists to create a connection circle, a systems modeling tool that helps to visualize connections among variables within a system.

5. You can use a simple example like this one to illustrate how a connection circle works:

   ![Connection Circle Example](image)

6. Explain that variables are written around the outside of the circle. Each of these variables is a factor that is subject to change. The arrows are drawn from cause to effect. For example, as reading instruction is increased, the number of books read also increases. As the number of books read increases, so does enjoyment of reading.

   Option: Various other systems models could be utilized in this activity, including causal loops, a fishbone diagram, and an iceberg model.

   Option: Rather than constrict students to a particular model, allow them to devise their own graphic representation to show how the variables are connected. Ask groups, either on butcher paper or using computer tools, to sketch a diagram explaining how these 6 variables are connected to health of the Latino immigrant community in the U.S.

7. Pass out paper and markers/pens to each group.
Activity 5: In Sickness and in Health  continued

8. Instruct groups to draw a large circle on their paper and list their variables around the outside edge of the circle.

9. Give students 10 minutes to determine how the variables are connected with each other. When one variable is directly connected to another variable, students should draw an arrow from the cause to the effect. For example, an arrow might be drawn from ‘strength of family ties’ to ‘availability of care for children’ because an increase in the strength of family ties means an increase in the willingness of people to care for children in the family rather than pay for babysitter. (Alternatively, another factor—‘proximity of family members’—could be introduced between the two previous factors: strength of family ties keeps family members living closer together, which in turn increases the availability of care for children.) Another arrow might be drawn from ‘employment’ to ‘availability of healthy and nutritious meals’ because an increase in hours worked could, past a certain point, decrease their ability to cook for their family.

   • Note: Some variables may be connected to many others, and some variables may not have any connections to other variables. When a variable is not connected to any others, it is likely that another variable needs to be added to the outside of the circle.

10. As students work, walk around the room and ask groups to articulate why they made connections between certain variables.

11. Ask student groups to determine what variables could be introduced into the system to reduce the ability of the community to make people healthy. (These variables reduce the health of immigrants who have been here a number of years.) Have students list these on the back of their connection circle. For each variable introduced that “weakens” the Latino Paradox Health, students should identify:

   • Why this weakness (variable that negatively affects health) exists, despite its negative consequences for the system
   • How the negative impact of that action could be mitigated (lessened)

12. Conclude with a class discussion or journal activity using one or more of the following questions.

Discussion Questions

1. How could creating a connection circle help you to solve a problem? In this case, what problem could the connection circle you drew help to solve?

2. Which variables have lots of arrows going in and out? What does this signify?

3. In general, what might be immigrants’ short-term goals? In general, what might be immigrants’ long-term goals? How might these goals conflict?

4. Aside from new immigrants, health in the United States currently depends mostly on wealth. How could the relationship between money and health be weakened, so that those without much money could remain healthy?

5. What role does the government play in the health of poor communities?

6. How can individuals like you improve the health of your community?

Additional Resource

• Video: Unnatural Causes

http://www.unnaturalcauses.org/about_the_series.php

Seven-part DVD series, available to high schools at a 75% discount.
Chapter 15
Peace and Conflict

CHAPTER BIG IDEAS
- Violent conflicts are a barrier to improved human security and sustainability.
- Critically analyzing root causes of conflict can help to create sustainable solutions.
Guiding Questions
- What causes conflict and why do conflicts persist around the globe?
- How can we be involved in efforts to decrease conflict and increase peace?

Key Concepts
- peace
- conflict
- human security
- interstate war
- intrastate war
- genocide
- terrorism

Supporting Vocabulary
- violence
- intractable
- infrastructure
- ethnic cleansing
- propaganda

Service Learning Component

Service Learning Project Idea:
- Question: What are ways we can build upon or increase peace in our local school community?

Hook Resource: Mix It Up: Score One for Humanity
http://www.tolerance.org/blog/mix-it-score-one-humanity
This article documents how a high school in Dearborn, Michigan has a Mix It Up event at their school.

Project: Students organize a “Mix It Up Day” at school where they promote and teach their classmates how to communicate peacefully with students of all different types of backgrounds. Mix It Up encourages students to identify, question, and cross social boundaries. Students learn how to break these boundaries in the lunch room. To get started, students can visit Teaching Tolerance (http://www.tolerance.org/mix-it-up/get-started) to learn more about how to structure this event.

Additional Resources:
- Website: The Teen Files
http://www.challengeday.org/videos.php
This 15-minute video excerpt highlights a typical Challenge Day program. Challenge Day brings 2 trained individuals to a school to lead a workshop for students and staff about how to accept people of different backgrounds and breakdown separation.
Project Based Learning Component

Project Based Learning Idea:

- **Overview:** Students develop a peace talk that persuades people in their local school or neighborhood community for the need to address a specific conflict-related issue.
- **Driving Question:** What can we as a community do to address a local conflict-related issue that is impacting us?
- **Hook Resource:** TED Talk: A Realistic Vision for World Peace
  
  ![TED Talk](http://bit.ly/MhTbmF)
  
  In this 11-minute video, a Nobel Peace Prize Laureate—Jody Williams—speaks about how to bring about and sustain world peace.
- **Individual Project:** Students individually create a written form of their peace talk to send to an organization, government official, or community member about how to best address a conflict-related issue impacting them.
- **Group Project:** In groups of 3 to 4, students create a persuasive peace talk that they will give to school officials or community officials about best ways to address a conflict-related issue.

• **Additional Resources:**
  - **Website:** Martin Luther King Jr.’s "I Have a Dream" speech
  - **Article:** "City Students Hold Peace Event"
    [http://bsun.md/MhUdyS](http://bsun.md/MhUdyS)
  - **Website:** Peace Jam’s website
    [http://www.peacejam.org](http://www.peacejam.org)

This website allows for students to view a number of Nobel Laureates speaking about their experiences working to build peaceful communities.

Summative Assessment

Chapter Test

Connections

**World History connections:**
Historic trends in global conflict, interstate, and intrastate wars

**Economics connections:**
How conflicts impact economies

**Geography connections:**
Case studies of conflicts around the world

**Civics connections:**
Personal and structural solutions to conflict
Activities in Teacher’s Guide: Suggested Sequence

<table>
<thead>
<tr>
<th>Day</th>
<th>Reading:</th>
<th>Activity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>Introduction to Peace and Conflict</td>
<td>Conflict Watch—Students watch a world news report from any major television channel. They take note of a conflict mentioned, the bias in which it is presented, and research other media sources to get all sides of the story. They then present the information they learned to their classmates.</td>
</tr>
<tr>
<td>Day 2</td>
<td>Background on Peace and Conflict</td>
<td>To Fight or Not to Fight?—Students examine a variety of interstate and intrastate conflicts through a role-playing activity. They learn to identify root causes of conflict, how to separate positions from interests in a conflict, and experience mediating a conflict.</td>
</tr>
<tr>
<td>Day 3</td>
<td>Peace and Conflict Today</td>
<td>Increasing the Peace—Students read several scenarios related to different types of conflicts. They critically analyze what types of actions would escalate the conflict and what types of actions would resolve the conflict.</td>
</tr>
<tr>
<td>Day 4</td>
<td>Pathways to Progress: Peace and Conflict</td>
<td>Peaceful Solutions, Day 1—Student take on the role of peace diplomats who offer specific ideas for developing greater security and stability within a given country.</td>
</tr>
<tr>
<td>Day 5</td>
<td>Pathways to Progress: Peace and Conflict</td>
<td>Peaceful Solutions, Day 2—Student take on the role of peace diplomats who offer specific ideas for developing greater security and stability.</td>
</tr>
</tbody>
</table>
Discussion Questions from the Chapter Reading

Introduction to Peace and Conflict
1. What factors might allow a mild conflict to escalate into a violent, high intensity one?
2. The conflict between the people of Palestine and Israel is considered an intractable conflict. What are other examples of intractable conflicts that you know of?
3. Benjamin Franklin once said, “There was never a good war, or a bad peace.” Do you agree with this statement? Why or why not?

Background on Peace and Conflict
4. Why do you think a government would want to inflict genocide on a specific group of people?
5. Why do some countries in Asia and Africa exhibit characteristics consistent with an increased likelihood of internal conflicts?

Peace and Conflict Today
6. How does natural resource scarcity fuel conflict?
7. What are steps governments can take to transition a country to a more peaceful society after a conflict ends?

Pathways to Progress: Peace and Conflict
8. Why might increasing individuals’ access to education, jobs, and housing help to decrease conflict around the world?
9. Why do you think Anderson Sa was exposed to conflict at such a young age? What contributed to this early exposure?
Chapter Assessment: Peace and Conflict, page 1

Recall
Match the following words on the left with their definition on the right.

1. Conflict threat of unlawful violence to create fear
2. Intrastate war freedom from danger, poverty or apprehension
3. Terrorism internal conflicts within a country
4. Human security a fight, battle, or struggle, especially a prolonged struggle

Reasoning/Explanation
Complete the following multiple choice questions by choosing one correct answer.

5. Which of the following characteristics best illustrates an increased likelihood for intrastate war?
   a. slow population growth within a country
   b. high economic growth
   c. recent political elections
   d. ethnic differences

6. Which statement best describes how ineffective governance can be a precursor to conflict?
   a. Ineffective governance provides social services to its citizens.
   b. Ineffective governance increases likelihood of higher unemployment.
   c. Ineffective governance provides citizens some ability to voice their concerns.
   d. Ineffective governance increases the amount of rural migration from urban areas.

7. What type of violence is described in the following example?
   A country targets a specific ethnic, religious, national, or racial group with the intention to systematically eliminate them through mass killing.
   a. terrorism
   b. genocide
   c. police brutality
   d. nuclear warfare
Chapter Assessment: Peace and Conflict, page 2

8. Which of the following best provides a way to decrease conflict?
   a. increasing access to education, jobs, and housing
   b. holding peace rallies throughout the year
   c. training more citizens to be in the military
   d. improving wildlife conservation efforts

9. Which of the following best explains the trend in present-day conflicts?
   a. International conflicts have increased significantly during the last several decades.
   b. Genocides have decreased because of international peace keeping.
   c. Intrastate conflicts have increased mostly due to natural resource exploitation.
   d. Terrorism has decreased because of a strong international criminal court system.

10. Which statement best explains the link between conflict and sustainability?
    a. Conflicts decrease human security and environmental stability.
    b. Conflicts increase sustainability if people are fighting for the right cause.
    c. Conflicts increase military security within a country which supports general human security.
    d. Conflicts increase the possibility of prolonged peace after ending.

11. Use the graphic organizer to answer the question.
    Which statement is an accurate representation of what would replace the X in the graphic organizer?
    a. allowing guerilla soldiers to have access to land so they can improve their quality of life
    b. satisfying basic social needs of citizens including access to food, water, and health
    c. enforcing an authoritarian style of governance that brings stability to the country
    d. putting up barriers so no refugees or immigrants will enter the country
Chapter Assessment: Peace and Conflict, page 3

12. Why does terrorism attack people’s fundamental concept of safety?
   a. Terrorists use highly sophisticated weapons to harm people.
   b. Terrorists use kidnapping as a means to harm anyone connected to the government.
   c. Terrorists use violence to harm innocent bystanders unknowingly in public spaces.
   d. Terrorists use ethnic cleansing as a way to strategically wipe out an entire group.

13. Which statement below best describes why the conflict in Rwanda started?
   a. A severe drought forced many people to move from the north of the country to the south therefore decreasing resources like water and food.
   b. The military government did not distribute money equally to all groups of people, causing some to live in poverty.
   c. The colonial rulers from Belgium reinforced the ideas that Tutsis were superior to Hutus, causing ethnic strife.
   d. The country had a large population of youth between the ages of 15 and 24 years old.

14. Which best replaces X in the flow chart?

   In 1917, the British came up with the Balfour Declaration.  
   The declaration gave support to the construction of a homeland in Palestine for Jewish people.  
   X  
   In 1967, Israel initiated the Six-Day War, which ousted Egypt and Jordan from the former Palestinian territory.

   a. The Jewish population divided Palestine up equally with the Arabs living there and called their land Israel.
   b. The Jewish population created Israel and occupied three quarters of Palestinian territory.
   c. The Arab population living in Palestine wanted control of three quarters of Palestinian territory.
   d. The Arab population created Israel, a location where Jewish and Arab populations could live peacefully together.
Application/Complex Reasoning

Answer the following short answer questions below.

15. Review the map and then answer the questions below.

**Population at War between 1945 and 2004**

**Part A.** Name 2 characteristics that are consistent with an increased likelihood for internal conflicts.

**Part B.** Identify one way a government can create a peaceful society after a conflict has happened.

16. Use the quote below and what you learned from the chapter reading to answer the questions below.

“We shall defend our island, whatever the cost may be, we shall fight on the beaches, we shall fight on the landing grounds, we shall fight in the fields and in the streets, we shall fight in the hills; we shall never surrender.”

—Winston Churchill, British politician

**Part A.** What is the relationship between conflict and sustainability within a country?

**Part B.** Identify a solution that would help to increase sustainability within a country.
Recall (4 points total)

1. Conflict—a fight, battle, or struggle, especially a prolonged struggle
2. Intrastate war—internal conflicts within a country
3. Terrorism—threat of unlawful violence to create fear
4. Human security—freedom from danger, poverty or apprehension

Reasoning/Explanation (10 points total)

5. d  
6. b  
7. b  
8. a  
9. c  
10. a  
11. b  
12. c  
13. c  
14. b

Application/Complex Reasoning (6 points total)

15. Part A. Answers will vary. (1 point)
   • high populations
   • large populations between 15 and 24 years old
   • low income levels
   • low economic growth
   • recent political instability
   • ethnic differences
   • corruption by elites
   • natural resource exploitation
   • country borders arbitrarily drawn by European colonizers
   • history of colonization

   Part B. Answers will vary. (2 points)
   • reintegrating soldiers back into society
   • controlling small arms trade
   • reforming the constitution
   • allowing for free elections and democracy
   • promoting cooperation among ethnic groups
   • satisfying basic social needs of citizens

16. Part A. Answers will vary. (1 point)
   • Conflict and the economy are related because during a time of war, a country’s economy slows down.
   • During extended conflicts, institutions such as banks and businesses are at risk of collapsing.
   • Conflict and society are related because in times of violent conflict, refugee and migrant populations tend to increase.
   • Soldiers may have a difficult time reintegrating back into society because of physical or psychological ailments.
   • Conflict and the environment are related because during times of conflicts, biodiversity is at risk of decreasing.
   • Widespread destruction of land is at risk of increasing.
   • Chemical warfare can cause health problems.

   Part B. Answers will vary. (2 points)
   • Responding to abusive governments can help punish perpetrators of war crimes to justice.
   • Protecting natural resources can help to ensure these resources do not disappear and cause conflict.
   • Securing access to education, jobs, and housing can increase stability within a country.
   • Bridging differences between people can help overcome tensions and social divisions.
Activity 1: Conflict Watch

Overview
Students watch a world news report and investigate a story related to conflict. Through this investigation, students identify the bias of how the conflict is reported. They will then research other media outlets from other countries to compare and contrast the conflict. They will present this information back to their classmates.

Objectives
Students will:
• investigate a story related to conflict
• ask media literacy questions about the bias of the story
• analyze root causes of this conflict

Inquiry/Critical Thinking Questions
• Why would media be biased when reporting about a given conflict?
• What are ways to identify this bias?
• How can solutions to conflicts involve all stakeholders in equal ways?

Time Required
One 45-minute class plus time outside of class

Key Concepts
• conflict
• bias
• media literacy

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments

National Science Education Standards
F. Science in Personal and Social Perspectives

National EfS Standards
2.4 Social and Cultural Systems: Peace and Conflict

Materials/Preparation
Handout: Conflict Watch, 1 per student
Internet access
Activity 1: Conflict Watch  continued

Activity

Introduction
1. Ask students to brainstorm examples of news stories related to conflict.
2. Explain how conflict related issues could include anything related to politically motivated crimes, suicide bombings, assassinations, terrorism, nuclear weapon development, social unrest, rioting, civil war, war crimes, and air strikes.
3. Tell them that they will be watching a world news report outside of class to learn about current conflicts happening around the world. They can watch this report from major television news outlets such as CNN or ABC.
4. Explain that they will choose one conflict mentioned in the news report.
5. While learning about this conflict, they will ask questions about the bias of the way it was reported. Refresh students on the meaning of bias, or presenting a specific perspective on a given issue.

Steps
1. Ask students why a news source may have bias when presenting a given conflict.
2. After watching the news clip, they will research two additional sources that report on this topic (this can be done inside of class or assigned as homework).
3. Challenge students to research additional sources that are from other countries (i.e., news clips from BBC or Al Jazeera; newspapers from India, South Africa, France).
4. Pass out the handout, Conflict Watch, to all students.
5. The following day, students will present information back to their classmates about the conflict they researched.

Discussion Questions
1. What surprised you when you were watching the news?
2. Did the additional resources you researched share the same bias as the news report you watched?
3. Why do you think a story may be reported differently from different parts of the world?
4. In 1993, 7 out of 10 local TV stories on violence in California involved youth, yet youth made up only 14% of violent arrests in California that year. Why do you think the news showed so many more stories on youth violence than what was actually occurring?
5. Are there any commonalities among the root causes you and your classmates shared related to the conflicts you researched?

Additional Resources
• Website: PBS Newshour Extra
http://www.pbs.org/newshour/extra/teachers/arts/index.html
This website provides students and teachers with quality educational resources based on current issues and events. News articles are created for students with background and context to understand complex topics, lessons plans are available for teachers, and opportunities to voice student opinions on these different topics are offered.

• Lesson: The Impact of Images: Considering the Place of Photojournalism Today
This lesson by Shannon Doyne and Holly Epstein Ojulvo in the New York Times’ Learning Network has students consider photojournalism’s impact on capturing images during times of war.

Directions: Watch a world news report show and identify one conflict mentioned. Then answer the related questions below.

1. What world news show did you watch?

2. What conflict did they report on?

3. Summarize what you learned about the conflict from the news clip.

4. Whose perspective is this story told from?

5. Whose story is not told in this message?
6. Research this specific conflict more in-depth by finding two additional sources that report on it. Then complete the chart below:

<table>
<thead>
<tr>
<th>Source A name:</th>
<th>What additional information did you learn from source A?</th>
<th>Is there any specific bias from this source?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source B name:</td>
<td>What additional information did you learn from source B?</td>
<td>Is there any specific bias from this source?</td>
</tr>
</tbody>
</table>

7. Based on all of these sources of information, who are the key people involved in this conflict?

_______________________________________________________________________________________
_______________________________________________________________________________________
_______________________________________________________________________________________

8. How would you summarize the conflict now that you have learned about it from three different perspectives?

_______________________________________________________________________________________
_______________________________________________________________________________________
_______________________________________________________________________________________

9. What other types of resources would you want to research to ensure you get the full picture related to this conflict?

_______________________________________________________________________________________
_______________________________________________________________________________________
_______________________________________________________________________________________
Activity 2: To Fight or Not to Fight?

Overview
Students examine a variety of interstate and intrastate conflicts through a role-playing activity. They learn to identify the roots of conflict, how to separate positions from interests in a conflict, and experience mediating a conflict.

Objectives
Students will:
• understand the roots of conflict
• learn to separate positions from interests
• analyze conflicts from multiple perspectives
• gain an understanding of how difficult conflicts are resolved

Inquiry/Critical Thinking Questions
• What are the sources of conflict?
• How are these sources of conflict connected to global issues?
• How can outsiders (e.g., mediators) help resolve conflicts?

Time Required
One 60-minute class

Key Concepts
• interstate and intrastate conflict
• scarcity
• positions and interests
• conflict mediation

National Standards Addressed
National Council for the Social Studies
1. Culture
3. People, Places, and Environments
5. Individuals, Groups, and Institutions
6. Power, Authority, and Governance
9. Global Connections

National Science Education Standards
F. Science in Personal and Social Perspectives

National Efs Standards
2.4 Social and Cultural Systems: Peace and Conflict
2.4 Social and Cultural Systems: Governance

Materials/Preparation
Handout: Conflict Scenarios, 3 copies per 15 students (each group will need 3 strips with the same 3 scenarios)
Handout: Conflict Resolution Worksheets, 2 copies per student (copy the handout on both sides of a single sheet of paper)
Activity 2: To Fight or Not to Fight?  continued

Activity

Introduction

1. Ask students to think of a conflict they have experienced recently. It could be a disagreement with family, friends, teachers, etc. Take a few minutes to have the students think of (or write) 1 or more conflicts they have had.

2. Ask for a volunteer to share their conflict with the class.

3. While they are explaining the conflict, write the basic elements of it on the board or overhead, breaking out the conflict as follows:

   • Who were the parties involved in the conflict?
   • Why did the student think he/she was right? This is their **Position**. Explain how to identify a position by writing the following terms common to position statements on the board: “It’s my right to …,” “I’ve always done it this way,” “It’s my responsibility/job to…,” “My beliefs teach me that ….”
   • What was the conflict about? This is the students’ **Interest**. Did the students want something they could not have; was it an argument based on different values, etc.
   • How (if) was the conflict resolved?

4. Tell the class they are going to role-play conflicts that take place around the world. Some of these conflicts arise from people competing for a scarce resource, and others from differences in culture, religion, and ethnic identity.

Steps

1. Read aloud 1 conflict scenario from the Conflict Scenarios handout and then walk students through the Conflict Resolution Worksheet, having them identify the parties involved, each party’s **position** (why they think they’re right), and each party’s **interests** (what they want).

2. Lead the class in brainstorming how the conflict might be resolved, focusing on the interests they identified for each party.

3. Tell the class they are going to repeat this process in small groups. Explain that each group will work on 3 scenarios. For each scenario, 2 students will take opposing sides in the conflict, and 1 student will act as a mediator. The mediator will keep track of time during the exercise, and can suggest resolutions to the conflict if the 2 sides reach an impasse during negotiations. The mediator’s job is to objectively help both sides reach a resolution through **empathy** and **compromise**—without giving up their vital interests.

4. Explain that for each scenario, the 2 students taking opposing sides in the conflict will have 2 minutes to read their scenario and fill out their Conflict Resolution Worksheet. They will have 3 minutes to present their positions and interests to the other side and try to reach an agreement. Be sure to emphasize that students will not be graded based on reaching an agreement. Some scenarios may not have resolutions. Students should keep in mind that they are representing an entire group or country in this negotiation, and that it is the students’ duty to represent their best interests. Therefore, they should think carefully before agreeing to a solution.

5. Arrange the class into groups of 3 and give each group 3 strips with the same 3 conflict scenarios. Give each student 2 (or 1 double-sided copy) Conflict Resolution Worksheets.

6. Have each student number off from 1 to 3. Number 1 will mediate scenario 1, number 2 will mediate scenario 2, and number 3 will mediate scenario 3. For each scenario, the mediator will assign the other 2 students to a side.

7. Have students begin role-playing each of their conflict scenarios, starting with scenario 1 and continuing until they finish the third scenario on their strip. Circulate around the room listening and helping as students work through their scenarios.
8. After each group has completed its 3 scenarios (approximately 20 minutes), bring the class back together for reflection questions.

Discussion Questions

1. How many of you reached a solution to at least one of the scenarios you role-played? (If time permits, have students briefly summarize one of their scenarios).

2. Did you have to give up something you wanted to reach a solution, or did you find a solution that gave both sides everything they wanted (met everyone's interests)?

3. Did you think the mediator in your group was fair, or did you feel the mediator was favoring the other side? Did you trust the mediator?

4. Do you think the solutions you reached are sustainable (i.e. meet present human, economic and environmental needs without compromising the ability of future generations to meet these needs) or do you think there will be another conflict around the same issue in the future?

5. What are some solutions that could be more sustainable? Do you think these sustainable solutions can happen without help from an outside party or entity? If you think a sustainable solution requires outside help, who should provide it?

6. Which scenarios did you find more difficult to solve: conflicts over resources or conflicts over values, religion, and ethnicity? Were you willing to give up some of your values for a solution? (Conflicts over core values and identity issues are often intractable. It is often impossible to move beyond discussing positions to discussing interests, since any concession is perceived as a renouncement of your core values and a “win” for an enemy).

Media Extension
Watch a film in class that explores the roots and human impacts of conflicts. During the movie, have the class write down the positions and interests they hear identified in the film. They can discuss these different perspectives after.

Additional Resources

- **Film:** Long Night's Journey Into Day: South Africa's Search for Truth and Reconciliation
  This 94-minute film by Frances Reid and Deborah Hoffman (2000) looks at South Africa's Truth and Reconciliation Commission, which examined crimes perpetrated during the apartheid era.

- **Book:** Mediation: Getting to Win Win
  A student handbook by Fran Schmidt that teaches students to resolve conflicts fairly and constructively. (Miami, FL: Peace Education Foundation, 2007)
To Fight or Not to Fight? Conflict Scenarios

Note: Each group of 3 students will need 3 strips with the same 3 scenarios. There are 5 strips, enough for 15 students. If you have more than 15 students, repeat the scenarios in different groups.

**Scenario 1: Grazing vs. Farming**  
**Sides: Farmers and Ranchers**
Soyland is a small country with a growing population. There is very little land left that is suitable for growing crops by Farmers. That same small amount of land is also used by Ranchers to graze their cows. The cows use a lot of land, but they can be sold for more money than the crops can be sold for. The people of Soyland rely on the crops grown by Farmers for food, and the Farmers rely on selling crops to support themselves.

**Scenario 2: International Water Rights**  
**Sides: Electra and Foodville**
A large river runs through two countries. In the past, the two countries have taken the same amount of water from the river. Now, Electra needs electricity and wants to build a dam on the river. Farmers in Foodville depend on water from the river to grow crops. If the dam is built, Foodville will have less water than before, and some farmers may not be able to produce as many crops.

**Scenario 3: Forced Co-existence**  
**Sides: Corats and Lemaks**
The people of the country of Bursia are divided into two ethnic groups: Corats and Lemaks. The Corats and Lemaks have historically been enemies. For many years, a much larger country strictly controlled Bursia and kept the Corats and Lemaks from fighting. Recently, the larger country collapsed. Now the Corats want to rule all of Bursia, since they believe it has always belonged to them. The Lemaks want to split Bursia in half and form their own country without Corats living there. The Corats do not want this, because most of the natural resources are in the area of Bursia that Lemaks want for their new country.

**Scenario 1: Not in My Backyard!**  
**Sides: Capital City and Smithville**
Capital City is a growing metropolis that produces tons of garbage every week. Recently their landfill used for their garbage became full, and city officials began searching for a new site to put the garbage. The efficient option was to dump garbage in an area near the small community of Smithville. Other options exist, but they will cost much more and may result in more taxes—slowing Capital City's growth. Smithville doesn't want to take Capital City's garbage. Capital City is prepared to compensate residents of Smithville for having the garbage dump located near their community.

**Scenario 2: Water for Peace**  
**Sides: Drylandia and Dustytown**
Drylandia and Dustytown have been at war for many years. Drylandia captured and has controlled a piece of Dustytown's territory for a long part of the war. In recent peace negotiations, Dustytown has offered to stop fighting if Drylandia will give back the piece of Dustytown's territory it controls. Drylandia would like to stop fighting, but the piece of territory it controls contains a large aquifer, which Drylandia relies on to provide its country with fresh water. The region the two countries are located in is very dry, and fresh water is scarce.

**Scenario 3: Family Planning**  
**Sides: Government and Elders**
The population of the country of Alagura has grown rapidly for the past 50 years, and this has put a huge strain on Alagura's limited resources. Recently, the Government of Alagura decided to offer free family planning services, in the hope of slowing population growth. The plan immediately met resistance from a group of powerful Elders, who believe it is against the deepest values of Alagurans to prevent people from bringing more life into the world. Many Alagurans look to the Elders for moral and ethical guidance, and many also rely on the Elders for help with food and education for their children when times are tough.
**Scenario 1: Right to Nuclear Power?**  
**Sides: Ralcun and Celari**

Ralcun and Celari share a border and have a history of fighting. The two countries have not fought a war for many years, but a recent announcement by Ralcun has raised tensions. Ralcun announced it intends to build a nuclear power plant for producing energy. Ralcun claims it has the right to build a nuclear power plant for peaceful purposes. Celari fears that Ralcun intends to use the plant to produce weapons. Celari has threatened to go to war with Ralcun if it continues with its plans to build a nuclear power plant.

**Scenario 2: The Forest**  
**Sides: Villagers and Tourism Company**

In the country of Tropicio, there is a forest the Villagers depend on for fuel to cook their food and heat their homes. The local Tourism Company leads trips into the forest, where visitors come to see the rare trees and animals that live there. As the population of the village grows and people collect more and more wood for fuel, the forest is disappearing at a rapid rate. The Tourism Company is worried that the forest will soon be destroyed.

**Scenario 3: Ethnicity and Power**  
**Sides: Thalas and Zalas**

The country of Izkara is populated by two ethnic groups: Thalas (the minority) and Zalas (the majority). Izkara has been ruled by its military for many years. Nearly all members of the military are from the minority Thalas ethnic group. Recently, the majority Zalas ethnic group has pressured the military government to step down, and asked for elections to be held. If fair elections are held, the Zalas will almost certainly come to power, since they are the majority. The Zalas have made it clear that if elections are not held soon, they will take up arms and fight a civil war against the military.
Scenario 1: Who Owns the Forest?  
Sides: Tribespeople and Government

The Tribespeople of Arborlandia have lived in the Big Forest for hundreds of years. Arborlandia is a poor country, and recently the Government decided that in order to raise money, it would start heavy logging in the Big Forest and sell the wood to people in the North. The Tribespeople have refused to leave the Big Forest, since it is their home and they do not believe the Government has the right to make them leave. The Government believes that selling wood from the Big Forest will bring in much needed income, which it will use to pay off debts and provide services to thousands of people in Arborlandia. The Government is willing to pay the Tribespeople some money to move out of the Big Forest.

Scenario 2: Intranational Water Rights  
Sides: Farmers and Fisherfolk

Farmers in the Country of Aguaville depend heavily on the Blue River for water for their crops, which they sell to support their families. Fisherfolk in Aguaville also depend on the Blue River for fish, which they sell to support their families. Due to a long period of dry weather, there is increasingly less water in the Blue River. With the Blue River running low, the Aguaville Fisherfolk worry there will be less fish if the farmers continue to use the same amount of water for their crops.

Scenario 3: Oil and Ethnicity  
Sides: Bogians and Birdians

Augustus is a country split between a Bogian population in the North and a Birdian population in the South. The two populations have been fighting a civil war for many years over religious differences and competition for scarce farming land. Recently, a small reserve of oil was discovered in the middle of the country. Completely controlling the oil reserve would provide enough income for either side to win the civil war. Alternatively, the oil could also provide income to help rebuild the country if both sides could share, but there would need to be peace for this to happen. Many people on both sides believe that ending the war would mean admitting the other side had won. Finally, devoting land to drilling for oil will reduce the amount of already scarce farming land available to both Bogians and Birdians.
To Fight or Not to Fight? Conflict Resolution Worksheet

Group Members: ____________________________________________

Directions:

• In your group of 3, count off 1 to 3. Number 1 will mediate scenario 1, number 2 will mediate scenario 2, and number 3 will mediate scenario 3.
• The mediator will assign sides to the 2 other students.
• Each side will read, discuss, negotiate, and fill out 1 worksheet for each of the 3 scenarios. The mediator’s job is to objectively help both sides reach a resolution through empathy and compromise, without giving up their vital interests.
• Read your assigned scenario and write answers to the following questions:

1. I am (the side you are representing):

2. My position is (why you think you are right):

3. My interests are (what you want/need to get out of this negotiation):

4. The interest(s) I absolutely can’t give up during negotiations are:

5. I think the other side’s interests are (what you think the other side wants/needs):

6. Discuss the conflict. Tell the other side what your positions and interests are. The mediator should assist with the discussion, urging sides to practice empathy (trying to understand the other side’s position and interests) and compromise (giving up non-essential interests) to reach a resolution.

7. After your discussion and negotiation, briefly explain the resolution you reached (if any):
Activity 3: Increasing the Peace

Overview
In groups of 3 to 4, students read several scenarios related to different types of conflicts. They analyze what types of actions would escalate the conflict and what types of actions would de-escalate the conflict.

Objectives
Students will:
• analyze scenarios critically and think about what types of actions escalate and decrease conflicts

Inquiry/Critical Thinking Questions
• How can we critically understand what causes conflicts to erupt?
• What are sustainable ways to prevent conflicts from happening?

Time Required
One 45-minute class

Key Concepts
• peace
• sustainability
• escalation
• de-escalation

National Standards Addressed
National Council for the Social Studies
1. Culture
3. People, Places, and Environments
5. Individuals, Groups, and Institutions
6. Power, Authority, and Governance
9. Global Connections
10. Civic Ideals and Practices

National Science Education Standards
F. Science in Personal and Social Perspectives

National Efs Standards
2.2 Ecological Systems: Respect for limits

Materials/Preparation
Handout: Increasing the Peace, 1 per group of 3 to 4 students
Activity 3: Increasing the Peace  continued

**Activity**

**Introduction**

1. Present students the following scenario: *Two students have not been getting along lately. They have had rising tensions ever since the school year started and rumors have started to spread about them fighting after school at the end of the week.*

2. Ask students the following questions: what actions would escalate the conflict? What actions would resolve the conflict?

3. Brainstorm with students what kinds of things can help to intensify a situation and what can help to relieve a situation (*i.e.*, peer pressure, tone of voice, weapons, and fear can intensify a situation while respect, compromise, and negotiation can help to relieve a situation).

**Steps**

1. Explain to students they will read different scenarios that have the potential to escalate into conflict.

2. Have students gather into groups of 3 to 4 students.

3. Pass out the handout, *Increasing the Peace*, to each small group of students.

4. Tell students they will work in these groups to decide what kinds of actions would escalate a conflict and what kinds of actions would de-escalate a conflict.

5. After they have gone through the scenarios, lead them in the following discussion.

**Discussion Questions**

1. Were there certain scenarios that would be more challenging to de-escalate? Why?

2. In issues that impact you personally, what do you think are legitimate ways to handle conflicts?

3. In international affairs, what do you think are legitimate ways to handle conflicts?

4. Can conflict related issues always be resolved? Why or why not?

5. What do you think you would have done in each of the scenarios? Why?

**Writing Extension**

Have students develop a toolkit that helps individuals in their local school community think of strategies they can take before letting a conflict escalate from mild to intense.

**Additional Resources**

- **Website:** Facing History and Ourselves

  Facing History and Ourselves features the story about Cyril Ramaphosa, the chairperson of the South African Constitutional Assembly who became famous for the phrase, “just 20 minutes more” in learning how to create the new constitution post Apartheid. Through negotiation and debate, the assembly was able to come to a conclusion.

- **Lessons:** Peacebuilding Toolkit for Educators, High School Edition
  [https://www.usip.org/sites/default/files/GPC_EducatorToolkit-%28HighSchool%29_combined.pdf](https://www.usip.org/sites/default/files/GPC_EducatorToolkit-%28HighSchool%29_combined.pdf)

  This toolkit edited by Alison Milofsky was designed to provide educators a way in which to speak to high school students about peace and conflict. The toolkit revolves around three main principles: conflict is inherent, violent conflict is preventable, and there are many ways a person can become a peace builder. (Washington, D.C.: United States Institute of Peace, 2011)
Increasing the Peace

Directions: Read each of these scenarios in your groups. Determine what kinds of actions by those involved would result in conflict and what kinds of actions would result in peace.

1. Class has just started and a new student walks in. She looks quite different than the rest of the class and as soon as she sits down, a few classmates begin making fun of her.
   a. What could escalate conflict? _____________________________________________________________
   b. What could resolve conflict? ____________________________________________________________

2. In a given country, a population is quite homogenous. The majority group makes up 90% of the population. The minority group is 10% of the population. Lately, there have been cartoons on the Internet and graffiti in different neighborhoods that make fun of the minority group. In addition, news reports on television speak negatively about the group.
   a. What could escalate conflict? _____________________________________________________________
   b. What could resolve conflict? _____________________________________________________________

3. Conflict has increased along the border of two countries because both places need freshwater for drinking. A few world leaders have been asked to help decide how this water should be shared between the two countries.
   a. What could escalate this conflict? _________________________________________________________
   b. What could resolve this conflict? _________________________________________________________

4. Lately, a country has been dealing with the issue of overpopulation. Within thirty years, the number of young people between 13 and 24 years old will triple.
   a. What could escalate conflict? _____________________________________________________________
   b. What could resolve conflict? _____________________________________________________________

5. A drought has decreased water availability in a given country. A number of people have had to migrate from their homes to another region within the country.
   a. What could escalate conflict? _____________________________________________________________
   b. What could resolve conflict? _____________________________________________________________
Activity 4: Peaceful Solutions

Overview
Students take on the role of peace diplomats who offer solutions to a specific country on how to build more security and stability. In small groups, students research what is preventing their given country from peace and security, and then develop a 3-point proposal as a country plan for peace.

Objectives
Students will:
• identify barriers to stability within a country
• create a peace proposal for a given country
• integrate sustainable solutions within this proposal

Inquiry/Critical Thinking Questions
• What are ways we can work collaboratively to build a peaceful and sustainable society?
• What can a government do to facilitate peace?

Time Required
Two 45-minute classes

Key Concepts
• peace
• sustainability
• diplomacy

National Standards Addressed
National Council for the Social Studies
1. Culture
3. People, Places, and Environments
5. Individuals, Groups, and Institutions
6. Power, Authority, and Governance
9. Global Connections
10. Civic Ideals and Practices

National Science Education Standards
F. Science in Personal and Social Perspectives

National EFS Standards
2.4 Social and Cultural Systems: Peace and Conflict
3.2 Collective Action: Public Discourse and Policy

Materials/Preparation
Handout: Countries and Global Peace Index Ratings, 1 for each group of 3
Handout: Peaceful Solutions, 1 for each group of 3
Internet access

Activity
Introduction
1. Share the following article, What’s Causing the Conflict in the Ivory Coast?
2. Have students read this article with a partner.
3. Ask students about what they believe the root cause is that has contributed to an increase in conflict.
4. Ask them about what could have helped to prevent the conflict in the Ivory Coast from happening.

Steps
1. Ask students what kinds of solutions generally help to create a more peaceful and sustainable society? (i.e., reducing tensions due to ethnic or social division, responding to abusive governments, reducing natural resource scarcity, and increasing access to educations, jobs, and housing)
2. Explain to them they will take on the role of diplomats who consult with country governments and provide these governments a peace plan that provides ideas on how to maintain or increase security.
3. Tell them they will work in groups of three. They will be given a specific country and the country’s Global Peace Index number.
4. Pass out one country to each group from the handout, Countries and Global Peace Index Ratings.
5. Explain that the Global Peace Index number is the number given to 153 different countries indicating the country’s peacefulness ranging from the most peaceful country (1) to the least peaceful country (153).
**Math Extension**

Have students create a Peace Index tool that could measure peace in the local areas where they live. They can create a number of indicators to measure peace (i.e., employment rates, crime rates, education rates, etc.).

**Additional Resources**

- **Video:** Seeds
  [http://www.seedsthemovie.com](http://www.seedsthemovie.com)
  A documentary by Marjan Safinia and Josephy Boyle (2010) that feature youth from war torn countries who come together for three weeks in Maine to go through the Seeds of Peace program.

- **Website:** Choosing to Participate
  [https://www.facinghistory.org/topics/democracy-civic-engagement](https://www.facinghistory.org/topics/democracy-civic-engagement)
  This website created by the organization Facing History and Ourselves, focuses on civic choices individuals take in their community, nation, and world. Students learn about topics related to civic participation, democracy, bystanders versus upstanders, community, and segregation.

- **Website:** Playing for Change
  [https://playingforchange.org](https://playingforchange.org)
  Playing for Change is an organization that believes that “peace and change are possible through the universal language of music.” The foundation is dedicated to providing resources to musicians and communities around the world.

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**Activity 4: Peaceful Solutions continued**

6. When they receive this country and the country’s number, they will need to research the following pieces of information:
   - What kind of governance does the country have?
   - Has it had a history of conflict in the past? If so, how often and why?
   - What is the average education level?
   - What is the average life expectancy?
   - What is the average GDP?
   - Has there been any pronounced ethnic tensions in recent times?

7. Ask students how all of this information about a country relates to a country’s chance for peace.

8. Hand each group the Peaceful Solutions handout.


10. After students research this information, they will create a Peace Plan for their assigned country.

11. They can the share this Peace Plan in the form of a visual presentation with their classmates.

**Discussion Questions**

1. What role do governments play in creating a peaceful country?

2. What do you notice about the countries that have the least peace?

3. What are challenges to creating a peaceful and sustainable country?

4. What can the international community do to help support peace? Is there anything more peaceful countries can do to help those countries struggling with conflict?
### Countries and Global Peace Index Ratings

<table>
<thead>
<tr>
<th>Country</th>
<th>Global Peace Index Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myanmar</td>
<td>133</td>
</tr>
<tr>
<td>India</td>
<td>135</td>
</tr>
<tr>
<td>South Africa</td>
<td>118</td>
</tr>
<tr>
<td>United States</td>
<td>82</td>
</tr>
<tr>
<td>Venezuela</td>
<td>124</td>
</tr>
<tr>
<td>Afghanistan</td>
<td>150</td>
</tr>
<tr>
<td>Niger</td>
<td>119</td>
</tr>
<tr>
<td>Brazil</td>
<td>74</td>
</tr>
<tr>
<td>Mexico</td>
<td>121</td>
</tr>
<tr>
<td>Serbia</td>
<td>84</td>
</tr>
<tr>
<td>Spain</td>
<td>28</td>
</tr>
<tr>
<td>Egypt</td>
<td>73</td>
</tr>
</tbody>
</table>

Directions: Research the following information about the country you’ve been assigned to create a Peace Plan for. After you research this information, put together a proposed Peace Plan that includes at least three solutions to increasing stability.

1. What kind of governance does the country have?

2. Has the country had a history of conflict in the past? If so, how often and why?

3. What is the average education level?

4. What is the average life expectancy?

5. What is the average GDP?

6. What is the unemployment rate?

7. Have there been any pronounced ethnic or religious tensions in recent times?

8. What other information have you learned about your country?
As a diplomat to the country you have researched, what are your three proposed ideas to enhance peace and security? Explain your idea and the rationale behind why you chose it.

Idea 1:

Idea 2:

Idea 3:

What might be challenging when implementing these plans?

Who will be key stakeholders to whom you can reach out to support this plan?
Essential Question
How can addressing other global issues help to improve quality of life?

Time Required
7-10 days

Materials
Packet: Human Health, Security, and Well-being
The packet includes the following:
• Product 1: Research Paper (Individual), 1 copy per student
• Product 2: Grant Application (Group), 1 copy per student
• Product 3: Presentation (Group), 1 copy per student
• Student Reflection Sheet, 1 copy per student
• Performance-based Assessment Holistic Scoring Rubric, 1 copy per student
• Student Reference Sheet for the Holistic Scoring Rubric, 1 copy per student

(Ways to Introduce this Assessment)

1. Explain to students that they will be completing a performance-based assessment based on the unit Human Health, Security, and Well-being from the textbook. This unit includes the chapters Quality of Life, Health, Governance, Human Migration, Gender, and Conflict. This is an opportunity for them to both show their content knowledge and apply other skills like critical thinking, global awareness, and problem-solving.

2. Remind students of the OECD Better Life Index, an index designed to look at a number of factors that contribute to well-being in different OECD countries: OECD: Better Life Index, http://www.oecdbetterlifeindex.org/.

Option: If you haven't already completed Activity 1, Livin' the Good Life, from the Quality of Life chapter, introduce students to this activity. They can learn how to create indicators for quality of life on a small scale to understand ways to measure it.

3. Explain to students that by the completion of the assessment, they will have researched ways countries can measure quality of life in effective ways and have considered ways to address one of the indicators related to quality of life.


5. Organize students into groups. Each group should have 4-5 students.

6. Review the driving question with students.

7. Have each group decide which country it would like to research and determine which topic (e.g., human rights record, health, poverty) each member of the group will research. Each group should take 15 minutes to discuss and decide.

8. Review each product students are expected to create to see what questions they have. Explain to them that they will be assessed on these products based on the Performance-based Holistic Scoring Rubric in the back of their packets.

Note: The skills being assessed are 21st Century Skills and Common Core Standards. You can also assess students on content knowledge through the National Council for the Social Studies Standards.

9. Have them review the Student Reference Sheet for the Holistic Scoring Rubric so they can comprehend the types of skills they will be assessed on.

10. Explain to students that after they hand in their 3 products, they will need to complete a student reflection sheet.

Option: Share the Sample Performance-based Assessment Rubric so students can understand how holistic scoring works.
Driving Question:

What would be a good way to improve quality of life for citizens in a country?

According to research conducted by the United Nations in 2011, Norway was rated as one of the countries with the highest quality of life in the world. Norway has held this rating since 1995. Quality of life is a measure of well-being based on values such as education, physical and mental health, leisure time, and social activity. All countries, whether developed or developing, can improve quality of life for their citizens.

Working in groups of 4-5 students, you will create an organization and collaborate on a grant application to the United Nations for funding to implement a plan designed to improve one component of quality of life in the country of your choice.
Product 1: Research Paper (Individual)

Based on the country your group chooses, the first product you create will be a paper in which you will:

- Research one of the following topics related to the country:
  a. human rights
  b. health
  c. poverty
  d. gender
  e. governance

- Compile a 2-3 page report that provides the following information regarding your topic:
  a. statistics
  b. related current events
  c. related issues or challenges

- Include a bibliography that provides sources for the information you found.

Additional Resources

- Website: CIA World Factbook
  This website provides information on history, geography, economy, people, etc., for countries around the world.

- Website: UNICEF
  http://www.unicef.org/
  The United Nations Children's Fund website provides statistics on countries around the world.

- Website: World Health Organization
  http://www.who.int/en/
  The WHO website provides data and statistics about health-related topics around the world as well as publications and other resources.

- Website: Amnesty International
  http://www.amnestyusa.org/
  Amnesty International is an organization that monitors human rights around the world. Their website provides information about issues related to human rights in different countries around the world.

- Website: United Nations Millennium Development Goals
  http://www.un.org/millenniumgoals/
  In addition to information about the 8 Millennium Development Goals, this website provides resources and statistics related to quality of life indicators.
Product 2: Grant Application (Group)

Each member of your group will share individual research with the group. You will then choose one topic from the individual research to focus on. Based on this topic, you will create an organization that addresses this issue and develop a grant application for your organization.

Before creating your organization and writing a grant application, you will:

- **Address the following questions:**
  a. What is the issue that needs to be solved?
  b. Why will solving this issue improve quality of life in the country?
  c. What resources will be needed to fix this issue?
  d. What kinds of stakeholders need to be involved in order to support this issue?

After answering these questions, you will:

- **Brainstorm and develop an idea for an organization you would create in order to address this quality of life issue.** Answer the following questions about your organization:
  a. What is the name of your organization?
  b. What is the mission of your organization?
  c. Whom do you want to support?

- **What are 2-3 goals you have for your organization?** Create a grant application which includes the following sections (you can divide up responsibility for each section in advance):
  a. **Cover letter:** The cover letter should introduce your organization to the United Nations and specifically state what you are asking for and why you are asking for it. It should be no longer than 1 page.
  b. **Executive summary:** The executive summary provides a short summary of your plan. It covers the key elements of each component of the grant. It should be no longer than 1 page.
  c. **Problem statement:** The problem statement explains the problem you intend to address. It focuses on the people you intend to help. It should be well supported with facts and evidence. It should be no longer than 1 page.
  d. **Goals and objectives:** The goals and objectives outline what you intend to accomplish with the plan. They also explain specific results or outcomes you expect to accomplish with the plan. The goals are the broad achievement and the objectives are the narrower, concrete steps that are to be used to determine whether the goal will be reached. It should be 1-2 pages.
  e. **Methods and strategies section:** The methods and strategies section describes how you intend to reach your goals and objectives. It also explains why you have chosen the method or strategy to achieve your goals and objectives. It should be no longer than 1 page.
  f. **Evaluation section:** The evaluation section explains how you will determine what worked and what did not work in your plan. Funders want to know that you will not just take their money and spend it without being able to determine that your plan has an impact. It should be 1-2 pages.

### Additional Resource

- **Website:** *About.com: How to Write a Grant Proposal; From Summary to Budget*
  This post by Joanne Fritz describes how to write a grant proposal.
Product 3: Presentation (Group)

Your group will explain the mission of your organization and what you hope to accomplish based on your grant application through a visual presentation to your classmates.

You can create one of the following:

- **PowerPoint presentation**: Each member is responsible for at least 2 slides. The presentation may begin with an explanation of why this issue was chosen. The slides should have graphics (e.g., tables, charts, photographs) to support the plan.

- **Podcast or vidcast**: Each member will contribute to a 5-minute mini-documentary. Group members may interview each other and provide charts, maps, tables, and other visuals to support their plan.

- **Posterboard presentation**: Each member will contribute to creating a poster using tables, charts, maps, and photos. The group will also deliver an oral argument for why their solutions will address the issue and are worth funding.

- **Brochure presentation**: Each member will contribute to creating a brochure using tables, charts, maps, and photos. They will also deliver an oral argument for why this solution will address the issue and is worth funding. They should provide copies of the brochure to other students in the class for the presentation.

**Additional Resources**

- **Website**: Microsoft Office: Create your first presentation
  This website provides information on how to create a PowerPoint presentation.

- **Website**: eHow.com: How to Make a Podcast
  In this post, Katherine Johnson provides instructions on how to make a podcast.

- **Website**: eHow.com: How to Video Podcast
  This post provides instructions on how to make a video podcast.
Student Reflection Sheet, page 1

Student name: __________________________________________________________

Instructions to Students: Prior to completing this Student Reflection Sheet, review the Performance-based Assessment Holistic Scoring Rubric and the Student Reference Sheet for the Holistic Scoring Rubric (which provides a detailed description of each skill included on the rubric). These documents will help you understand how to reflect on the quality of your work for this performance-based assessment.

Content Knowledge, Critical Thinking, and Problem-solving

1. Identify 2 skills you developed when you created the 3 products for this assessment.
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

2. Were there any challenges you encountered when creating any of the products?
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

3. Evaluate the quality of your research findings from the sources you used for your performance-based assessment. Explain how your findings contributed to any conclusions you reached in your performance-based assessment.
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

Awareness of Broader Sustainability Relationships

4. Explain how your products relate to one of the broader global issues connected to essential human needs.
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
5. Explain how any of your products could be used to inform or develop broader civic or government sustainability policies at the local, state, federal, or global levels.

_______________________________________________________________________________________

_______________________________________________________________________________________

Self-evaluation and Collaboration

6. Based on the scoring rubric, how do you rate the quality of your products?

_______________________________________________________________________________________

_______________________________________________________________________________________

7. List specific products you created. Explain ways in which you could improve the quality of each one.

_______________________________________________________________________________________

_______________________________________________________________________________________

_______________________________________________________________________________________

8. Evaluate your role in your team and describe how you contributed to the completion of the assessment.

_______________________________________________________________________________________

_______________________________________________________________________________________

_______________________________________________________________________________________

9. Describe how you improved the collaboration between group members to successfully complete the assessment.

_______________________________________________________________________________________

_______________________________________________________________________________________

_______________________________________________________________________________________

Information Technology and Communication

10. What types of technology (such as computers and software packages, the Internet, and digital video and audio equipment) did you use in the development of your products? How did these types of technology help you research and present the products effectively?

_______________________________________________________________________________________

_______________________________________________________________________________________
# Performance-based Assessment Holistic Scoring Rubric

**Student Name:** ____________________________  **Unit Title:** __________________________________________  **Project Title:** ________________________________________

<table>
<thead>
<tr>
<th>Skill Section</th>
<th>Exceeds Expectations (4)</th>
<th>Meets Expectations (3)</th>
<th>Performs Below Expectations (2)</th>
<th>Performs Well Below Expectations (1)</th>
<th>There Is Insufficient Evidence (0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) <strong>Content Knowledge and Skills</strong></td>
<td>Demonstrates clear understanding of the major ideas, concepts, and skills covered in all of the targeted standards.</td>
<td>Demonstrates general understanding of the major ideas, concepts, and skills covered in the targeted standards, with minor gaps in breadth, depth, and/or accuracy of understanding.</td>
<td>Demonstrates limited understanding of major ideas, concepts, and skills covered in the targeted standards, with substantial gaps in breadth, depth, and/or accuracy of understanding.</td>
<td>Demonstrates minimal or no understanding of major ideas, concepts, and skills covered in the targeted standards, with complete gaps in breadth, depth, and/or accuracy of understanding.</td>
<td>There is insufficient evidence to assess an understanding of major ideas, concepts, and skills covered in the targeted standards.</td>
</tr>
<tr>
<td>(2) <strong>Application of Content Knowledge and Skills</strong></td>
<td>Demonstrates clear application of the major ideas, concepts, and skills covered in all of the targeted standards.</td>
<td>Demonstrates general application of the major ideas, concepts, and skills covered in the targeted standards, with minor gaps in breadth, depth, and/or accuracy of application.</td>
<td>Demonstrates limited application of the major ideas, concepts, and skills covered in the targeted standards, with substantial gaps in breadth, depth, and/or accuracy of application.</td>
<td>Demonstrates minimal or no application of the major ideas, concepts, and skills covered in the targeted standards, with complete gaps in breadth, depth, and/or accuracy of application.</td>
<td>There is insufficient evidence to assess the application of major ideas, concepts, and skills covered in the targeted standards.</td>
</tr>
<tr>
<td>(3) <strong>Critical Thinking and Problem-solving</strong></td>
<td>Demonstrates clear use of critical thinking to solve problems in the performance-based assessment.</td>
<td>Demonstrates general use of critical thinking to solve problems in the performance-based assessment.</td>
<td>Demonstrates limited use of critical thinking to solve problems in the performance-based assessment.</td>
<td>Demonstrates minimal or no use of critical thinking to solve problems in the performance-based assessment.</td>
<td>There is insufficient evidence to assess critical thinking in the performance-based assessment (i.e., performance-based assessment is incomplete).</td>
</tr>
<tr>
<td>Performance-based Assessment 3</td>
<td>Evaluation of Research Findings from Sources</td>
<td>Global Awareness</td>
<td>Civic Literacy</td>
<td>Self-evaluation</td>
<td></td>
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<tr>
<td>---------------------------------</td>
<td>---------------------------------------------</td>
<td>-----------------</td>
<td>---------------</td>
<td>----------------</td>
<td></td>
</tr>
<tr>
<td>(4) Evaluation of Research Findings from Sources</td>
<td>Demonstrates clear skill to evaluate the quality of the findings from sources to reach conclusions in the performance-based assessment.</td>
<td>Demonstrates general understanding of global awareness in the performance-based assessment in relation to all of the targeted standards.</td>
<td>Demonstrates clear understanding of civic literacy in all of the targeted standards.</td>
<td>Demonstrates clear self-evaluation of the quality of the student's work on the performance-based assessment in relation to all of the targeted standards.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Demonstrates general skill to evaluate the quality of the findings from sources to reach conclusions in the performance-based assessment.</td>
<td>Demonstrates general understanding of global awareness in the performance-based assessment in relation to the targeted standards, with minor gaps in breadth, depth, and/or accuracy of understanding.</td>
<td>Demonstrates general understanding of civic literacy in the targeted standards, with minor gaps in breadth, depth, and/or accuracy of understanding.</td>
<td>Demonstrates general self-evaluation of the quality of the student's work on the performance-based assessment in relation to the targeted standards.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Demonstrates limited skill to evaluate the quality of the findings from sources to reach conclusions in the performance-based assessment.</td>
<td>Demonstrates limited understanding of global awareness in the performance-based assessment in relation to the targeted standards, with substantial gaps in breadth, depth, and/or accuracy of understanding.</td>
<td>Demonstrates limited understanding of civic literacy in the targeted standards, with substantial gaps in breadth, depth, and/or accuracy of understanding.</td>
<td>Demonstrates limited self-evaluation of the quality of the student's work on the performance-based assessment in relation to the targeted standards.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Demonstrates minimal or no skill to evaluate the quality of the findings from sources to reach conclusions in the performance-based assessment.</td>
<td>Demonstrates minimal or no understanding of global awareness in the performance-based assessment in relation to the targeted standards, with complete gaps in breadth, depth, and/or accuracy of understanding.</td>
<td>Demonstrates minimal or no understanding of civic literacy in the targeted standards, with complete gaps in breadth, depth, and/or accuracy of understanding.</td>
<td>Demonstrates minimal or no self-evaluation of the quality of the student's work on the performance-based assessment in relation to the targeted standards.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>There is insufficient evidence to assess the evaluation of research findings from sources in the performance-based assessment (i.e., performance-based assessment is incomplete).</td>
<td>There is insufficient evidence to assess global awareness in the performance-based assessment in relation to the targeted standards (i.e., performance-based assessment is incomplete).</td>
<td>There is insufficient evidence to assess civic literacy in the performance-based assessment in relation to the targeted standards (i.e., performance-based assessment is incomplete).</td>
<td>There is insufficient evidence to assess the self-evaluation of the student's work on the performance-based assessment in relation to the targeted standards (i.e., performance-based assessment is incomplete).</td>
<td></td>
</tr>
<tr>
<td>(8) Collaboration and Contribution</td>
<td>Demonstrates active and consistent collaboration and contribution in the group.</td>
<td>Demonstrates general collaboration and contribution in the group.</td>
<td>Demonstrates limited collaboration and contribution in the group.</td>
<td>Demonstrates minimal or no collaboration and contribution in the group.</td>
<td>There is insufficient evidence to assess collaboration and contribution in the performance-based assessment (i.e., performance-based assessment is incomplete).</td>
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<td>------------------------------------------------------------------</td>
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</tr>
<tr>
<td>(9) Information, Media, and Technology Skills</td>
<td>Demonstrates clear skills to use, manage, and evaluate information using media and information technology to complete the performance-based assessment.</td>
<td>Demonstrates general skills to use, manage, and evaluate information using media and information technology to complete the performance-based assessment.</td>
<td>Demonstrates limited skills to use, manage, and evaluate information using media and information technology to complete the performance-based assessment.</td>
<td>Demonstrates minimal or no skills to use, manage, and evaluate information using media and information technology to complete the performance-based assessment.</td>
<td>There is insufficient evidence to assess use of information, media, and technology skills in the performance-based assessment (i.e., performance-based assessment is incomplete).</td>
</tr>
<tr>
<td>(10) Communication and Presentation</td>
<td>Demonstrates clear thoughts and ideas using oral, written, and nonverbal communication skills (e.g., eye contact, facing the audience).</td>
<td>Demonstrates general thoughts and ideas using oral, written, and nonverbal communication skills (e.g., eye contact, facing the audience).</td>
<td>Demonstrates limited thoughts and ideas using oral, written, and nonverbal communication skills (e.g., eye contact, facing the audience).</td>
<td>Demonstrates minimal or no thoughts and ideas using oral, written, or nonverbal communication skills (e.g., eye contact, facing the audience).</td>
<td>There is insufficient evidence to assess communication and presentation in the performance-based assessment (i.e., performance-based assessment is incomplete).</td>
</tr>
<tr>
<td>Overall Score (Check Only One)</td>
<td>Exceeds Expectations</td>
<td>Meets Expectations</td>
<td>Performs Below Expectations</td>
<td>Performs Well Below Expectations</td>
<td>There Is Insufficient Evidence</td>
</tr>
</tbody>
</table>
# Student Reference Sheet for the Holistic Scoring Rubric

<table>
<thead>
<tr>
<th>Skill</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Content Knowledge and Skills</td>
<td>The intent of Content Knowledge and Skills is to determine whether: • You have learned the concepts and ideas of the course • You demonstrate an understanding of the ideas and concepts of the targeted learning standards of the performance-based assessment</td>
</tr>
<tr>
<td>2. Application of Content Knowledge and Skills</td>
<td>The intent of Application of Content Knowledge and Skills is to determine whether the performance-based assessment products and the Student Reflection Sheet submitted by you demonstrate that: • You have properly applied the ideas and concepts of the targeted learning standards of the performance-based assessment to the performance-based assessment products</td>
</tr>
<tr>
<td>3. Critical Thinking and Problem-solving</td>
<td>The intent of Critical Thinking and Problem-solving is to determine whether the performance-based assessment products and the Student Reflection Sheet submitted by you demonstrate: • The use of reasoning to analyze and evaluate evidence, arguments, and alternative points of view • The understanding of a problem The application of strategies or solutions for resolving the problem • The application of evidence to support your conclusions • The application of your understanding of an issue to a novel situation to resolve a problem</td>
</tr>
<tr>
<td>4. Evaluation of Research Findings from Sources</td>
<td>The intent of Evaluation of Research Findings from Sources is to determine whether the performance-based assessment products and the Student Reflection Sheet submitted by you demonstrate: • The skill to analyze and to determine the usefulness of findings and sources in answering the research topic • The understanding of how to integrate information into a report, without plagiarism, to support arguments about the research topic</td>
</tr>
</tbody>
</table>
| **5. Global Awareness** | The intent of Global Awareness is to determine whether the performance-based assessment products and the Student Reflection Sheet submitted by you demonstrate:  
- The understanding of how your performance-based assessment fits within broader global issues  
- The understanding that this issue is related not only to your community or country, but to the world as a whole  
- The understanding that there is a diversity of cultures, religions, and lifestyles around the globe  
- The understanding that problems can be solved a variety of ways and that solutions must fit the needs of unique cultures and countries around the globe |
| **6. Civic Literacy** | The intent of Civic Literacy is to determine whether the performance-based assessment products and the Student Reflection Sheet submitted by you demonstrate:  
- The understanding of how your performance-based assessment reflects broader civic or government policies regarding sustainability issues at the local, state, federal, and global levels  
- The recognition of your role as a citizen toward sustainability issues |
| **7. Self-evaluation** | The intent of Self-evaluation is to determine whether you take responsibility for your own learning by:  
- Articulating the quality of your performance-based assessment in relation to the ideas and concepts in the targeted learning standards of the performance-based assessment  
- Using the Student Reflection Sheet to identify the strengths and weaknesses of your work  
- Suggesting ways to improve your work in the Student Reflection Sheet  
- Suggesting ways to improve your work beyond the Student Reflection Sheet |
| **8. Collaboration and Contribution** | The intent of Collaboration and Contribution is to determine how much you collaborated with other students in the development and completion of the performance-based assessment, by:  
- Working collaboratively with other students  
- Designating work assignments among group members  
- Sharing responsibility for the completion of the performance-based assessment  
- Using listening and leadership skills  
- Being flexible and able to compromise to complete the performance-based assessment |
| 9. Information, Media, and Technology Skills | The intent of Information, Media, and Technology Skills is to determine whether the performance-based assessment products and the Student Reflection Sheet submitted by you demonstrate:
• The proficiency to effectively use 21st century media and technology (e.g., computers and software packages, the Internet, digital video and audio equipment)
• The skill to research and analyze information
• The skill to develop reports and make presentations |
| 10. Communication and Presentation | The intent of Communication and Presentation is to determine whether the performance-based assessment products and the Student Reflection Sheet submitted by you demonstrate:
• The skill to clearly and effectively express your ideas and thoughts through oral, written, and nonverbal forms of communication (e.g., eye contact, facing the audience)
• The use of communication for a variety of purposes (e.g., to inform, instruct, motivate, persuade)
• The use of a variety of multimedia and technology (e.g., written reports, poster boards, video presentations, PowerPoint presentations) for presentations |
| 11. Overall Score | The overall score for the performance-based assessment is a holistic determination rather than an accumulation of points from the previous sections. The teacher should use the ratings given in the individual skill sections to determine the overall score that the teacher believes is appropriate for your work. |
# Sample Performance-based Assessment

**Student Name:** Jane Doe  
**Unit Title:** Raising the Quality of Life of a Country  
**Project Title:** Improving the Quality of Life in Nicaragua

<table>
<thead>
<tr>
<th>Skill Section</th>
<th>Exceeds Expectations (4)</th>
<th>Meets Expectations (3)</th>
<th>Performs Below Expectations (2)</th>
<th>Performs Well Below Expectations (1)</th>
<th>There Is Insufficient Evidence (0)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(1) Content Knowledge and Skills</strong></td>
<td>Demonstrates clear understanding of the major ideas, concepts, and skills covered in all of the targeted standards.</td>
<td>Demonstrates general understanding of the major ideas, concepts, and skills covered in the targeted standards, with minor gaps in breadth, depth, and/or accuracy of understanding.</td>
<td>Demonstrates limited understanding of major ideas, concepts, and skills covered in the targeted standards, with substantial gaps in breadth, depth, and/or accuracy of understanding.</td>
<td>Demonstrates minimal or no understanding of major ideas, concepts, and skills covered in the targeted standards, with complete gaps in breadth, depth, and/or accuracy of understanding.</td>
<td>There is insufficient evidence to assess an understanding of major ideas, concepts, and skills covered in the targeted standards.</td>
</tr>
<tr>
<td><strong>(2) Application of Content Knowledge and Skills</strong></td>
<td>Demonstrates clear application of the major ideas, concepts, and skills covered in all of the targeted standards.</td>
<td>Demonstrates general application of the major ideas, concepts, and skills covered in the targeted standards, with minor gaps in breadth, depth, and/or accuracy of application.</td>
<td>Demonstrates limited application of the major ideas, concepts, and skills covered in the targeted standards, with substantial gaps in breadth, depth, and/or accuracy of application.</td>
<td>Demonstrates minimal or no application of the major ideas, concepts, and skills covered in the targeted standards, with complete gaps in breadth, depth, and/or accuracy of application.</td>
<td>There is insufficient evidence to assess the application of major ideas, concepts, and skills covered in the targeted standards.</td>
</tr>
<tr>
<td><strong>(3) Critical Thinking and Problem-solving</strong></td>
<td>Demonstrates clear use of critical thinking to solve problems in the performance-based assessment.</td>
<td>Demonstrates general use of critical thinking to solve problems in the performance-based assessment.</td>
<td>Demonstrates limited use of critical thinking to solve problems in the performance-based assessment.</td>
<td>Demonstrates minimal or no use of critical thinking to solve problems in the performance-based assessment.</td>
<td>There is insufficient evidence to assess critical thinking in the performance-based assessment (i.e., performance-based assessment is incomplete).</td>
</tr>
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<td>(4) Evaluation of Research Findings from Sources</td>
<td>Demonstrates clear skill to evaluate the quality of the findings from sources to reach conclusions in the performance-based assessment.</td>
<td>Demonstrates general skill to evaluate the quality of the findings from sources to reach conclusions in the performance-based assessment.</td>
<td>Demonstrates limited skill to evaluate the quality of the findings from sources to reach conclusions in the performance-based assessment.</td>
<td>Demonstrates minimal or no skill to evaluate the quality of the findings from sources to reach conclusions in the performance-based assessment.</td>
<td>There is insufficient evidence to assess the evaluation of research findings from sources in the performance-based assessment (i.e., performance-based assessment is incomplete).</td>
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<td>(5) Global Awareness</td>
<td>Demonstrates clear understanding of global awareness in the performance-based assessment in relation to all of the targeted standards.</td>
<td>Demonstrates general understanding of global awareness in the performance-based assessment in relation to the targeted standards, with minor gaps in breadth, depth, and/or accuracy of understanding.</td>
<td>Demonstrates limited understanding of global awareness in the performance-based assessment in relation to the targeted standards, with substantial gaps in breadth, depth, and/or accuracy of understanding.</td>
<td>Demonstrates minimal or no understanding of global awareness in the performance-based assessment in relation to the targeted standards, with complete gaps in breadth, depth, and/or accuracy of understanding.</td>
<td>There is insufficient evidence to assess global awareness in the performance-based assessment in relation to the targeted standards (i.e., performance-based assessment is incomplete).</td>
</tr>
<tr>
<td>(6) Civic Literacy</td>
<td>Demonstrates clear understanding of civic literacy in all of the targeted standards.</td>
<td>Demonstrates general understanding of civic literacy in the targeted standards, with minor gaps in breadth, depth, and/or accuracy of understanding.</td>
<td>Demonstrates limited understanding of civic literacy in the targeted standards, with substantial gaps in breadth, depth, and/or accuracy of understanding.</td>
<td>Demonstrates minimal or no understanding of civic literacy in the targeted standards, with complete gaps in breadth, depth, and/or accuracy of understanding.</td>
<td>There is insufficient evidence to assess civic literacy in the performance-based assessment in relation to the targeted standards (i.e., performance-based assessment is incomplete).</td>
</tr>
<tr>
<td>(8) Collaboration and Contribution</td>
<td>Demonstrates active and consistent collaboration and contribution in the group.</td>
<td>Demonstrates general collaboration and contribution in the group.</td>
<td>Demonstrates limited collaboration and contribution in the group.</td>
<td>Demonstrates minimal or no collaboration and contribution in the group.</td>
<td>There is insufficient evidence to assess collaboration and contribution in the performance-based assessment (i.e., performance-based assessment is incomplete).</td>
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</tr>
<tr>
<td>(9) Information, Media, and Technology Skills</td>
<td>Demonstrates clear skills to use, manage, and evaluate information using media and information technology to complete the performance-based assessment.</td>
<td>Demonstrates general skills to use, manage, and evaluate information using media and information technology to complete the performance-based assessment.</td>
<td>Demonstrates limited skills to use, manage, and evaluate information using media and information technology to complete the performance-based assessment.</td>
<td>Demonstrates minimal or no skills to use, manage, and evaluate information using media and information technology to complete the performance-based assessment.</td>
<td>There is insufficient evidence to assess use of information, media, and technology skills in the performance-based assessment (i.e., performance-based assessment is incomplete).</td>
</tr>
<tr>
<td>(10) Communication and Presentation</td>
<td>Demonstrates clear thoughts and ideas using oral, written, and nonverbal communication skills (e.g., eye contact, facing the audience).</td>
<td>Demonstrates general thoughts and ideas using oral, written, and nonverbal communication skills (e.g., eye contact, facing the audience).</td>
<td>Demonstrates limited thoughts and ideas using oral, written, and nonverbal communication skills (e.g., eye contact, facing the audience).</td>
<td>Demonstrates minimal or no thoughts and ideas using oral, written, or nonverbal communication skills (e.g., eye contact, facing the audience).</td>
<td>There is insufficient evidence to assess communication and presentation in the performance-based assessment (i.e., performance-based assessment is incomplete).</td>
</tr>
<tr>
<td>Overall Score (Check Only One)</td>
<td>Exceeds Expectations</td>
<td>Meets Expectations</td>
<td>Performs Below Expectations</td>
<td>Performs Well Below Expectations</td>
<td>There Is Insufficient Evidence</td>
</tr>
</tbody>
</table>
Comments on Scoring Holistically

A student turned in a research report on gender equality in Nicaragua. The research report was well organized and provided a number of sources. The student also turned in, with the other students in her group, the final draft of a grant application and a PowerPoint presentation about the grant application. The grant application was well written. The students developed a plausible plan to improve the quality of life in Nicaragua, applying the concepts they learned in the unit. The student gave thoughtful responses to the questions on the Student Reflection Sheet, demonstrating an understanding of how the grant application related to the targeted learning standards and broader global sustainability issues. The student was also critical of her work and suggested ways that she could improve it. During her group presentation, the student discussed two slides of the PowerPoint. The student had difficulty using the projector and advancing the slides. The student also was noticeably uncomfortable discussing the slides and did not make much eye contact with the audience.

The teacher awarded the student a 4 for Content Knowledge and Skills, but awarded a 3 for Application of Content Knowledge and Skills. The teacher also awarded a 4 for Critical Thinking and Problem-solving, but only a 3 for Evaluation of Research Findings from Sources. For the skills Civic Literacy, Global Awareness, and Self-evaluation, the teacher awarded 4s. For Collaboration and Contribution, the teacher awarded a 3. During the presentation of the grant, the teacher noticed that the student had difficulty giving the PowerPoint presentation and was not an effective communicator. Nevertheless, based on the ratings for Content Knowledge and Skills, Critical Thinking and Problem-Solving, Global Awareness, Civic Literacy, and Self-evaluation, the teacher awarded a 3 for Overall Score.
CHAPTER BIG IDEAS

- All people, regardless of who they are, where they come from, or what they do, are born with fundamental human rights.
- Human rights have direct connections to sustainability.
Guiding Questions
- What are fundamental human rights and how have they been honored or violated throughout history?
- How do human rights connect to sustainability?

Key Concepts
- human rights
- Universal Declaration of Human Rights
- discrimination
- self-determination

Supporting Vocabulary
- freedom
- justice
- equality
- civil disobedience
- apartheid
- transitional justice

Service Learning Component
Service Learning Project Idea
- **Question:** How can we educate younger students about the Convention on Rights of the Child?
- **Hook Resource:** *The Wall*
  A children’s book by Eve Bunting that shows how war can impact a child’s life. The book can relate to the idea that every child should be free from armed conflict.
- **Project:** Have students identify an upper elementary classroom (4th–6th grade) they would like to work with. They can create children’s books about a specific right from the Convention on Rights of the Child and share these books with the students in the class. Students in the upper elementary classroom can then work pair with students to create a PSA about a specific child right.

Additional Resources:
- **Website:** UNICEF
  UNICEF has created a child friendly version of the Convention on Rights of the Child.
- **Website:** Oneminutesjr.
  These 60-second videos made by young people between the ages of 12 to 20 around the world inspired by the rights of the child.
- **Lessons:** Eve Bunting lesson connections
  [https://people.hofstra.edu/alan_j_singer/CoursePacks/TeachingChildrenAboutHumanRightsUsingEveBunting.pdf](https://people.hofstra.edu/alan_j_singer/CoursePacks/TeachingChildrenAboutHumanRightsUsingEveBunting.pdf)
  Eve Bunting, a children’s author, has written a number of books on social issues related to human rights for the elementary school level.

Project Based Learning Component
Project Based Learning Idea
- **Overview:** Students are asked to collaborate on the creation of a blueprint for a human rights exhibit in a museum. They will also individually write a letter to a museum to persuade the museum why this specific human rights exhibit should be featured. This human rights chapter and corresponding activities in the teacher’s guide will arm...
students with the knowledge they need to complete their projects.

- **Driving Question:** How can you create a human rights exhibit in a museum to honor a specific event or group of people?
- **Hook Resource:** *Silent Witness: The story of Lola Wein and her dress*
  

  An online exhibit featured on the United States Holocaust Memorial Museum website. Lola Wein is a Jewish woman who was forced to hide in a hole for 7 years during the Holocaust when she was a little girl. Before hiding, her mother sewed a dress for her. Decades later, she still has the dress.

- **Individual Project:** Students write to their local history museum and persuade the museum to feature a specific human rights exhibit.
- **Group Project:** Students create a blueprint for a human rights exhibit at their local museum.

**Note:** FTF Activity 4, “Creating our Future,” can serve as a template for students as they determine how they will create their project and what they would like to feature in their exhibit.

- **Additional Resources**
  - **For Gathering ideas about exhibits**
    - **Website:** *United States Holocaust Memorial Museum*  

  - **For learning about human rights violations**
    - **Website:** *Center for Economic and Social Rights*  
    - **Website:** *Amnesty International*  

**Summative Assessment**

Chapter Test

**Connections**

**World History connections:**
History of the Declaration of Human Rights; impacts of genocide on human rights; World War II; British Salt Tax; Berlin Wall; apartheid in South Africa; Ottoman Empire; Persian Empire; Magna Carta

**Economics connections:**
Child labor; forced labor; labor rights

**Geography connections:**
Global, regional, and local human rights issues; family law in Morocco

**Civics connections:**
Personal and structural solutions to human rights issues; U.S. Patriot Act, political freedoms, civic rights, transitional justice
## Activities in Teacher’s Guide: Suggested Sequence

### Day 1

**Reading:** *Introduction to Human Rights*

**Activity 1:** *Current Events and Human Rights*—Students explore a number of current events related to human rights issues. After researching and responding to specific questions about a specific current event, they will present information back to their peers about the issue, the rights that were violated, and what solutions have been offered.

### Day 2

**Reading:** *Background on Human Rights*

**Activity 2:** *Defending Civil Rights*—Students examine a variety of historic civil rights court cases in the United States. Students will analyze these cases in pairs and create compelling opening statements to present to their peers to advocate for the rights these court cases sought to protect. The activity will culminate in creating a timeline of these cases to see how far the Civil Rights Movement has come in the United States.

### Day 3

**Reading:** *Human Rights Today*

**Activity 3:** *The Power to Change*—Students brainstorm different types of human rights. After reviewing the Universal Declaration of Human Rights, they are provided a specific article from the Declaration. In groups, they create 2 skits: one that presents how an individual or group is not allowed to exercise a particular right and one that presents an individual or group able to exercise this right because of a personal or structural solution. Students will act out these skits to their classmates.

### Day 4

**Reading:** *Pathways to Progress: Human Rights*

**Activity 4:** *Creating Our Future*—Students consider what they can personally do to create solutions to human rights issues. Students will identify what human rights issues they want to work on. Using an action-planning model, they visualize solutions to this specific issue, identify objectives, develop a plan, and implement their vision through action and service learning.
Discussion Questions from the Chapter Reading

Introduction to Human Rights
1. Why would weak governance potentially weaken support for human rights within a country?
2. What is the relationship between a clean environment and human rights?

Background on Human Rights
3. Why might certain countries have a difficult time adhering to the Universal Declaration of Human Rights?
4. Mahatma Gandhi believed that freedom from British colonizers was necessary. He violated specific laws to fight for this freedom. Do you think breaking laws in such cases is justified?

Human Rights Today
5. What are consequences to not educating a large percentage of young people within a society?
6. What are ways women’s rights have been violated? What can governments do to promote gender equality?

Pathways to Progress: Human Rights
7. Describe how Japanese Americans who were put into internment camps during World War II were able to seek transitional justice years later.
8. Carl T. Rowan, a famous journalist, said, “It is often easier to become outraged by injustice half a world away than by oppression and discrimination half a block from home.” How does it relate to your understanding of human rights?
Chapter Assessment: Human Rights, page 1

Recall
Match the following words on the left with their definitions on the right.

1. Human rights  
   active refusal to obey certain laws and demands of a government or ruler

2. Discrimination  
   inherent to all human beings, regardless of background

3. Self determination  
   unjust treatment towards a group of people

4. Civil disobedience  
   the ability of countries to govern themselves as opposed to being governed by a foreign ruler

Reasoning/Explanation
Complete the following multiple choice questions by choosing one correct answer.

5. Which statement best explains Mahatma Gandhi’s opinion of British rule over India?
   a. British rule over India helped to bring efficiency and order to the country.
   b. British rule over India unfairly gave too much power to Muslims.
   c. British rule over India protected India from conflict with its neighbors.
   d. British rule over India was oppressive and freedom was necessary.

6. During the 1990s, the actions of the Myanmar government towards the laborers working on the pipeline demonstrated:
   a. The government cared about the laborers and wanted to ensure they maintained their rights throughout the pipeline construction.
   b. The government wanted to build the pipeline at the expense of labor workers’ rights.
   c. The government supported health, labor, and education rights of the laborers throughout the pipeline construction.
   d. The government wasn’t concerned about the conditions under which the laborers worked, but paid them high wages.

7. Which of the following best illustrates an example of a civil rights violation?
   a. not allowing students to take an independent study at school
   b. not allowing students to attend a school because it is out of their zoning area
   c. not allowing students the right to choose what teacher they learn from
   d. not allowing students to attend a school because of their racial background
8. Which of the following statements best explains how apartheid impacted people in South Africa?
   a. Apartheid provided equal employment opportunities for people of all backgrounds.
   b. Apartheid took away religious freedom from those who did not practice Christianity.
   c. Apartheid enforced legal segregation and took away political and civil rights from black people.
   d. Apartheid seized land from Dutch farmers and redistributed it to all citizens.

9. All of the following are possible outcomes when a country does not protect education rights for children, except:
   a. an increased need for jobs since more of the population would be working instead of attending school
   b. lower rates of poverty and a decreased demand for social services
   c. a threat to economic sustainability since less people can contribute to the economy in an effective way
   d. a loss of future engineers, doctors, lawyers, and other professionals since less children attend school

10. What is an example of transitional justice?
   a. the Nuremberg Trials after World War II, which brought war criminals to court and charged them with human rights abuses
   b. the ruling of the 1954 case of *Brown v. Board of Education*, which declared state laws that created separate public schools for black and white students were unconstitutional
   c. a 2007 supreme court ruling in Belize, which awarded indigenous communities land based on property rights protections written in the Belize constitution
   d. the ruling of the 1969 *Tinker v. Des Moines School District*, which allowed a student to wear a black arm band to protest the Vietnam War
11. Which best replaces X in the flow chart?

Before World War II, countries had exclusive power over how they dealt with citizens.  
X  
The United Nations formed as a collective international group to promote peace and security.  
The Universal Declaration of Human Rights was adopted on October 10, 1948.

- a. World War II allowed countries to form strategic relationships with each other. These relationships fostered growth as an international community.
- b. Atrocities like the Holocaust prompted leaders to speak out against genocide and advocate for universal human rights.
- c. After World War II, countries wanted to ensure they still had the ability to have exclusive power over their citizens.
- d. During World War II, countries lost the ability to have complete power over their own citizens.

12. Which statement best describes the actions of the East Berlin’s government after the Berlin Wall was built in 1961?

- a. East Berlin’s government advocated for political and civil rights for its people.
- b. East Berlin’s government provided many economic opportunities for its people.
- c. East Berlin’s government limited political freedoms of its people.
- d. East Berlin’s government abused many rights of women and children.

13. All of the following would help a person to access his or her basic needs, except:

- a. primary health care
- b. safe drinking water
- c. high school education
- d. adequate housing

14. Which of the following illustrates an example of a business supporting human rights?

- a. a business that allows for children to work and receive competitive wages
- b. a business that pays its workers fair wages
- c. a business that provides its employees vacation and sick leave
- d. a business that pushes for decreased environmental regulations
Chapter Assessment: Human Rights,  page 4

Application/Complex Reasoning

Answer the following short answer questions below.

15. “This is a very powerful truth. All human beings are born free and equal in dignity and rights. This is the first article of the 1948 Universal Declaration of Human Rights. The Declaration represents the first time that universal human rights were spelled out for all people in a civil and individual context…”

—UNFPA Executive Director Thoraya A. Obaid

Part A. Explain why the Universal Declaration of Human Rights was created.

Part B. Identify one of the rights in the Universal Declaration and how this right has been violated in the past.

16. World War II spurred the creation of the Universal Declaration of Human Rights. Two specific events that prompted international outcry were the Holocaust and the Japanese Internment.

Part A. Choose one of these events and explain how it violated a group of people’s rights.

Part B. What is one action that a government could take to prevent this kind event from ever happening again?
Recall (4 points total)

1. Human rights—inherent to all human beings, regardless of background
2. Discrimination—unjust treatment towards a group of people
3. Self determination—the ability of countries to govern themselves as opposed to being governed by a foreign ruler
4. Civil disobedience—active refusal to obey certain laws and demands of a government or ruler

Reasoning/Explanation (10 points total)

5. d  
6. b  
7. d  
8. b  
9. b  
10. a  
11. b  
12. c  
13. c  
14. b

Application/Complex Reasoning (6 points total)

15. Part A. (1 point)
   • The Universal Declaration of Human Rights was created after World War II. The United Nations had formed as an international group to promote peace and security. Eleanor Roosevelt was elected the head of the United Nations Human Rights Commission and helped to draft a human rights declaration. The Declaration was adopted on October 10, 1948.

   Part B. Answers may vary. (2 points)
   • Civil Rights were violated during Apartheid in South Africa. Black South Africans lost many of their rights as legal segregation was imposed within the country.
   • Political rights were violated when East Berlin put up the Berlin Wall in 1961. The government on the east side went so far as to control information media.
   • Religious rights were violated when approximately 6 million Jewish people were killed during the Holocaust under Nazi rule.
   • Gender rights were violated in Congo during ongoing conflict as violence against women increased exponentially.

16. Part A. Answers may vary. (1 point)
   • The Holocaust was the mass genocide of Jewish people living in Europe during World War II.
   • The Japanese Internment in the United States happened after Pearl Harbor was bombed by the Japanese on December 7, 1941; 110,000 Japanese-Americans were forced to relocate to 10 internment camps across the United States.

   Part B. Answers may vary. (2 points)
   • A government can create international partnerships so they do not isolate themselves and make decisions that violate human rights.
   • A government can create policies that support tolerance of all kinds of people and doesn’t favor one group of people over another.
   • A government can avoid creating propaganda that scapegoats one group of people.
Activity 1: Current Events and Human Rights

Overview
Students explore a number of current events related to human rights issues. After researching and responding to specific questions about a specific current event, they will present information back to their peers about the issue, the rights that were violated, and what solutions have been offered.

Objectives
Students will:
• explore specific human rights and what people have done to enforce them
• identify current events that relate to tensions between wants and needs of individuals and groups
• explore causes, consequences, and solutions to human rights issues
• investigate concerns and issues related to universal human rights

Inquiry/Critical Thinking Questions
• What are the consequences of limiting individuals’ human rights?
• What can be done to prevent human rights abuses from happening?

Time Required
One 60-minute class

Key Concepts
• global issues
• sustainable solutions
• human rights abuses

National Standards Addressed
National Council for the Social Studies:
1. Culture
3. People, Places, and Environments
4. Individual development and Identity
5. Individuals, Groups, and Institutions
6. Power, Authority, and Governance
9. Civic ideals and practices

National Science Education Standards:
F. Science in Personal and Social Perspectives

National Efs Standards:
3.1 Personal Action: Personal Responsibility
3.1 Personal Action: Accountability

Materials/Preparation
Handout: Current Events and Human Rights, 1 handout per 3 to 4 students
Handout: Global Issues to Research, 1 global issue per 3 to 4 students
Newspaper article of any current event related to human rights violations

Activity
Introduction
1. Ask students to define “human rights.” According to the United Nations, human rights are “rights inherent to all human beings, whatever our nationality, place of residence, sex, national or ethnic origin, colour, religion, language, or any other status.”
2. Ask students to review the different types of human rights they have studied thus far.
3. Share the newspaper article you have found related to a current event and a specific human rights violation.
4. Ask students to identify what right they believe an individual or group is not exercising and explain why they think this is the case.

Steps
1. Divide the class into groups of 3 to 4 students.
2. Explain to students that each group will receive one global issue to research.
3. Hand out one global issue to each group from the handout, Global Issues to Research.
Activity 1: Current Events and Human Rights

4. Pass out the *Current Events and Human Rights* handout to each group.
5. Explain to them that they will first research information related to the global issue they were given. After, they will find one current event related to this global issues topic. They can do so by researching newspapers and magazines online such as *The New York Times* and *Newsweek*.
6. They can then complete the handout as a group.
7. Once they have completed their handouts, have them join together with other members of their group to share articles they researched. They can report this information back to the class.

Discussion Questions

1. Are any of the human rights violations connected to each other? If so, how might solutions be connected also? Provide an example of a solution that might impact more than one human right.
2. Are there specific regions of the world that are more prone to human rights violations? Which regions are they? Why do you think they have more human rights violations?
3. Why might human rights be in greater jeopardy when resources are scarce within a country?
4. Former UN Secretary-General Kofi Annan stated, “We will not enjoy security without development, we will not enjoy development without security, and we will not enjoy either without respect for human rights.” Do you believe security and development are not possible without respect for human rights? Why or why not?

History Extension

Have students research the same issue they were assigned, but through a historical lens. For example, how were religious rights denied to a group decades or centuries ago? How did people work to resolve this issue, or is the issue still unresolved? Is it comparable to how people are resolving similar issues today?

Additional Resources

Resources for human rights research:

- Website: Coalition to Stop the Use of Child Soldiers  
- Website: Internet Censorship in China  
- Website: Partners in Health  
  [http://www.pih.org](http://www.pih.org)
- Website: Girl Effect  
  [http://www.girleffect.org/question](http://www.girleffect.org/question)
- Website: Human Trafficking.org  
- Website: ACLU Defense of Religious Practice and Expression  
Global Issues to Research

Global Issue 1:
Child soldiers

Global Issue 2:
Government censorship

Global Issue 3:
Health care

Global Issue 4:
Girls and education

Global Issue 5:
Human trafficking

Global Issue 6:
Religious oppression

Human Rights
Current Events and Human Rights,  page 1

**Directions:** Research a particular global issue based on the topic your teacher has provided you. Find one credible newspaper article related to this topic. After you have read the article, respond to the following questions. After you independently research, you will share this information with other members of your group.

**Issue:**

1. What information did you learn about your issue?

2. What surprised you as you researched your issue?

3. Find a newspaper article(s) that looks at a current event related to your issue (provide author name, article title, publication source, publish date)

4. What human right is being violated?

5. What group of people is involved?

Human Rights
6. Where in the world did this issue take place?

_______________________________________________________________________________________
_______________________________________________________________________________________
_______________________________________________________________________________________
_______________________________________________________________________________________

7. Why do you think human rights violations have happened to this group?

_______________________________________________________________________________________
_______________________________________________________________________________________
_______________________________________________________________________________________
_______________________________________________________________________________________

8. Has anything been done to solve this issue?

_______________________________________________________________________________________
_______________________________________________________________________________________
_______________________________________________________________________________________
_______________________________________________________________________________________

9. How can readers and citizens support this effort?

_______________________________________________________________________________________
_______________________________________________________________________________________
_______________________________________________________________________________________
_______________________________________________________________________________________

10. If there is one policy that should be developed around this global issue, what would you recommend?

_______________________________________________________________________________________
_______________________________________________________________________________________
_______________________________________________________________________________________
_______________________________________________________________________________________
Activity 2: Defending Civil Rights

Overview
Students examine a variety of historic civil rights court cases in the United States. Students will analyze these cases in pairs and create compelling opening statements to present to their peers to advocate for the rights these court cases sought to protect. The activity will culminate in creating a timeline of these cases to see how far the Civil Rights Movement has come in the United States.

Objectives
• identify the essential elements of an opening statement made within a courtroom
• analyze historic court cases in the United States and how they relate to civil rights
• utilize persuasive language to convince peers about the relevance of these rights

Inquiry/Critical Thinking Questions
• How can court cases systematically put limits on the civil rights of individuals or groups?
• What successes and failures have happened in the Civil Rights Movement within the United States?

Time Required
Two 60-minute classes; ideally, students will have time to research their court cases through the Internet and books to create their opening statements

Key Concepts
• civil rights
• U.S. Supreme Court
• advocacy

National Standards Addressed
National Council for the Social Studies:
1. Culture
3. People, Places, and Environments
4. Individual development and Identity
5. Individuals, Groups, and Institutions
6. Power, Authority, and Governance
9. Global Connections
10. Civic ideals and practices

National Science Education Standards:
F. Science in Personal and Social Perspectives

National Efs Standards:
3.1 Personal Action: Personal Responsibility
3.1 Personal Action: Accountability

Materials/Preparation
Post-it notes, 1 each for half of the class
Cards: Landmark Civil Rights Cases in the United States, 1 card per student pair
Handout: Civil Rights: A Look at U.S. History, 1 per student pair
Handout: Opening Statement Rubric, 1 per student pair

Human Rights
Activity 2: Defending Civil Rights  continued

Activity

Introduction

1. Divide the class into 2 groups.
2. Hand one group post-it notes and explain they should wear this on their clothing.
3. For the next few minutes, ignore students who do not have post-it notes on their clothing and praise students who do. Offer a number of compliments to those wearing post-it notes, such as, you’re doing such a great job in class these days!
4. Ask students who are wearing post-it notes the following:
   • if they would like to have a special lunch with you
   • how they would feel if you gave them 5 extra credit points on their next test
5. Arbitrarily award extra credit to these students.
6. You may hear from the other students that you are treating them unfairly. After a few minutes of favored treatment, stop the activity.
7. Ask students what set of rights are being violated in this scenario (those students with no post-it notes are being discriminated against).
8. Explain to students that during the 1960s, Jane Elliott was a teacher who did this activity with her students, but divided them up by eye color. She wanted to teach students about civil rights and discrimination in the United States.
9. Tell students that the United States has an extensive civil rights history that they are going to research.

Steps

1. Tell students they will be analyzing court cases in the United States related to civil rights during the last 150 years.
2. Explain that when lawyers present cases within the courtroom during a trial, they are allowed to present an opening statement to the judge and jury.
3. Tell students they will develop and present opening statements related to these specific court cases to advocate for a specific civil right. They will be representing the person or group in each court case whose rights have been violated.

Option: Have students watch sample opening statements to provide them a clear idea of what they sound like.

• Science in the Courtroom: The Woburn Toxic Trial
  http://serc.carleton.edu/woburn/resources/video.html
  View opening statements created by different lawyers for a mock trial.

• Philadelphia
  http://www.youtube.com/watch?v=131fQF4CgLg4
  View Denzel's Washington's opening statement from the movie as he defends his client who was fired from an organization because he had HIV.

4. Pass out the handout, Civil Rights: A Look at U.S. History to each pair of students.
5. Explain to students there are tips on their handout to help them create effective opening statements.
6. Share the Opening Statement Rubric with students.
7. Break students up into pairs.
8. Hand 1 card from the handout, Landmark Civil Rights Cases in the United States to each pair.

Option: A number of research links for each court case can be found on the websites below. Share these links with students if they need support in beginning their research:

• Civil Rights: U.S. Supreme Court Decisions
  http://public.findlaw.com/civil-rights/civil-rights-basics/key-civil-rights-cases.html
  A resource by the organization Find Law.
Activity 2: Defending Civil Rights continued

- Supreme Court
  [http://www.law.cornell.edu/supct/](http://www.law.cornell.edu/supct/)
  A resource by Cornell University Law School.

- Landmark Cases of the U.S. Supreme Court
  A resource created by Street Law, Inc. and The Supreme Court Historical Society.

9. Have students complete the Civil Rights: A Look at U.S. History handout after they have researched and read about their court case.
   Note: Students will need to do some of this online research independently.

10. Have them create opening statements based on their specific court case, using tips from the handout and the rubric as guides.

11. Explain each pair will present these opening statements to their classmates. Each statement should be between 2 to 3 minutes.

12. After all students have shared their opening statements, reiterate to them that they have shared arguments for key civil rights cases in the United States history.

- Option: Have students arrange themselves into a timeline based on the court cases to visually have a sense of how civil rights law has changed throughout the course of history in the United States.

13. Use the following questions to generate a class discussion.

Discussion Questions

1. What have been successes for civil rights throughout U.S. history?
2. Who are key people that should advocate for human rights?
3. How can laws be used to uphold human rights? How can laws be used to violate human rights?
4. Do you agree with the Supreme Court’s decision on the case you researched? Why or why not?

5. What do you believe is the most pressing civil rights issue today?

Additional Resources

- Documentary: Eyes on the Prize: America’s Civil Rights Movement
  [www.pbs.org/wgbh/amex/eyesontheprize/](http://www.pbs.org/wgbh/amex/eyesontheprize/)
  This multi-part documentary series by Henry Hampton tells the story of the African-American Civil Rights movement. The series uses a number of primary sources to explain with the events of the Civil Rights Movement.

- Film: To Catch a Fire
  By Phillip Noyce, To Catch a Fire is the real life story of a South African, Patrick Chamusso, who is wrongly accused of a bombing an oil refinery and the results of the wrongful accusation during apartheid.

- Website: NAACP (National Association of the Advancement of Colored People)
  The NAACP was founded in 1909; it is the nation's oldest civil rights organization. The website shares information about current advocacy work and publications, and includes an interactive timeline that documents more than 100 years of the organization's work.

- Website: American Civil Liberties Union (ACLU),
  [http://www.aclu.org/](http://www.aclu.org/)
  The ACLU is an organization that includes over 500,000 members who work to defend and preserve the individual rights and liberties of everyone in the United States.

- Website: iCivics,
  [http://www.icivics.org/About](http://www.icivics.org/About)
  iCivics is a website designed to teach students civics and inspire them to be active participants.
## Opening Statement Rubric

<table>
<thead>
<tr>
<th></th>
<th>4 (exceeds standard)</th>
<th>3 (meets standard)</th>
<th>2 (partially meets standard)</th>
<th>1 (does not meet standard)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Utilizes critical thinking</strong></td>
<td>analyzes the court case effectively and demonstrates this analysis when presenting the opening statement by sharing accurate facts, events, and dates</td>
<td>analyzes the court case somewhat effectively and demonstrates this analysis when presenting the opening statement through sharing accurate facts, events, and dates</td>
<td>does not analyze the court case effectively; misinterpretation is evident through inaccurate facts, events, and dates</td>
<td>does not attempt to analyze the court case</td>
</tr>
<tr>
<td><strong>Organizes ideas effectively</strong></td>
<td>presents opening statement in a well-organized manner that establishes the background for case and why the audience should care; provides 2 to 3 pieces of factual information within this statement</td>
<td>presents opening statement in a mostly-organized manner telling the story of the case and why the audience should care; provides 2 to 3 pieces of factual information within this statement</td>
<td>presents opening statement in a somewhat logical manner; somewhat tells a story and engages the audience in why they should care; provides 1 to 2 pieces of factual information within this statement</td>
<td>does not demonstrate an attempt to organize ideas into a logical presentation that audience can follow; does not provide any factual information to support opening statement</td>
</tr>
<tr>
<td><strong>Communicates effectively with audience</strong></td>
<td>communicates effectively by using persuasive language for audience; audience is compelled to agree with opening statement</td>
<td>communicates effectively and uses persuasive language for audience; audience is mostly compelled to agree with opening statement</td>
<td>somewhat communicates and uses persuasive language to engage the audience; audience may be uninterested or unable to understand opening statement</td>
<td>does not communicate effectively with audience; audience is not compelled to agree with opening statement</td>
</tr>
</tbody>
</table>

Human Rights
<table>
<thead>
<tr>
<th>Case</th>
<th>Year</th>
<th>Ruling</th>
<th>Defending</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dred Scott v. Sandford</strong></td>
<td>(1856)</td>
<td>Citizenship and rights are denied to all African-Americans.</td>
<td>Dred Scott</td>
</tr>
<tr>
<td><strong>Plessy v. Ferguson</strong></td>
<td>(1896)</td>
<td>Public spaces are considered ‘separate, but equal,’ meaning they can be racially segregated.</td>
<td>Plessy</td>
</tr>
<tr>
<td><strong>Korematsu v. U.S.</strong></td>
<td>(1944)</td>
<td>Internment of Americans of Japanese descent during World War II is allowed.</td>
<td>Korematsu</td>
</tr>
<tr>
<td><strong>Shelley v. Kraemer</strong></td>
<td>(1948)</td>
<td>Courts can't enforce neighborhoods’ restrictive laws that prohibit people on the basis of race from owning or occupying property.</td>
<td>Shelley</td>
</tr>
<tr>
<td><strong>Miranda v. Arizona</strong></td>
<td>(1966)</td>
<td>Police must advise criminal suspects of their rights.</td>
<td>Miranda</td>
</tr>
<tr>
<td><strong>Loving v. Virginia</strong></td>
<td>(1967)</td>
<td>State laws that prohibit inter-racial marriage are unconstitutional.</td>
<td>Loving</td>
</tr>
<tr>
<td><strong>Griggs v. Duke Power Company</strong></td>
<td>(1971)</td>
<td>Specific education requirements and tests used to exclude African-American job applicants are not allowed.</td>
<td>Griggs</td>
</tr>
<tr>
<td><strong>Lau v. Nichols</strong></td>
<td>(1973)</td>
<td>San Francisco’s failure to give Chinese students English instruction is deemed unlawful discrimination.</td>
<td>Lau</td>
</tr>
<tr>
<td>Case</td>
<td>Ruling</td>
<td>Defending</td>
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<tr>
<td><em>Johnson v. Transportation Agency</em> (1987)</td>
<td>Ruling: Court decides that Santa Clara’s transportation agency taking into account an employee’s gender to promote her was fair.</td>
<td>Johnson</td>
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<tr>
<td><em>Romer v. Evans</em> (1996)</td>
<td>Ruling: An amendment in Colorado’s constitution is unconstitutional because it did not allow legal protection of homosexuals’ rights.</td>
<td>Romer</td>
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</tr>
<tr>
<td><em>Roper v. Simmons</em> (2005)</td>
<td>Ruling: Juveniles under the age of 18 cannot be sentenced to death.</td>
<td>Roper</td>
<td></td>
</tr>
</tbody>
</table>
Directions: While researching information about your court case, complete the questions below. Use these responses to help create your opening statement you will present to your classmates. Tips on how to create an effective opening statement are included below.

Name of court case: ____________________________________________

1. Summarize the court case.
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

2. Whose civil rights were threatened in this court case?
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

3. In what way were their rights threatened?
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

4. Were there any laws in place that either helped to support or did not help to support these specific civil rights?
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________

5. Write a compelling first sentence for your opening statement so that it grabs the audience/jury.
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
   ____________________________________________________________
6. List 3 pieces of factual information you will use to defend your client.

_______________________________________________________________________________________
_______________________________________________________________________________________
_______________________________________________________________________________________

7. Create your opening statement.

_______________________________________________________________________________________
_______________________________________________________________________________________
_______________________________________________________________________________________

Tips on how to create an effective opening statement:

The opening statement is the first time a jury and judge hears from an attorney about the point he/she is trying to make in a courtroom. Your goal is to have them side with your clients’ needs. The opening statement is very important to the outcome of a case; 80% of the jury decides on opinions when the opening statements are made. That is why it is crucial to make a clear and compelling opening argument.1

1. To begin, describe the case in a sentence summary using a theme.
   (i.e., “This is a case about access to an excellent education.”)
2. Tell a story. Make your audience care about the people you are defending.
   You can do so by providing a character sketch of the major players involved.2
3. Be sure to share evidence that supports your story.
4. Use visual or auditory aids when possible.
5. Conclude with a clear message of how you want the trial to end.3
6. The statement should be between 3 to 4 minutes.

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1 Douglass F. Noland, “Ten Points in Making an Effective Opening Statement,”
Activity 3: The Power to Change

Overview
Students brainstorm different types of human rights. After reviewing the Universal Declaration of Human Rights, they are provided a specific article from the Declaration. In groups, they create 2 skits: one that presents how an individual or group is not allowed to exercise a particular right and one that presents an individual or group able to exercise this right because of a personal or structural solution. Students will act out these skits to their classmates.

Objectives
Students will:
• identify different types of human rights
• create scenarios that represent when people do and do not have access to specific rights
• identify personal and structural solutions to human rights violations

Inquiry/Critical Thinking Questions
• What are fundamental human rights all people are born with?
• What are barriers that prevent individuals from observing these rights?

Time Required
One 45-minute class

Key Concepts
• human rights
• Universal Declaration of Human Rights
• personal solutions
• structural solutions

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
9. Global Connections

National Science Education Standards
F. Science in Personal and Social Perspectives

National EfS Standards
3.1 Personal Action: Personal Responsibility
3.1 Personal Action: Accountability

Materials/Preparation
Handout: Select Articles from Declaration of Human Rights, 1 article per group of 3 to 4 students

Activity
Introduction
2. Explain to students that although people are born with these human rights, not everyone is able to exercise them.
3. Ask students to define what personal and structural solutions are. (Personal solutions are solutions to a problem whereby an individual attempts to solve the problem. Structural solutions are solutions to a problem that involves changing a system or an established structure.)

Option: Have students brainstorm a list of personal and structural solutions to a common issue facing their school or local community.
Activity 3: The Power to Change  continued

Steps

1. Tell the class they are going to create 2 skits based on one of the Articles from the Declaration of Human Rights: one that focuses on a negative situation in which an individual or group is not receiving a specific right, and one in which they transform the situation so that this individual or group receives this right. For example, based on Article 26, the first skit could look like students working under harsh conditions in a factory because they need to support their families. The second skit would transform into how students are learning happily in school because working conditions have improved. The group would explain how this transformation was made through a personal or structural solution.

2. Break the class into groups of 3 to 4 students.

3. Hand out one article to each group from the handout, Select Articles from Declaration of Human Rights.

4. Tell them that to create a skit effectively, they should consider:
   • who in the world may not be receiving the specific right
   • a realistic solution that would allow people to enjoy this right (i.e., policy change, advocacy, civic participation, protest, legal action)

5. Explain to students they have 15 to 20 minutes to create 2 skits and act them out in front of the class. Each skit can be between 2 to 3 minutes.

6. Have students act out their skits.

7. Lead the class in the following discussion.

Discussion Question

1. What are effective solutions governments, organizations, and individuals can take part in to ensure the human rights of all people are protected?

2. What may be barriers preventing people from not having access to certain rights?

3. What connections exist between quality of life and human rights?

4. What is the relationship between human rights and good governance?

Technology Extension

Have students create a digital public service announcement on a specific human right they care about. They can share these videos with classmates and other students at their school.

Language Arts Extension

Have students translate the Universal Declaration of Human Rights into language that is familiar for your student population. For an example of this, see the language provided by United for Human Rights (http://www.humanrights.com).

Additional Resources

• Video: Top Ten Cartoons for Children’s Rights
   http://www.unicef.org/videoaudio/video_top_cartoons.html
   A number of animation studios have worked with UNICEF to create these cartoons that inform people around the world about children’s rights. Each PSA focuses on rights described in the global rights treaty.

• Website: Youth for Human Rights
   http://www.youthforhumanrights.org/
   Youth for Human Rights is an organization that teaches youth about human rights both in and outside of the classroom. Public service announcements about human rights, videos, and a documentary are all available on the website.
Select Articles from the Declaration of Human Rights

Article 2.
Everyone is entitled to all the rights and freedoms set forth in this Declaration, without distinction of any kind, such as race, color, sex, language, religion, political or other opinion, national or social origin, property, birth or other status. Furthermore, no distinction shall be made on the basis of the political, jurisdictional or international status of the country or territory to which a person belongs, whether it be independent, trust, non-self-governing or under any other limitation of sovereignty.

Article 18.
Everyone has the right to freedom of thought, conscience and religion; this right includes freedom to change his religion or belief, and freedom, either alone or in community with others and in public or private, to manifest his religion or belief in teaching, practice, worship and observance.

Article 20.
(1) Everyone has the right to freedom of peaceful assembly and association

Article 23.
(1) Everyone has the right to work, to free choice of employment, to just and favorable conditions of work and to protection against unemployment

Article 23.
(2) Everyone, without any discrimination, has the right to equal pay for equal work,

Article 25.
(1) Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control.

Article 25.
(2) Motherhood and childhood are entitled to special care and assistance. All children, whether born in or out of wedlock, shall enjoy the same social protection.

Article 26.
(1) Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education shall be compulsory. Technical and professional education shall be made generally available and higher education shall be equally accessible to all on the basis of merit.
Activity 4: Creating Our Future

Overview
Students consider what they can personally do to create solutions to human rights issues. Students will identify what human rights issues they want to work on. Using an action-planning model, they visualize solutions to this specific issue, identify objectives, develop a plan, and implement their vision through action and service learning.

Objectives
Students will:
• create an actionable plan for solutions towards human rights issues
• identify issues they want to address, and identify and prioritize objectives

Inquiry/Critical Thinking Questions
• How do we envision and create a world we want for ourselves and for future generations?
• How do we identify structural solutions to human rights issues?
• How can we work together to plan a course of action?

Time Required
One 90-minute class; additional class time for implementing the action plan. Whereas the 90 minute lesson can be completed in isolation, ideally, students will have time to research their issues through community interviews, the Internet and books, develop their plans fully, and implement their projects.

Key Concepts
• vision statement
• action plan
• personal solutions
• structural solutions

National Standards Addressed
National Council for Social Studies
2. Time, Continuity, and Change
4. Individual Development and Identity
5. Individuals, Groups, and Institutions
6. Power, Authority, and Governance
10. Civic Ideals and Practices

National Science Education Standards
F. Science in Personal and Social Perspectives

National Efs Standards
3.1 Personal Action: Personal Responsibility
3.1 Personal Action: Accountability

Materials/Preparation
Handout/Overhead: Action Planning Worksheet, 1 per group of 3-4 students, and make an overhead
Butcher paper, 1 sheet per group
Colored marking pens, 1 set per group
Activity 4: Creating Our Future  continued

Activity

Introduction
1. Ask students about what kinds of human rights issues they see impacting people in their local community or globally.

Steps
1. Tell them they will be creating action plans that consider solutions to these human rights issues.
2. Explain that, to help focus their vision of this plan, it is helpful to think about specific human rights issues that are important to them. Brainstorm and list human rights issues (these may include all or some of the following: gender rights, human rights, health rights, labor rights, religious rights, civil rights, and political rights).
3. Explain that they will develop an “action plan” to address 1 of the human rights issues in the list using a model called an “Action Planning Sequence.” Through this process, they will assess how the issue affects both local and global communities, and develop a plan to address the structural causes of the issue.
4. Give each student a copy of the handout, Action Planning Worksheet, and show the overhead of the same worksheet. Explain each step of the action planning process to the students, using the overhead as a guide.
5. Divide the class into groups of 3 or 4. Assign, or have each group choose, a topic from the list of issues. Give each group a piece of butcher paper and pens.
6. Give them about 20–30 minutes to follow the steps outlined in the handout. They should begin by discussing and agreeing upon a shared vision. Circulate the room and assist students as they are working.
7. After they complete the handout, have each group transfer the information to a piece of butcher paper. Encourage them to include pictures, graphs, quotes, etc.
8. Have each group present their displays to the class.
9. Bring the class back together for reflection questions.

Discussion Questions
1. Does creating an action plan to help solve a human rights issue for the future help you realize it? How and why is this important step in creating effective solutions?
2. Did the action sequence process work? How could the process be improved?
3. What will you do next to implement your plan?
4. In what other circumstances could you use this action planning process?
5. Once you have taken action on an issue, it changes the dynamics of the issue by producing unintended consequences or by revealing new solutions. What can you do next to address this issue and work toward your vision?

Writing Extension
Have students write a letter to an influential entity (government agency, newspaper, etc.) or a family member or friend explaining their human rights vision and outlining the steps to realizing it.

Art Extension
Have students create a mural at the school (or as part of a local community development project) depicting their collective vision of human rights.

Additional Resources
- Film: Pay it Forward
  This feature film by Mimi Leder is about a young boy who attempts to make the world a better place.
- Book: The Lemming Dilemma: Living with Purpose, Leading with Vision
  A charming story by David Hutchens is about a lemming’s quest for meaning, aspiration, and value. (Pegasus Communications, 2000.)
Creating Our Future, page 1
Action Planning Worksheet

Group members: ________________________________________________________________

Issue we are focusing on: _______________________________________________________

Scope of the Issue

Who or what is currently being affected by this human rights issue?
___________________________________________________________________________
___________________________________________________________________________
How does this issue affect our local community?
___________________________________________________________________________
___________________________________________________________________________
How does this issue affect our global community?
___________________________________________________________________________
___________________________________________________________________________

Visualize Desired Outcome

Brainstorm, discuss, and write a summary of the desired outcome for our specific issue:
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________

Gather Companions

What is already being done to effect change on this issue? Brainstorm, discuss, and list the people and organizations that share a similar vision and can help us meet our vision:
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________

Identify and Prioritize Objectives
What are the steps or parts that will lead to your vision? What does the vision look like? For example, if your vision is “full access to health care for all people,” then the objectives might be more doctors per person, more clinics in poor neighborhoods, or more reproductive health care. Discuss, list, and prioritize 2 or 3 objectives that will lead to our vision.

What are some specific things that will need to occur to realize our vision and to be sure that we are addressing structural solutions to the issue we are addressing?

Identify Obstacles
Discuss who or what might get in the way of realizing our vision. List a few obstacles and include ways we might address them:

Identify Resources
What resources will you need to get your vision going? Is it information, money, time? How will you use these resources? Discuss and list information, resources, and other help we will need to realize our vision:

Implement Action Plan and Follow Up
What steps will you take to start working on your vision? Who will be responsible for implementing each step? List the steps we will take to start implementing our vision:
CHAPTER BIG IDEAS

- To build a sustainable future, opportunities for improved well-being must be available to people of all genders.
- Gender equity must play a role in building sustainable communities.
Guiding Questions

- How does gender equity relate to sustainability?
- What are modern trends related to gender equity?
- What are ways to individually and structurally address gender inequities?

Key Concepts

- gender
- intersex
- gender identity
- cisgender
- transgender
- gender norms
- gender equity
- masculinity
- femininity
- gender-based violence (GBV)
- human trafficking
- maternal health care
- feminization of poverty

Supporting Vocabulary

- biosocial
- biological essentialism
- social constructionism
- patriarchal societies
- stratification
- suffrage
- slavery
- child marriage
- reproductive rights

Service Learning Component

Service Learning Project Idea

- **Question:** How can we best educate people about gender issues in the developing world?

- **Hook resource:** *Wangari’s Tree of Peace*
  This children’s book by Jeanette Winter tells the story of Wangari Maathai. The Nobel Peace Prize winner grew up in Kenya and started the Green Belt Movement, which is responsible for planting 30 million trees throughout the continent of Africa.

- **Project:** Students write and illustrate children’s books about gender issues both locally and globally. They can sell the books as a fundraiser for an organization working to plant trees around the world or supporting education in global communities.

- **Additional Resources:**
  - **Website:** *CARE*
    [http://www.care.org](http://www.care.org)
    CARE is an organization that works to fight global poverty with a specific focus on women.
  - **Website:** *Women for Women*
    Women for Women is an organization that works to provide women survivors of war, civil strife, and conflicts the tools necessary to create stable lives.
Project-based Learning Component

Project-based Learning Idea

- **Overview:** Students will research issues related to gender and education in the United States.
- **Driving Question:** How can we address the increased rate of drop-outs for boys?
- **Hook Resource:** *Illiteracy and Dropout Rates*, PBS Student Reporting Lab Story. [https://www.youtube.com/watch?v=oiHRTAHdCQE](https://www.youtube.com/watch?v=oiHRTAHdCQE)
- **Individual Project:** Individuals will write letters to administration about what can be done to ensure boys graduate from high school.
- **Group Project:** Groups will create a 2-minute public service announcement that will address the impacts on boys of dropping out of high school and not attending school/entering a program after high school.
- **Additional Resources:**
  - **Website:** National Center for Education Statistics [https://nces.ed.gov/fastfacts/display.asp?id=16](https://nces.ed.gov/fastfacts/display.asp?id=16) (updated annually) Students can analyze dropout and completion rates in the United States by race, ethnicity, and gender.
  - **Film:** *The Mask You Live In* This film illustrates the pressures put on boys to not show emotion toward education and family. [http://therepresentationproject.org/film/the-mask-you-live-in/](http://therepresentationproject.org/film/the-mask-you-live-in/)

Summative Assessment

Chapter Test

Connections

**World History connections:**
Patriarchal societies; agricultural settlements; traditional gender roles; women’s suffrage; historical land ownership trends; Industrial Revolution; World War II; genocide in Rwanda; Malala Yousafzai

**Economic connections:**
Women in the workforce; World Bank; Green Belt Movement; ecotourism; property rights

**Geography connections:**
Gender inequities throughout the globe; human trafficking; HIV/AIDS pandemic; displacement due to conflict; mass migration

**Civics connections**
Personal and structural solutions to gender issues; Gavin Grimm
## Activities in Teacher’s Guide: Suggested Sequence

### Day 1

**Reading:** *Introduction to Gender*

**Activity 1:** *Gender in Media*—Students begin by acknowledging some individual beliefs they have related to gender. They then analyze an advertisement that portrays different genders and consider stereotypes and impacts of media on society. They generate ideas about how the ad could be modified so that it does not promote rigid gender norms.

### Day 2

**Reading:** *Background on Gender*

**Activity 2:** *Women’s Movements Around the World*—Students research different women’s rights movements around the world. In small groups, they learn about a specific women’s movement and share this information with their classmates. The class then identifies different types of gender-related issues and analyzes impacts of these issues on sustainability.

### Day 3

**Reading:** *Gender Today*

**Activity 3:** *Everyone Does Better When Women Do Better*—Students enact the roles of citizens and government representatives from various countries at a “town meeting” forum. Citizens address their local government representative with concerns about the status of women and girls in their country and potential solutions. With input from the citizens, the leaders prioritize the concerns voiced at the meeting and decide on the most effective way to take action and improve the situation in each of the countries.

### Day 4

**Reading:** *Pathways to Progress: Gender*

**Activity 4:** *Closing the Gender Gap*—Students analyze what the typical girl in a developing country will experience from birth until adulthood. They will then brainstorm points of intervention in order to consider ways to reform the cycle of gender inequality that persists today. They will work in pairs to determine ways to change the course of this girl’s life and examine possible unintended consequences of these interventions.
Day 5

**Reading:** *Singular “They”*

**Activity 5:** *Singular “They”: Writing in Context*—Students will read an example of a student essay on the issue of pronouns in the struggle for gender equity of transgender people. They will be able to discuss the concept of “singular they.” Also, they will see an example of using evidence in writing to help them with their own writing structure.
Discussion Questions from the Chapter Reading

**Introduction to Gender**

1. What does gender mean?
2. How do gender norms affect your life? Your friends’ lives?
3. How do you think gender identity is formed?

**Background on Gender**

4. How were gender roles defined in the early 19th century? Do any of these roles still hold true today?
5. How did the Industrial Revolution impact gender roles in the United States?

**Gender Today**

6. What are examples of contemporary issues of gender inequity? What has been done to address these issues?
7. Why is education a preventative measure for a number of gender-related inequities?
8. What strategies for supporting gender equity make the most sense to you?

**Pathways to Progress: Gender**

9. What are personal ways to address gender-based inequities?
10. What are structural ways to address gender-based inequities? How could you as an individual support these structural reforms?
Chapter Assessment: Gender, page 1

Recall
Match the following words on the left with their definitions on the right.

1. Gender  widely held and oversimplified beliefs about a group of people
2. Stereotype  how one feels in regards to their place in society and how they define themselves
3. Human trafficking  a system in which the male is the dominant authority
4. Patriarchal society  the illegal dealing or trading of people

Reasoning/Explanation
Complete the following multiple choice questions by choosing the correct answer.

5. Which reason best explains how patriarchal societies promote gender inequity:
   a. by allowing women to vote after the age of 25 years old
   b. by giving men more economic, legal, and political power
   c. by giving women reproductive rights only after a certain age
   d. by allowing access to free education to both girls and boys

6. Which of the following is not a theory of how gender identity is formed?
   a. social constructionism
   b. biological essentialism
   c. cisgender
   d. biosocial theory

7. Which statement best explains how World War I and World War II significantly changed women’s roles in the United States?
   a. Women were finally given the right to own property and the right to vote.
   b. Women were able to fight on the frontlines with men.
   c. Women were able to enter the workforce and earn money for their families.
   d. Women were able to go to universities at a much higher rate.

8. All of the following are contemporary issues of gender inequity, except:
   a. human trafficking
   b. gender-based violence
   c. reproductive rights and health care
   d. overconsumption
Chapter Assessment: Gender, page 2

9. A mother and her two daughters spend a disproportionate amount of time outside collecting firewood, gathering water, and farming. The father works in the city, while the son goes to school. How could this scenario change to best support a community’s long-term sustainability?
   a. The daughters should be attending school so they can contribute economically to the family in the future.
   b. The mother should stay at home preparing food while the daughters collect natural resources.
   c. The son should be helping the mother and two daughters on the farm instead of attending school.
   d. The son should be working in the city with his father to support the family instead of attending school.

10. Which of the following is not a gender identity term?
   a. transgender
   b. gay
   c. cisgender
   d. male

11. Ongoing conflict within a country can contribute to gender inequity in all of the following ways, except:
   a. girls and women are forced to stay at home while men leave to fight
   b. girls and women risk being victims of sexual violence and forced prostitution
   c. girls and women are forced to hide weapons and arms for soldiers
   d. girls and women typically stop attending school

12. Which statement explains the concept of feminization of poverty?
   a. If a woman is born into poverty, her child will most likely live in poverty.
   b. The gap between the number of men and the number of women in poverty is widening.
   c. Because women are less skilled and less capable, they are more often the ones who live in poverty.
   d. After conflicts happen, more women live in poverty because they don't have a strong social network.
Chapter Assessment: Gender, page 3

13. Which of the following best demonstrates an example of how media can disrupt or work against rigid gender norms?
   a. sports drink commercial in which girls play soccer
   b. magazine ad in which a muscular teenage boy and a thin teenage girl eat dinner at a popular restaurant chain
   c. jeans commercial in which a very shy girl talks to a boy who is assertive and confident
   d. food ad in which a young boy eats a burger and fries

14. Which statement best demonstrates a result of mothers who receive maternal health care?
   a. Mothers who receive maternal health care waste public tax dollars on raising their children.
   b. Mothers who receive maternal health care learn what foods to eat during pregnancy so their children have proper nutrition.
   c. Mothers who receive maternal health care become too dependent on health care providers to support them with their children’s needs.
   d. Mothers who use maternal health care have an easier time preparing their children for pre-school.

Application/Complex Reasoning

Answer the following short answer questions below.

15. Part A. What is a patriarchal society?
   Part B. What is one way a patriarchal society can lead to gender inequities?

16. “We ask justice, we ask equality, we ask that all the civil and political rights that belong to citizens of the United States be guaranteed to us and our daughters forever.”
   —Declaration of Rights for Women, July 1876
   Part A. Identify one way women’s rights have improved throughout history.
   Part B. Identify one way women struggle for equity today.
   Part C. What kind of policy could a government create to address gender inequities?
Teacher Master
Chapter Assessment: Gender

Recall (4 points total)
1. Gender—how one feels in regards to their place in society and how they define themselves
2. Stereotype—widely held and oversimplified beliefs about a group of people
3. Human trafficking—the illegal dealing or trading of people
4. Patriarchal society—a system in which the male is the dominant authority

Reasoning/Explanation (10 points total)
5. b
6. c
7. c
8. d
9. a
10. b
11. c
12. b
13. a
14. b

Application/Complex Reasoning (6 points total)
15. Part A. (1 point)
   • A patriarchal society is a society in which the male has been the dominant authority figure. Within these societies, legal, political, and economic power is more often given to men than women.
   Part B. Answers will vary. (1 point)
   • Women may not be able to vote.
   • Women may not be able to own land.
   • Women may not be able to be political leaders.
   • Women may not be able to work outside of the home.
16. Part A. Answers will vary. (1 point)
   • Voting rights
   • Reproductive rights
   • Property rights
   • Changing economic roles
   Part B. Answers will vary. (1 point)
   • Gender-Based Violence
   • Victims of conflict
   • Maternal health
   • Human rights abuses
   • Gender gap in economic and educational opportunities
   Part C. Answers will vary. (2 points)
   • Governments can create policies that make it tough on people who commit violence against women
   • Governments can create policies that address war crimes that harm women
   • Governments can invest more money into maternal health
   • Governments can invest more money into primary and secondary education
Activity 1: Gender in Media

Overview
Students begin by acknowledging some individual beliefs they have related to gender. They then analyze an advertisement that portrays different genders and consider stereotypes and impacts of media on society. They generate ideas about how the ad could be modified so that it does not promote stereotypes about gender.

Objectives
Students will:
• consider traditional gender roles in society
• identify gender stereotypes that may be counter-productive for building sustainable societies
• analyze how the media reinforce stereotypes

Inquiry/Critical Thinking Questions
• In what ways do the media reinforce gender stereotypes?
• What are the consequences of these gender stereotypes?
• What are ways the media can help to ensure stereotypes are not reinforced?

Time Required
One 45-minute class

Key Concepts
• gender roles
• media literacy
• identifying bias
• stereotypes

National Standards Addressed

National Council for the Social Studies
1. Culture
4. Individual Development and Identity
5. Individuals, Groups, and Institutions

National EfS Standards
2.4 Social and Cultural Systems: Social Justice
3.1 Personal Action: Personal Responsibility

Materials/Preparation
Before Class: Each student should bring an advertisement that includes people. This could be a print or online ad. The ad can sell objects like electronics, beauty items, or clothing.

Quiz: Would You Rather, 1 per student
Handout: Gender in Media, 1 per student

Activity

Introduction
1. Pass out the Would You Rather quiz to students. Explain that data collected will be anonymous but will be shared with the aggregate responses of the class.
2. After students have completed the quiz, collect the quizzes, tally the data, and share with the class.
3. Ask students to analyze any trends they notice.
4. Ask students to define the words “stereotype” and “gender norm.”
Activity 1: Gender in Media  

5. Explain to them that the first part of each of the “would you rather” statements represents a norm of how women might respond. The second part of each statement represents a norm of how men might respond.

6. Have students consider other types of norms related to gender (e.g., boys don’t cry, girls are emotional).

7. Ask them the following questions, in a brief discussion format:
   - Where do we learn gender roles?
   - How might the media influence the ways we think about gender?

8. Share the following information with them:
   - Women and men are often presented stereotypically in the media. Women typically take on more emotionally-centered roles.
   - There are more working males than females portrayed on television, but women make up half of the work force in the United States.
   - Women in G-rated movies are as likely to wear sexually revealing clothes as women in R-rated movies (20.3% versus 23.5%).
   - The average person aged 8 to 18 years old uses media more than 6 hours per day.

Discussion Questions

1. How might the way gender is portrayed in the media affect our attitudes and beliefs about gender?

2. What are potential consequences of gender norms? How might you be affected by these norms?

3. Do gender norms perpetuate gender inequity?

Communications Extension

Have students watch a television show created for elementary school children. They can analyze how the program depicts gender. Do the images show men and women in traditional roles based on gender? Does the show promote gender inequities? Is the show gender neutral? Or does the show challenge gender norms and promote equity?

Additional Resources

- Film: Miss Representation
  Directed by Jennifer Siebel Newsom, this documentary challenges the media’s portrayal of women and girls in America. Stories from teenage girls and interviews with a number of politicians, journalists, and entertainers give thoughts on how these portrayals can be damaging. The film or segments of it can be streamed.

- Film: The Mask You Live In
  Directed by Jennifer Siebel Newsom, this documentary challenges the media’s portrayal of men and boys in America. Stories from teenage boys and interviews with a number of politicians, athletes, and entertainers give thoughts on how these portrayals can be damaging. The film or segments of it can be streamed.

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Dr. Stacy L. Smith and Amy D. Granados, “Gender and the Media,” National PTA, [available here](http://www.facingthefuture.org)
Would You Rather Quiz

1. Would you rather have someone tell you that you’re attractive or intelligent?

2. Would you rather be emotionally strong or physically strong?

3. Would you rather ask for input when you have a problem or solve the problem yourself?
Gender and Media

1. What product or service is being advertised?

2. What advertising technique does the ad employ? Choose from one of the following:
   - Humor
   - Celebrity Endorsement
   - Personal Testimonial
   - Image
   - Product Quality
   - Sale or Promotion
   Other (explain): __________________________________________

3. Does the ad appeal to you? Why or why not?

4. What demographic (age and gender) do you think the ad is targeting?

5. How are females and/or males depicted in this ad?

6. Is the gender portrayal in this ad stereotypical? If so, in what ways?

7. What kind of message does this ad promote about the gender(s) portrayed?

8. Would you change the gender portrayal in this ad? Why? If so, how?
Activity 2: Women’s Movements around the World

Overview
Students research different women’s rights movements around the world. In small groups, they learn about a specific women’s movement and share this information with their classmates. The class then identifies different types of gender-related issues and analyzes impacts of these issues on sustainability.

Objectives
Students will:
• research a women’s movement in a specific country
• give a presentation to the class based on the research they learned
• identify ways in which gender issues differ throughout the world

Inquiry/Critical Thinking Questions
• How do gender issues around the world differ?
• How can national governments work together to promote gender equity?
• What are barriers to gender equity around the world?

Time Required
One 90-minute class

Key Concepts
• social movements
• gender equity

National Standards Addressed
National Council for the Social Studies
1. Culture
3. People, Places, and Environments
5. Individuals, Groups, and Institutions
9. Global Connections
10. Civic Ideals and Practices

National EFS Standards
2.4 Social and Cultural Systems: Social Justice
3.2 Collective Action: Community-Based and Societal Decision-Making

Materials/Preparation
Index cards: Index cards with “true” written on front and “false” written on back, 1 per student
Handout: Social Movement Cards, 1 card per group of 5 students. Each group will research a women’s movement from a different country.
Handout: Moving Forward, 1 handout per group of 5 students
Internet Access
Activity 2: Women’s Movements around the World

Activity

Introduction

1. Hand out index cards to students.
2. Explain to students that you will ask them a series of questions, pausing after each question to let students respond. They can respond to the question by either raising their index card with the “true” side facing front or raising their card with the “false” side facing front.ii
   - In some regions of the world, women do the majority of agricultural labor and produce the majority of food. (true)
   - Two out of every three poor adults are women. (true)
   - In Arab states, less than 30% of women participate in the workforce. (true)
   - 70% of garment workers in Cambodia are women. (false, more than 90% of garment workers are women)
3. Ask students if they think women throughout the world face the same challenges and struggles. If not, why is there a differentiation? (e.g., cultural norms, restrictive laws)

Steps

1. Ask students if they are familiar with the idea of social movements. (e.g., the Civil Rights Movement, the women’s liberation movement, the Southwest farmworkers’ movement)
2. Explain that social movements are made of groups of individuals or organizations that work to address a specific political or social issue.
3. Ask students if they can think of social movements throughout history that helped promote gender equity. (e.g., the women’s suffrage movement)
4. Tell students they will work in small groups to learn about social movements around the world that have worked to ensure women have equal rights.
5. Divide the class up into groups of 4 to 5 students. Pass out one Social Movement Card to each group.
6. Pass out one Moving Forward handout to each group.
7. Give students 45 minutes to research information about their specific social movement.
8. Have each group create a 5-to-10 minute presentation to share with the rest of the class about their specific social movement.
   - Option: Students could present these social movements to a panel that role-plays representatives like Bill and Melinda Gates. The panel could decide which social movement to fund.

Discussion Questions

1. Were there any commonalities among these movements?
2. Do these social movements and the changes they seek to address have the potential to create solutions for other types of global issues? In what way?
3. What challenges did each of these movements face? How did they overcome these challenges?

Additional Resources

- Film: The Shape of Water
  http://www.theshapeofwatermovie.com
  This documentary looks at how women from Brazil, India, Jerusalem, and Senegal deal with issues related to environmental degradation, antiquated traditions, economic dependence, and war.
- Lesson Plans: Women Making Change and Women Forging Hope
  Please visit https://www.tolerance.org for information
  Teaching Tolerance teamed with a number of other organizations to create the International Women of Hope Project. This project features 12 of the world’s most visionary female activists, related in-depth biographies, and activities for students to learn more about the work these women have accomplished.

Social Movements Cards

India
The Nirbhaya Movement

Liberia
Women’s Peace Movement

Afghanistan
The Revolutionary Association of the Women of Afghanistan (RAWA)

United States
Women’s Labor Movement

Argentina
Mothers of Plaza de Mayo

Iran
Women’s Movement
Moving Forward

Group Names: ___________________________________________ Date: ________________

Country and movement researched: ____________________________________________

1. What kind of social change did the women in the country you researched want?

___________________________________________________________________________

___________________________________________________________________________

2. Identify 2 reasons why this social change had not happened previously.

___________________________________________________________________________

___________________________________________________________________________

3. Who were other stakeholders the movement enlisted for support?

___________________________________________________________________________

___________________________________________________________________________

4. Provide 4 events within this movement that you believe were significant.

___________________________________________________________________________

___________________________________________________________________________

___________________________________________________________________________

___________________________________________________________________________

5. Was the movement successful? If so, what kinds of changes resulted in this movement? (e.g., new policies, new parts of constitution) If not, what kinds of barriers existed that prevented change from happening?

___________________________________________________________________________

___________________________________________________________________________

___________________________________________________________________________

___________________________________________________________________________
Activity 3: Everyone Does Better When Women Do Better

Overview
Students enact the roles of citizens and government representatives from various countries at a “town meeting” forum. Citizens address their local government representative with concerns about the status of women and girls in their country and potential solutions. With input from the citizens, the leaders prioritize the concerns voiced at the meeting and decide on the most effective way to take action and improve the situation in each of the countries.

Objectives
Students will:
• brainstorm indicators of the health and well-being of women and girls around the world
• research facts about the demographics and status of people in a given country
• give a verbal presentation on the situation in a given country
• prioritize the needs of each country in order to develop an effective plan of action

Inquiry/Critical Thinking Questions
• What does it take to make a population healthy?
• Why is women’s health important for everyone?
• What are the root causes of a population’s poor health?
• What solutions address the root causes of a population’s poor health?

Time Required
Two 45-minute classes

Key Concepts
• human rights
• gender equity
• health rights

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
5. Individuals, Groups, and Institutions
6. Power, Authority, and Governance
9. Global Connections

National Science Education Standards
F. Science in Personal and Social Perspectives

National Efs Standards
2.4 Social and Cultural Systems: Social Justice
2.4 Social and Cultural Systems: Global Health
3.2 Collective Action: Public Discourse and Policy

Materials/Preparation
Handout/Overhead: Key Vocabulary, make overhead or 1 copy per student
Handout: Country Profile, 1 per group of 5 students
Handout: Town Meeting Role Cards, 1 sheet per 5 students, 1 card per student. Each group will represent a different country (3 to 6 countries depending on class size) with 5 identities per group
Handout: Strategy Worksheet, 1 per student
Download: Population Reference Bureau’s The World’s Women and Girls 2011 Data Sheet download at www.prb.org, 1 hard copy per group or Internet access for each group

From the table below, select the country groups that students (in groups of 5) will represent. Include at least 1 country from each category of development.

<table>
<thead>
<tr>
<th>Category I: Low Development</th>
<th>Category II: Medium Development</th>
<th>Category III: High Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pakistan, Ethiopia, Kenya</td>
<td>China, India, Brazil</td>
<td>Argentina, Sweden, Mexico</td>
</tr>
</tbody>
</table>
Activity 3: Everyone Does Better When Women Do Better  continued

Activity—Day 1

Introduction

1. (Optional) Have students do a sides debate using the statement below. Before they get started, post an “agree” sign on one side of the room and a “disagree” sign on the other side of the room. They can choose which side they agree with and be prepared to debate the statement:
   • “Gender equity has no correlation to how a country will progress.”
2. Discuss the following questions with the whole class:
   • How can you tell if women and girls around the world are doing well? Brainstorm a list with the class and record it for reference later in the lesson.
   • What would you measure? (e.g., life expectancy, infant mortality rate, skilled birth attendant, literacy rates, HIV/AIDS rates, teen birth rates, women’s wages, number of women in poverty)
   • Why are these things important?
3. Go over the vocabulary words using the Handout/Overhead, Women Vocabulary.

Steps

1. Divide the class into country groups of 5 students and assign each group a country from the table in the Materials/Preparation section.
2. Hand out 1 role card to each student and have them write the name of their country in the first blank line on their role card.
3. Pass out PRB’s The World’s Women and Girls 2011 Data Sheet (or have students access the reports online). Give students time to individually use the reports to fill in the blanks for their role.
4. In their country groups, students will begin their town meetings. Give the following instructions:
   • Each country group will hold their meetings at the same time.
   • The students representing citizens (teacher, farmer, nurse, and parent) will sit facing the government representative.
   • The government representative will begin the meeting by introducing themselves and sharing some facts about the country by reading the role card aloud to the group of citizens.
   • The citizens will take turns reading their character role card aloud to the group.
   • The government representative will take notes on the Country Profile Sheet, recording the facts that the citizens share.
5. Bring the class back together for reflection questions.

Discussion Questions

1. What are the main differences between the low, medium, and high development countries? Which countries seem to be doing well? Which countries are not doing well?
2. What are the strengths and weaknesses of your assigned country?
3. Are there differences between how men and women are doing? If so, what do you think is the cause of these differences?
Activity—Day 2

Steps

1. Have students return to their country groups to discuss the concerns brought to the table in the last meeting.

2. Give each student 1 Strategy Worksheet, and give the students about 10 minutes to complete steps 1 and 2.

3. Referring to the Country Profile Sheet, students will discuss the questions on the Strategy Worksheet in their group, and individually list solutions to improve the health and well-being of their country.

4. Give students 10 minutes to complete step 3 of the Strategy Worksheet. Their country has been granted 10 million dollars to improve the health and well-being of all citizens. The government official will be making the final decision, but the citizens will be able to offer input. Students will write a brief synopsis of what they would like to spend the money on, why they chose to spend it that way, and what they think the result will be.

5. Bring the class together and have the government representative from each group announce their decision to the citizens.

6. Give citizens 1 minute each to voice their opinion about the decision. They can support or criticize the government official, but they must offer a thoughtful explanation for their views.

7. The government representatives can either change their decision based on the input from the community members or they can adhere to their original decision.

8. Conclude with the following reflection questions.

Discussion Questions

1. Were you satisfied with the decision made by your country’s government representative?

2. How well did the member of government represent everyone’s views?

3. How can citizens be involved in creating a healthy community? Who might an individual work with in their community to accomplish a particular goal?

4. If a country as a whole seems to be doing well, how do you know if everyone is doing well? Is it possible that there might be a group of people who are not represented by the country’s averages?

5. Why do some people say that everyone does better when women do better? Do you agree or disagree with this statement?

Additional Resources

• Film: Iron Jawed Angels
  www.iron-jawed-angels.com
  Directed by Katja von Garnier, this film is the story of a group of women who risk their lives to fight for American women’s right to vote.

• Film: Half the Sky
  https://www.youtube.com/watch?v=MRfDzznFEOU
  Two journalists interact with women all over the world to learn about gender inequity. The official film provides a variety of segments for free on YouTube.
**Key Vocabulary**

- **life expectancy at birth**—the average number of years a newborn can expect to live under current conditions
- **infant mortality rate**—the annual number of deaths of infants under the age of 1 per 1,000 live births
- **total fertility rate**—the average number of children a woman would have under current conditions
- **literacy rate**—the percent of people who can both read and write a short simple statement about his or her everyday life
- **births attended by skilled personnel**—the percent of births attended by doctors, nurses, or midwives
- **access to safe drinking water**—the percent of the population with access to 20 liters of drinking water per person per day from a source within 1 kilometer of the dwelling
- **percent of population living on less than $1.25 per day**—the percent of the population with average consumption expenditures less than $1.25 per day; currencies across countries are adjusted to reflect their purchasing power
- **women as percent of non-farm wage earners**—women’s paid employment in the non-agricultural sector as a percent of total non-agricultural employees

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**Country Profile for:**

<table>
<thead>
<tr>
<th>Population</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Life expectancy</td>
<td></td>
</tr>
<tr>
<td>% of population living on less than $2 per day</td>
<td></td>
</tr>
<tr>
<td>% of government seats held by women</td>
<td></td>
</tr>
<tr>
<td>Total fertility rate</td>
<td></td>
</tr>
<tr>
<td>Infant mortality rate</td>
<td></td>
</tr>
<tr>
<td>% of women attended by a skilled person when giving birth</td>
<td></td>
</tr>
<tr>
<td>% of population living with HIV/AIDS</td>
<td></td>
</tr>
<tr>
<td>% of population living with HIV/AIDS that are women</td>
<td></td>
</tr>
<tr>
<td>% of population without access to safe drinking water</td>
<td></td>
</tr>
<tr>
<td>% of girls enrolled in secondary education</td>
<td></td>
</tr>
<tr>
<td>% of girls who are literate</td>
<td></td>
</tr>
<tr>
<td>% of women working in jobs other than farming</td>
<td></td>
</tr>
</tbody>
</table>
I am a school teacher in ____________________________. I should live to be about ______ years old. In my country, ______% of girls are enrolled in secondary education and ______% of girls are literate. Both boys and girls / mostly boys / mostly girls get to go to school. Girls who have the chance to go to school are better able to take care of themselves and their families.

I am very proud of / satisfied with / very concerned about the well-being of the people in my country.

I am a parent of 2 children in ____________________________. The fertility rate in my country is ______. I have fewer / about the same number / more children than most women. I should live to be about ______ years old. In my country, ______ infants per 1,000 will die before they turn one. ______% of women are attended by a skilled person when they give birth. When the infant mortality rate is high, parents are likely to have more children. When women do not have skilled help during childbirth, the mother’s or baby’s health is at risk.

I am very proud of / satisfied with / very concerned about the well-being of the people in my country.

I am a farm worker in ____________________________. I should live to be about ______ years old. In my country, ______% of women are working in jobs other than farming. Although farming is an important part of life, in most countries farmers earn little to no money. If women are not allowed to work for fair wages then they are more likely to end up in poverty. This makes it more difficult for them to take care of their families. In my country, men / women have most of the wage earning jobs.

I am very proud of / satisfied with / very concerned about the well-being of the people in my country.
I work as a nurse in____________________________. I should live to be about ______ years old. In my country, ______% of the people live with HIV/AIDS. Of those people, ______% are women. More men/women have HIV/AIDS. ______% of people have access to safe drinking water. Without access to safe drinking water, people—especially infants—can become very sick.

I am very proud of/satisfied with/very concerned about the well-being of the people in my country.

I am a member of the government of ____________________________. I should live to be about ______ years old. In my country, ______% of government seats are held by women and ______% are held by men. Our population is _______, and of that population, ______% of the people live on less than $2 per day. It is well known that poverty is connected to poor health.

I am very proud of/satisfied with/very concerned about the well-being of the people in my country.
Strategy Worksheet

1. In your country group, discuss the following questions. Refer to the Country Profile notes and your role cards.
   • Which issue(s) have the greatest effect on the whole country?
   • Which issue(s) might be the cause of some of the other issues?
   • What are some solutions that would improve the situation in your country?
   • Which solution do you think is best? Why?
   • Which solutions should be tackled first?
   • Are there some solutions that might have a positive effect on more than 1 problem?

2. Individually, list in order of priority 3 to 5 solutions you would like to see implemented to improve the health and well-being of your country.

3. Now imagine that your country has been granted $10 million to spend on improving the health and well-being of all citizens. From the perspective of your role, take about 10 minutes to write a brief synopsis of how you think the money should be spent, why you would choose to spend it that way, and what you think the result will be (you may use the back of this paper or another sheet of paper to write your synopsis).
Activity 4: Leveling the Gender Field

Overview
Students analyze what the typical girl in a developing country will experience from birth until adulthood. They will then brainstorm points of intervention to consider ways to reform the cycle of gender inequity that persists today. They will work in pairs to determine ways to change the course of this girl’s life and examine possible unintended consequences of these interventions.

Objectives
Student will:
• identify root causes of gender inequities
• consider ways in which girls can rise out of poverty in developing countries to seek opportunities

Inquiry/Critical Thinking
• What contributes to heightened gender inequalities in developing countries?
• What are ways individuals and governments can contribute to changing the cycle of poverty and inequity for impoverished women?

Time Required
One 60-minute class

Key Concepts
• power
• feminization of poverty
• empowerment

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
5. Individuals, Groups, and Institutions
9. Global Connections

National Efs Standards
2.4 Social and Cultural Systems: Human Rights
2.4 Social and Cultural Systems: Social Justice
3.2 Collective Action: Community-Based and Societal Decision-Making

Materials/Preparation
Article: “To Fight Poverty, Invest in Girls,” Nancy Gibbs, February 14, 2011, Time Magazine, [http://content.time.com/time/magazine/article/0,9171,2046045,00.html](http://content.time.com/time/magazine/article/0,9171,2046045,00.html), 1 copy for each student pair
Handout: These Are the Facts, 1 fact for each student pair
Handout: Leveling the Gender Field, 1 for each student pair

Activity
Introduction
1. Ask students to think, pair, and share a definition of the word “power” (the ability to do something in a certain way).
2. Have them share these definitions with the class.
3. Ask them to consider ways people lose or are denied power (i.e., people may lose power if they do not have access to resources, are not allowed to vote, etc.)
4. With the same partner, ask them to come up with a definition for “empowerment” (gaining power in situations where normally one has not had power).
Activity 4: Leveling the Gender Field  continued

5. Now have them consider ways people can become empowered even when they do not have power. (i.e., they can join together and attempt to make changes where they live)

6. Share the following fact with them: 70% of children who don't go to school are girls. Ask them to consider why that might be. What factors might keep girls from going to school?

7. Have students make connections between not going to school, empowerment, and gender equity. Is not going to school mutually exclusive with gender equity and empowerment?

8. Tell students that according to UNICEF, gender equity and women’s empowerment can happen when women have the opportunity to influence key decisions that impact their lives in the household, workplace, and political sphere.

Steps

1. Share the article, “To Fight Poverty, Invest in Girls,” with students. Have them read this article with their partners.

2. Ask students how gender equity in developing countries relates to their lives. Explain to them gender equity around the world can help promote sustainability. Gender equity can reduce poverty, improve health, and support environmental sustainability.

3. Provide each student pair with one fact from the handout, These are the Facts, and a copy of the handout, Closing the Gender Gap.

4. Give students 40 to 45 minutes to complete the handout, Closing the Gender Gap.

5. After all student pairs have shared, have students answer the following discussion questions.

Discussion Questions

1. Why do you think gender disparities are more prevalent in developing countries and among poor women?

2. Why and how is it helpful to understand the root causes of problems identified within a system?

3. Of all the interventions you heard, which one would be most impactful? Which would be easiest to implement?

4. Why is it important to consider unintended consequences of interventions?

5. What role can local governance play in helping to improve the lives of girls in developing countries?

Social Studies Extension

Prison and the cycle of poverty have proven to have serious consequences on certain populations of men within the United States. Low education levels have been correlated with increased incarceration rates.¹ Have students analyze drop-out and incarceration rates in the United States for both men and women. They can research who exactly is caught up in this cycle. After, have them create points of intervention.

Additional Resources

• Website: The Girl Effect
  www.girleffect.org
  The Girl Effect website educates people about what they can do to help support poverty alleviation and gender equity in developing nations.

• Video: Closing the Gender Gap
  This five-minute video from ABC News reports on how women under 30 are earning more than their male counterparts in the United States.

These Are the Facts

One out of every 5 girls who enrolls in a primary school education does not complete this education.¹

Approximately 66% of illiterate adults are female.²

Approximately 14 million adolescent girls between ages 15 and 19 give birth to children each year.³

Out of the 500 largest corporations around the world, there are 13 that have females as chief executive officers.⁴

If a girl gives birth to a baby at the age of 18 or younger, the baby’s risk of dying in its first year is 60% greater than if the baby was born to a mother older than 19.⁵

In the majority of the world, women earn between 70-90% of what men earn.⁶

For women in reproductive years, HIV/AIDS is the leading causes of death and disease around the world.⁷

Women who live in sub-Saharan Africa spend approximately 40 billion hours collecting water.⁸

Closing the Gender Gap

Directions: Based on the fact you were given, answer the following questions below.

1. What questions do you have about the fact you were given?

2. Research more to learn about this fact. Summarize your findings.

3. Based on the fact you were given, what is one possible way women could be empowered?

4. What stakeholders would need to be involved to help support this solution?

5. Are there any unintended consequences related to the solution you suggested?

6. How could these unintended consequences be avoided?
Activity 5: Singular They: Writing In Context

Overview
Students will read an example of a student essay on the issue of pronouns in the struggle for gender equity of transgender people. They will be able to discuss the concept of “singular they.” Also, they will see an example of using evidence in writing to help them with their own writing structure.

Objectives
Student will:
• define “singular they” and gender-inclusive language
• compare and contrast approaches to gender-neutral pronouns
• analyze structure in writing

Inquiry/Critical Thinking
• What are ways that language includes or excludes gender identities?
• What is the “singular they” and how can it be used to create inclusive language?

Time Required
One 45- or 60-minute class

Key Concepts
• transgender
• gender identity
• gender equity

SECTION 1
For the Teacher
The singular they is gaining attention in the media and writing and teaching circles for its inclusive nature. Once considered acceptable and used by authors such as Geoffrey Chaucer and Jane Austen, the singular they fell out of favor in style guides in the early 20th century.

For example, in their The Elements of Style, William Strunk Jr. and E.B. White command writers to stop misusing they: “Do not use they when the antecedent is a distributive expression such as each, each one, everybody, every one, many a man. Use the singular pronoun.” The authors also caution writers against using they with the antecedents anybody, somebody and someone. (In the first 1918 edition of Elements, Strunk ruled that “he” was the default unless the antecedent was feminine.)

Later, the burgeoning feminist movement of the 1970s asked writers to consider the deferral to masculine pronouns to represent all people. Vis, cos, zir and zim came into being, but their use was limited. Mathematician Michael Spivak even created his own set of gender-neutral pronouns in 1983. None of these options gained traction in popular writing.

Now, the singular they is addressing another problem with English grammar: There is no room for gender identities other than the he/she binary of singular pronouns. Grammarians are drawing lines in the sand over this return to they as a singular pronoun.

Print sources and language associations are setting the precedent by adopting the use of the singular they in their publications. The Washington Post uses it. The American Dialect Society (ADS) named it 2015’s “Word of the Year.” Ben Zimmer, chair of the ADS’ New Words Committee, explained, “In the past year, new expressions of gender identity have generated a deal of discussion, and singular they has become a particularly significant element of that conversation. … While many novel gender-neutral pronouns have been proposed, they has the advantage of already being part of the language.” Because this word is already in the language—even though many people consider its use to be incorrect—it may have more of a chance of extending gender fluidity into our language in ways that other words have fallen short.
Activity 5: Singular They: Writing in Context  continued

Materials/Preparation
Handout: Singular “They”
Handout: Singular “They” Discussion Questions, 1 for each student or create groups

Discussion Questions
1. Why does the author argue for the use of the “singular they”? 
2. What are the two sides of the debate over the use of pronouns? 
3. How does the author illustrate their point in the last line of the essay? Why would the author do this?

Additional Resources
• “Thanks to the Singular They” https://www.tolerance.org/magazine/thanks-to-the-singular-they
  Argues that teachers need to teach the singular they to make classrooms more inclusive and affirming

  Explains the use of singular they according to APA style

• “Everyone Uses Singular ‘They,’ Whether They Realize It Or Not” http://www.npr.org/2016/01/13/462906419/everyone-uses-singular-they-whether-they-realize-it-or-not
  Commentary that gives an overview of the issues of grammar surrounding singular they and considers its future

• “2015 Word of the Year is singular ‘they’” https://www.americandialect.org/2015-word-of-the-year-is-singular-they
  Announces the American Dialect Society’s choice of singular “they” as the word of the year

• “All-Purpose Pronoun” http://www.nytimes.com/2009/07/26/magazine/26FOB-onlanguage-t.html
  Gives an overview of singular they's history and considers its value in social media contexts

Singular “They”

Sonny grew up wanting to be a mermaid. His room was filled with mermaids and merman. Even his sheets had mermaids. When he was five, he started telling his mom that he didn't want his penis anymore. Every time he went to the doctor, he asked his mom on their drive there if the doctor could make Sonny a girl. When Sonny drew pictures of himself, he gave himself long hair—like a mermaid’s—and signed his name “Sonia” on the back of the paper where no one else could see it. Before he even knew the word “transgender,” he knew that he didn’t feel right in his body. He knew he didn’t like to be called “he” when his mom talked about him. He knew he didn’t like hearing “his shirt” or “call him for dinner.” Sonny wanted to be Sonia, and the language surrounding him did not reflect his identity. Because the English language’s singular pronouns only work as a binary of he/she, writers should start using the “singular they” to ensure that everyone’s identity is reflected in language.

The “singular they” used to be considered grammatically incorrect. Because “they” is plural, not singular, grammarians reminded writers that pronouns need to agree in number and gender. As Colleen Clemens writes in her essay “Thanks to the 'Singular They,'”

…in their *The Elements of Style*, William Strunk Jr. and E.B. White command writers to stop misusing they: “Do not use they when the antecedent is a distributive expression such as each, each one, everybody, every one, many a man. Use the singular pronoun.” The authors also caution writers against using they with the antecedents anybody, somebody and someone.

For example, a person using what Strunk and White considered correct grammar would write the following: Sonny is always late. He needs a clock.

The pronoun “he” agrees in gender and number. However, if the writer thinks about Sonny/Sonia, Sonia is left out of this sentence.

Because language evolves and adapts to those speaking it, current grammar rules are moving toward a more inclusive nature to reflect the transgender movement. Though the “singular they” is not taught widely, it is gaining traction in teaching circles and style guides. The American Dialect Society voted the gender-neutral singular “they” as their Word of the Year in 2015. The Washington Post has used it in articles. A person using the “singular they” would write the above example this way:

Sonny is always late. They need a clock.

While this example does sound grammatically wrong, the pronoun use is inclusive and makes room for Sonia while “He needs a clock” limits Sonny to the male gender when she identifies as female. The “singular they” makes space in the sentence for Sonny’s gender identity.

Though English speakers’ ears will need some time to adjust to hearing the “singular they,” its incorporation in speaking and writing is crucial if there is ever going to be full inclusivity for those who identify as transgender. Limiting people’s identity in the name of grammatical rules is unfair and discriminatory. Sonia deserves the opportunity to see their identity reflected in the language they use.
Singular “They” Discussion Questions

1. Why does the author argue for the use of the “singular they”?

2. What are the two sides of the debate over the use of gender-neutral pronouns?

3. How does the author illustrate their point in the last line of the essay? Why would the author use this writing strategy?
Human Migration

CHAPTER BIG IDEAS

- Human migration—both voluntary and forced—affects people, economies, and environments.
- Forced migration has costs and benefits on global sustainability.
Guiding Questions
• What are global impacts of forced and voluntary migration?
• What does human migration look like in a sustainable world?

Key Concepts
• human migration
• multiculturalism
• refugees
• internally displaced persons (IDPs)
• asylum seeker

Supporting Vocabulary
• remittances
• xenophobia
• indentured servants
• brain drain
• human trafficking

Service Learning Component

Service Learning Project Idea
• Question: What are ways to support refugees or internally displaced persons (IDPs)?
• Hook resource: Refugee
  http://www.pbs.org/independentlens/refugee/film.html
  This movie by Spencer Nakasoko focuses on a boy from a tough neighborhood in San Francisco returning to Cambodia to meet his dad who wasn't able to immigrate.
• Project: Partner with a refugee or internally displaced person school through a pen-pal relationship or by raising money to send school supplies and equipment.

Project Based Learning Component

Project Based Learning Idea
• Overview: Students document stories about immigrants living within their community.
• Driving Question: How can you create oral histories that educate others about the different types of immigrants who live within your community?
• **Individual Project:** Students analyze the person they interviewed for their oral history project and write an essay that critically examines why this individual emigrated from their native country. They can study root causes of this immigration and what factors (push or pull) may have prompted this individual to move.

• **Group Project:** In groups of 2 to 3, students choose an individual within the community to interview who has emigrated from another country. They will document this story and share it at a community forum through a visual presentation (i.e., Powerpoint, digital story, etc.)

• **Additional Resources:**
  - Storycorps gives people of all backgrounds and beliefs the opportunity to record, share, and preserve their stories. It is one of the largest oral history projects in the United States. These stories can inspire ways students can share stories about their interviewees, http://storycorps.org/.
  - **Website:** *Literacy, ELL, and Digital Storytelling*
    

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**Summative Assessment**

Chapter Test

**Connections**

**World History connections:**
History of global migration; colonization; slavery

**Economics connections:**
Human labor; remittances

**Geography connections:**
Cultural integration; xenophobia; human trafficking; brain drain; refugees and IDPs

**Civics connections:**
Personal and structural solutions to human migration
# Activities in Teacher's Guide: Suggested Sequence

## Day 1

**Reading:** *Introduction to Human Migration*

**Activity 1:** *What's in the News?*—In this media literacy activity, students read the news and use an iceberg model to analyze the global patterns and underlying structural causes that drive migration patterns.

## Day 2

**Reading:** *Background on Human Migration*

**Activity 2:** *Seeking Asylum*—Through a simulation, students experience the difficult choices and struggles facing refugees and internally displaced persons (IDPs) when they are forced to leave their homes. Students learn about the root causes of refugee and IDP crises, and the options and obstacles each group faces.

## Day 3

**Reading:** *Human Migration Today*

**Activity 3:** *Policy Analysis*—Students analyze a time line of U.S. Policy on Immigration and Naturalization, observing trends and patterns during the last 200 years. After reviewing this information, they suggest immigration policies based on projections for the next several decades.

## Day 4

**Reading:** *Pathways to Progress: Human Migration*

**Activity 4:** *To Move or Not to Move?*—Students analyze different scenarios and in groups, recommend whether an individual should migrate from a specific country or not based on a variety of factors. In addition to the scenario they receive, students will research information to make an informed decision on this migration. Groups will present their recommendations to the class.
Discussion Questions from the Chapter Reading

Introduction to Human Migration

1. Aside from the earthquake, what are other reasons people from Haiti have immigrated through the years?

2. What are actions governments take that might enforce xenophobia? What are actions governments take that might decrease xenophobia?

Background of Human Migration

3. Contrast forced and voluntary factors of migration that have happened throughout modern history.

4. Trinidad and Tobago is one example of a country that has a history of forced and voluntary migration. What is another example of a country that illustrates this combination of migration patterns?

Human Migration Today

5. Why do you think Columbia, Iraq, and Sudan would have the largest IDP populations? What events have happened in those countries that might fuel dislocation and internal migration?

Pathways to Progress: Human Migration

6. What are personal solutions to address human migration in a sustainable way?

7. What are structural solutions to address human migration in a sustainable way?
Chapter Assessment: Human Migration, page 1

Recall
Match the following words on the left with their definitions on the right.

1. Refugee  the permanent or semi-permanent relocation of a person or group of people from one location to another
2. Human migration  people who flee their country for safety
3. Internally displaced person  a person who applies for protection from native country and for the right of residence in a foreign country
4. Asylum seeker  people who cannot flee their own country and are forced to find safety within the borders of their own country

Reasoning/Explanation
Complete the following multiple choice questions by choosing one correct answer.

5. Which statement best describes a result of the United States becoming an industrial power in the mid-1850s?
   a. The United States could send people abroad to train others in industrial power.
   b. A large influx of people emigrated to the United States in search of work.
   c. A recession hit the country soon after because of too much focus on industrialization.
   d. Skilled workers like doctors, engineers, and lawyers left the United States.

6. Which example best illustrates an example of an internally displaced person?
   a. a person from Sudan crossing the border to Chad because of conflict within Sudan
   b. a person from Iraq moving to Lebanon in search of more educational opportunities at a university
   c. a person within Sri Lanka who moved from a rural area to a city, after losing all of his belongings in a tsunami
   d. a person from Mexico who works in the United States during the day for higher wages, but returns back to Mexico at night

7. Which of the following is a pull factor in immigration?
   a. poverty
   b. conflict
   c. religious freedom
   d. environmental disaster
8. Tensions between refugees and the country they have migrated to have increased because refugees living within camps are using much of the firewood from forests that people from the host country are desperately in need of. Which example below represents a sustainable solution to ease this tension?
   a. Sending anyone attempting to take firewood back to their home country.
   b. Protecting the forests with national security to decrease firewood use.
   c. Teaching refugees how to use fuel-efficient stoves to decrease firewood collection.
   d. Creating a law that allows refugees a small amount of firewood they can use.

9. Which statement is an accurate representation of today’s global migration trends?
   a. A number of factors are fueling migration, both forced and voluntary.
   b. Due to globalization, the numbers of people migrating are decreasing.
   c. People are migrating to developing nations in search of economic and education opportunities.
   d. The largest cause of global migration today is discrimination against ethnic minorities.

10. Which example best demonstrates why a government would want to create an immigration policy that focuses on allowing more immigrants to enter its country?
    a. an economic recession
    b. an economic strategy
    c. an increase in xenophobic behavior
    d. an increase in terrorist threats

11. Which example best illustrates an example of voluntary migration?
    a. moving to another country because of religious persecution
    b. moving to another country because of human trafficking
    c. moving to another country because of impacts of climate change
    d. moving to another country because of a scholarship for school

12. How can immigrants sustainably support economies of country they move to?
    a. purchase products and services
    b. receive lower wages
    c. not pay taxes
    d. increase the need for welfare
13. Which example best illustrates an example of brain drain?
   a. scientists from the United States work in India in order to support India’s economy  
   b. doctors from Nigeria choose to practice in Canada after they have finished their medical training  
   c. engineers from China travel to Sierra Leone to support their infrastructure  
   d. students from Mexico attend university in the United States draining resources for American students

14. Which example below best illustrates the concept of xenophobia?
   a. a government creates propaganda against a specific immigrant group  
   b. a government decides to put extra security at the borders of its country  
   c. a government increases dialogue between different immigrant groups  
   d. a government excludes non-immigrant groups from participating in politics

Application/Complex Reasoning

Answer the following short answer questions below.

15. There are approximately 200 million people who live outside of their country of origin.\(^1\)

   Part A. Identify 1 pull factor that causes people to immigrate.
   Part B. Identify 1 push factor that causes people to immigrate.

16. Part A. What is 1 historic example of involuntary migration?
   Part B. What is 1 modern day example of involuntary migration?
   Part C. What is 1 possible solution that could help to prevent involuntary migration?

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Recall (4 points)

1. Refugee—the permanent or semi-permanent relocation of a person or group of people from one location to another
2. Human migration—people who flee their country for safety
3. Internally displaced person—a person who applies for protection from native country and for the right of residence in a foreign country
4. Asylum seeker—people who cannot flee their own country and are forced to find safety within the borders of their own country

Reasoning/Explanation (10 points)

5. b 7. c 9. a 11. d 13. b
6. c 8. c 10. b 12. a 14. a

Application/Complex Reasoning (6 points)

15. Part A. Answers will vary. (1 point)
   • Lower crime rates
   • Better educational opportunities
   • Political security
   • More attractive quality of life

   Part B. Answers will vary. (1 point)
   • Poverty
   • War
   • Unemployment
   • Weather conditions

16. Part A. Answers will vary. (1 point)
   • Slaves who were brought from Western Africa to the United States, Central America, South America, and the Caribbean between the 16th and 19th centuries
   • Indentured servants who were mostly brought from China and India to do work around the world

   Part B. Answers will vary. (1 point)
   • Haitians who had to leave Haiti after the earthquake in 2010
   • Women that are sold as sex slaves
   • Children that are trafficked
   • Sudanese people who have to flee Darfur because of conflict

   Part C. Answers will vary. (2 points)
   • Since increased tensions between different groups of people (i.e., ethnic, religious groups) spur conflict and conflict can lead to an increase in refugees and IDPS, a government could work to ensure that these tensions don’t escalate.
   • Governments should enforce strict policies that make human trafficking illegal. Those who participate in such kind of illegal activity will serve long sentences.
   • Systems can be set up within a country so that when natural disasters or for the potential for resource scarcity happen, the country is well prepared to support its citizens.
Activity 1: What’s in the News?

Overview
In this media literacy activity, students read the news and use an iceberg model to analyze the global patterns and underlying structural causes that drive migration patterns.

Objectives
Students will:
• analyze several news articles using a model that helps identify the particular global patterns and economic, political, and social forces (i.e., structural causes) related to migration
• identify connections among news articles
• discover patterns and determine underlying structures related to events reported in a news article
• write an article about the emerging patterns and underlying causes of a particular current event

Inquiry/Critical Thinking Questions
• What are the economic, political, and social forces that drive migration we see reported in the news?
• How are news events connected to each other in terms of their underlying causes?

Time Required
One 60-minute class

Key Concepts
• global migration patterns
• economic, political, and social structures
• media literacy
• iceberg model
• root causes of migration

National Standards Addressed
National Council for the Social Studies
1. Culture
2. Time, Continuity, and Change
3. People, Places, and Environments
4. Individual Development and Identity
5. Individuals, Groups, and Institutions
6. Power, Authority, and Governance
9. Global Connections

National Science Education Standards
F. Science in Personal and Social Perspectives

National EFS Standards
2.1 Interconnectedness: Systems Thinking
2.3 Economic Systems: Human Rights

Materials/Preparation
Copies of 1 sample news article about an important current event related to human migration, such as climate refugees, IDPs, or brain drain, to model the activity
Overhead: Iceberg Model
A variety of news articles from the newspaper, magazines, and/or the Internet about significant events related to human migration, 2 or 3 per group (You can gather the articles yourself and/or have students bring in articles.)
Butcher paper, 1 sheet per group
Colored marking pens, 3 to 4 pens per group
Activity 1: What’s in the News? continued

Activity

Introduction

1. Ask students what they think the term media literacy means. What would a media literate person be able to do? (Media literacy is the ability to read, analyze, evaluate, and produce communication in a variety of media forms such as television, print, radio, computers, etc.)

2. Tell them that they are going to explore an aspect of media literacy by analyzing some news articles related to human migration using the Iceberg Model.

Steps

1. Hand out the sample news article about an important current event related to human migration.

2. Ask students to paraphrase the event depicted in the sample article (e.g., “what happened?”).

3. Use the overhead, Iceberg Model, to lead a class discussion about the relationship between current events and the global patterns and underlying economic, political, and social forces that propel them to prominence in the news.

4. Explain that what we read about most often in the news are events—the newsworthy, exciting, and dramatic things that happen in our world. Events in the news are like the tip of an iceberg. The visible part of an iceberg is only about 10% of its total mass and the remaining 90% is underwater and never seen. However, it is this hidden 90% that the ocean currents act on and which determine the behavior of the iceberg’s tip. Likewise, news events “at the tip of the iceberg” may be things such as war in the Middle East, crime in our community, or a massive flood in China. On the news, these events are witnessed as dramatic isolated incidents; the forces that create and shape them (what happens “underwater”) are not often revealed.

When we notice the occurrence of similar events (wars or terrorist attacks in other parts of the world, or other extreme natural disasters such as earthquakes or a tsunami), we are seeing the emergence of a pattern. It may appear that more of these events are happening, or it may be that the media is reporting these events more often. For example, we might read a news article in the paper today about a local robbery (an event). Over the course of a year we may notice that there are several articles about robberies and other crimes committed in the same area of town (a pattern). Does this indicate that crime is up or just that we are hearing about it more frequently? Patterns underlie and act upon events, so they are shown just below the tip in the iceberg model.

Finally, deep beneath the surface are the underlying structures or root causes that drive the events and patterns—just as the underlying ice mass drives the tip of the iceberg. These underlying structures or causes can be economic, political, or social. For example, the underlying cause of the robberies and other crimes may have to do with the economics of the area. Perhaps schools in that area are unable to offer quality education, or unemployment may be high. Underlying structural causes may be the growing gap between the rich and poor, or a lack of education, job opportunities, or other forces that preclude sustainable livelihoods. Are underlying structural causes such as these typically revealed in news stories? If not, what effect does this have on how we understand an event and how we perceive the people who are involved in the event?

5. Go back to the sample news article, and together with the students use the iceberg model to analyze it. Ask them, “Has this type of event been in the news before? Is it a recurring event? If so, can you identify a global pattern that is driving these events?”

6. Once they have identified a pattern ask, “What are some possible root causes of these patterns? For example, is the event related to poverty, lack
Activity 1: What’s in the News?  continued

of education and/or health care, or development practices that are not environmentally sound? Does the article discuss some or all of these root causes?” If you use an article about a refugees leaving Sudan, you might look for a discussion in the article about Sudan’s history, arbitrary boundaries, religious tensions, environmental destruction, and poverty.

7. Before moving on, be sure students understand how to use the iceberg model to analyze a news article in terms of the events reported, emerging patterns, and underlying causes.

8. Arrange the class into groups of 3 to 4 students and give each group news articles related to a similar event, 1 sheet of butcher paper, and 1 set of pens.

9. In their groups, have the students read the articles, and use the iceberg model to analyze the event and look for patterns and root causes. Have students discuss whether they have noticed other similar events in the news. Then have them brainstorm, discuss, and list on a separate piece of paper all of the root causes they can think of that might contribute to the event.

10. Have each group create an iceberg diagram of their news article by gluing or taping the article onto the top of the paper, listing and/or drawing the patterns they have noticed, and finally listing and/or drawing the underlying root causes. Their final diagram should have a shape similar to an iceberg with the news article at the top (the event), the pattern below, and the underlying causes at the bottom.

11. Have each group present their iceberg models to the class. Discuss how many of the events presented connect to each other through similar underlying causes. For example, immigration patterns are often closely linked by factors such as poverty, social unrest, and limited resources.

12. Have each group discuss structural solutions that could be implemented to address the root causes of events and patterns identified in their articles.

Discussion Questions

1. How did using the iceberg model to analyze the news articles help in your understanding of events, patterns, root causes related to migration?

2. How does the iceberg model fall short as an analysis tool? In other words, are there news stories and/or events that would not fit this model?

3. What was the most surprising thing you found in your analysis?

4. What can we do to address the underlying structural problems of the events and patterns you studied?

Writing/Technology Extension

Have students research different online resources to see how a variety of news sources report on the same article they researched. They can compare these different media representations and analyze why descriptions of the same event may be different based on who is doing the reporting.

Additional Resources

• Website: The Independent Media Center
  www.indymedia.org
  The Independent Media Center is a network of collectively run media outlets for the creation of radical, accurate, and passionate telling of the truth.

• Website: Fairness and Accuracy in Reporting
  www.fair.org
  Fairness and Accuracy in Reporting is a national media watch group working to invigorate the First Amendment by advocating for greater diversity in the press and by scrutinizing media practices that marginalize public interest, minority, and dissenting viewpoints.
Iceberg Model
Activity 2: Seeking Asylum

Overview
Through a simulation, students experience the difficult choices and struggles facing refugees and internally displaced persons (IDPs) when they are forced to leave their homes. Students learn about the root causes of refugee and IDP crises, and the options and obstacles each group faces.

Objectives
Students will:
• understand the root causes of refugee and IDP crises, and explore root solutions for preventing these crises
• experience the asylum process and the differences in protection offered to refugees and IDPs
• be introduced to the debate within developed nations over setting immigration policies

Inquiry/Critical Thinking Questions
• Why and how does someone become a refugee or IDP?
• How do nations determine who qualifies as a refugee?
• How are refugee issues tied to other global issues?
• What are the impacts (negative and positive) of refugee and IDP populations on the environment, economies, and social fabrics of their host and home countries?
• What are some sustainable solutions to addressing the root causes of refugee and IDP crises?

Time Required
One 60-minute class

Key Concepts
• refugees
• internally displaced persons
• asylum
• resettlement

National Standards Addressed
National Council for the Social Studies
1. Culture
3. People, Places and Environments
5. Individuals, Groups, and Institutions
6. Power, Authority, and Governance
9. Global Connections
10. Civic ideals and practices

National Efs Standards
2.1 Interconnectedness: Systems Thinking
2.3 Economic Systems: Human Rights

Materials/Preparation
Handout/Overhead: Defining Refugees, IDPs, and Migrants, overhead or 1 copy per student
Handout: Seeking Asylum—Items, 1 copy per 4 students
Sign: Citizenship Certificate, create a piece of paper that says ‘Citizenship Certificate’ on it
2 large pieces of blank paper with “Asylum in Petrus” written in large letters on 1 piece and “Internally Displaced Persons” on the other. Tape the 2 signs on opposite sides of the classroom
2 sheets of butcher paper and pens, place 1 sheet and pens by each area where the signs are
A jug of water and crackers (enough for 1 or 2 crackers per student for about half the class) placed in an area by the “Asylum in Petrus” sign
Activity 2: Seeking Asylum  continued

Activity

Introduction

1. Do a sides debate using the following prompt.
   • “The U.S. should allow more refugees into the country.”
2. Show and review the Overhead or Handout, Defining Refugees, IDPs, and Migrants.
   • Option: You can review terminology with students by asking them such questions as: “What label could be used to classify the “Lost Boys of Sudan” who have moved to the U.S. to escape violence in the Darfur region?” (refugee) “What label would you use to describe people in Sudan who have left their homes in Darfur for fear of violence but who remain in the country?” (IDP)

Steps

1. Divide the class into groups of 3 to 4 students. Explain to these groups they are now a family unit.
2. Explain to the class that, due to an outbreak of civil war, all the families have to leave their homes immediately.
3. Tell them that each family can only take 5 items with them, selected from a handout (Seeking Asylum—Items) that you will provide them. They will only have 2 minutes to agree on what to bring and then flee before the fighting reaches their home. They can only choose items that are on the list.
4. Pass out the list quickly and start timing for 2 minutes. Keep the pressure on them to complete their selections within the allotted time.
5. After the 2-minute period, have them put their pens down. Have a representative from each family read off their 5 items. Make a note to yourself of which families chose to bring Identification Cards.
6. After all families read off their lists, take those families that chose Identification Cards to the “Asylum in Petrus” section of the room.
7. If no families have chosen to bring Identification Cards, have everyone go to the IDP side. Have a family that brought money “buy” their way into the camp. The goal is to have at least a couple of families in the refugee camp. Alternatively, if all the families bring identification cards, randomly select some families and move them to the IDP side of the room, telling them that their identification papers are not in order.
8. Explain that families often need to prove their country of origin so they can be granted asylum (protection) by a neighboring country. Inform the families in the Asylum section that they are now in the fictional country of Petrus, housed in a refugee camp operated by The United Nations High Commissioner for Refugees. This is why they have been given some basic food and drink (the water and crackers). The Asylum families may eat the crackers and drink water.
9. Explain that people in refugee camps are often assigned jobs, so those in the refugee camp are going to brainstorm and write on the butcher paper what their camp will need to function (e.g., kitchens, schools, doctors, etc.), and then identify the different types of jobs they might be doing.
10. Explain to those in the IDP area that families without identification papers were not granted asylum, and are stuck in the middle of the civil war in their home country. No United Nations agency has the authority to look after these families so, at the moment, they do not have any food or drink. Tell the IDP families to brainstorm and write on the butcher paper what they will do to survive—they could try to set up their own camp using the items they chose to take with them, or they could try to enter Petrus illegally by bribing border guards with their items, etc.
**Activity 2: Seeking Asylum continued**

11. After the students have brainstormed for a few minutes, take all but 1 of the families from the Asylum section and explain that the government of Petrus has determined that the civil war in the refugees’ home country has calmed down enough for them to return home. Explain that while Petrus is sorry the families have nothing, and their homes are probably gone, the refugees are using up the limited resources of their country and every family cannot be granted asylum forever. Take the families to the IDP section.

12. Finally, tell the 1 family remaining in the Asylum section that Petrus has agreed to resettle them, offering permanent residency. A local agency will help them find a home and a job. Give them the Citizenship Certificate.

13. Bring the class back together for reflection questions.

**Discussion Questions**

1. Did you feel the asylum process was fair?

2. Are there refugees in your community? Where are they from? How are they treated? What agencies exist to help refugees in your community?
   - **Note:** You may have students who are refugees. If they are comfortable sharing information about their experiences, they can do so with the class.

3. Would you feel differently about accepting someone who was not physically threatened with violence but couldn’t find any work in their own country?

4. How do you think refugee and IDP crises affect other global issues like environmental destruction, poverty, and education?

5. If the situation that caused a family to seek asylum is resolved, but the family has nothing to go back to in their home country, should they still be sent home? Why? Under what conditions should refugees be sent home?

6. What could be a sustainable solution to preventing large scale refugee and IDP crises? Economic development? Participatory and effective governance? Who should be in charge of implementing this solution?

**Writing Extension**

Have students write a short memoir based on their status as a refugee or IDP in the activity. Students should elaborate on the experience, describing conditions in the refugee or IDP camp, daily life, and how they feel about their situation.

- **Note:** If you have students who are refugees or IDPs, they can write about their actual experience.

**Additional Resources**

- **Book:** Of Beetles and Angels: A Boy's Remarkable Journey from a Refugee Camp to Harvard
  This book documents the story of Mawi Asgedom and his journey from a refugee camp all the way to Harvard University. (Mawi Asgedom, Little, Brown and Company, 2002)

- **Website:** The International Rescue Committee (IRC) www.theirc.org
  The International Rescue Committee (IRC) provides emergency relief, rehabilitation, protection of human rights, post-conflict development, resettlement services, and advocacy for those uprooted or affected by conflict and oppression.

- **Video:** Young Refugees' Video Diaries
  This website created by the British Red Cross offers accounts from youth about their experiences as refugees.
Defining Refugees, IDPs, and Migrants

Refugees: People who flee their country because they have a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group, or political opinion. A refugee, under this technical definition, is someone who crosses an international border to seek refuge in another country.

Asylum: Refugees who cross a border are seeking asylum, or protection within the country they entered. Under international law, people who can prove they qualify as refugees must be granted asylum until they either choose to return home, or conditions improve enough that it is determined they are no longer in immediate danger and can be told to leave by the country that granted the protection.

Resettlement: Countries can choose to resettle refugees, officially granting them permanent residency within their borders.

Internally Displaced Person (IDP): Someone who is forced to leave his/her home for the same reasons as a refugee, but is unable to cross an international border to obtain asylum. IDPs currently do not have the same rights and protections offered to refugees by international law. Their plight is often not monitored by international agencies, since they have not left their home country. While intrastate conflicts are the most common source of mass IDP movements, in recent years large-scale economic and public works projects in developing countries have resulted in forced mass evacuations of citizens to make room for dams, logging, and other land use purposes.

Migrants: People who choose to leave their home and obtain citizenship in a different country through an official citizenship process, or choose to leave their home and enter a new country by circumventing the citizenship process (illegally). The most common reason for emigration is a lack of economic opportunity and/or quality of life in the person’s home country. In recent years there has been a movement to change how destination countries treat migrants from the poorest parts of the world, dubbing them economic or environmental refugees.
Seeking Asylum—Items

**Directions:** There has been an outbreak of civil war in your country and you are being forced to leave immediately. Your “family” must choose only 5 of the items below to take with you.

Review the list together and circle the 5 items you agree to take. You have 2 minutes to reach a decision!

- Cooking pot
- Hammer and nails
- Water jug
- Radio
- Sack of grain
- Waterproof tarp
- Identification cards
- Cooking stove
- Family savings (around $35)
- Soap
- Machete (large curved knife)
- Photo album
- Pet dog
- Rifle
- Blankets
- Lantern
Activity 3: Policy Analysis

Overview
Students analyze a time line of U.S. Policy on Immigration and Naturalization, observing trends and patterns during the last 200 years. After reviewing this information, they suggest immigration policies based on projections for the next several decades.

Objectives
Students will:
• identify key policies throughout U.S. history around immigration and naturalization
• analyze interconnections among global issues and policy
• develop immigration policies for the future with sustainability in mind

Inquiry/Critical Thinking Questions
• What events could have initiated specific immigration policies through U.S. history?
• How can immigration policies help to improve quality of life for both immigrants and host communities?

Time required
One 60-minute class

Key Concepts
• immigration
• naturalization
• public policy

National Standards Addressed
National Council for the Social Studies
1. Culture
3. People, Places and Environments
5. Individuals, Groups, and Institutions
6. Power, Authority, and Governance
9. Global Connections
10. Civic ideals and practices

National EfS Standards
2.2 Interconnectedness: Systems Thinking
2.3 Economic Systems: Human Rights
3.2 Collective Action: Public Discourse and Policy

Materials/Preparation
Handout: Analyzing U.S. Immigration and Naturalization Policy, 1 per 3 groups of students
Internet Access

Activity
Introduction
1. Ask students which country has the largest number of immigrants. (*The United States has the largest number of immigrants, approximately 38 million people.* In recent years, government policy around the world has differed. Some countries have wanted to raise levels of immigration (i.e., Canada, Russia, and Australia), others have wanted to maintain levels (i.e., USA, Brazil, and India), and others have wanted to lower levels (i.e., Niger, Iran, and France).)

Steps
1. Explain to students they are going to research the history of immigration policy and naturalization in the United States. Naturalization is receiving full citizenship within a country.
2. Divide students into groups of 3.
3. Have them visit a credible website that provides a timeline related to U.S. immigration policy. One such possible website is:

   - *The Flow of History:*
   Please visit [http://www.flowofhistory.org](http://www.flowofhistory.org) for timeline

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Activity 3: Policy Analysis continued

4. Provide each group with the handout, Analyzing U.S. Immigration and Naturalization Policy.
5. Explain to them that after analyzing U.S. immigration policies, they will create an immigration policy to implement up until 2050.
6. Tell students to keep the goal of sustainability in mind when creating their policies. What immigration policy would lead to a vibrant sociocultural sector, a strong economy, and a thriving environment?
7. After sharing proposed immigration policies for the year 2050, lead students in the following discussion.

Discussion Questions
1. What might be the result of countries working together to create sustainable immigration policies?
2. Why might countries create policies that discourage immigration?
3. Are there ways to mitigate forced migration patterns around the world through policy measures?
4. What are the benefits to having an open immigration policy? What could be potential consequences?
5. What immigration policies resonated with you throughout U.S. history? Which ones did not seem effective? Why?

Geography Extension
Have students visit the following link, Snapshot: Global Migration, https://archive.nytimes.com/www.nytimes.com/ref/world/20070622_CAPEVERDE_GRAPHIC.html?scp=1&sq=global%2520migration&st=cse. They can analyze global migration patterns around the world to determine what regions have a large influx of immigrants coming in and other have a large influx of emigrants leaving. Students can also use this geographic data to determine what is driving these patterns.

Additional Resources
• Film: Lost Boys of Sudan
  In this film, Megan Mylan and Jon Shenk document the journey of 2 teenage Sudanese refugees travel from Africa to America. They are 2 of more than 20,000 male orphans known as the Lost Boys, some of who were chosen to participate in a resettlement program in America, www.lostboysfilm.com
• Film: Crossing Arizona
  In this documentary, Joseph Mathew and Dan DeVivo delve into the issue of immigration in the United States by looking at the issue from a number of different people’s perspectives in Arizona, where many people migrate illegally across the border (ranchers, humanitarian groups, political activists, farmers, and minutemen).
• Website: The Department of Homeland and Security
  https://www.dhs.gov/topics
  The Department of Homeland and Security website includes laws and regulations around immigration.
Analyzing U.S. Immigration and Naturalization Policy

**Group members:**

**Directions:** Research immigration and naturalization policy in the United States during the last 200 years and answer the related questions below.

1. What specific policies throughout the history of the United States appear to be geared toward improving quality of life and well-being of both immigrants and citizens?

2. Select one of the policies on immigration. Research any worldwide events that were occurring at that time. Determine what political, social, and economic circumstances may have led to this policy.

3. Are there any turning points in the timeline, where U.S. immigration policy seemed to change course? If so, what are they?

4. Was there an increase in certain types of immigrants throughout history? If so, how do you think this impacted present-day American society and culture?

5. Government policies throughout the world are driven by one of several specific goals: to raise levels of immigration, to maintain levels, and to lower levels. What kind of patterns have U.S. policy followed throughout history? Why do you think this is?

6. The U.S. population is projected to increase to more than 438 million people by 2050. Immigration is projected to increase from a net annual gain of 1.4 million people to 2.1 million people.¹ These increases will expand the labor force and support military growth, but potentially bring along strains on social, education, and health services.² What is one sustainable immigration policy you would suggest creating for the year 2050 to capitalize on benefits of immigration while preventing potential negative consequences? When crafting this policy, think about how it will support the economy, society, and the environment.

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1. Answers will vary. Possible responses: the 13th amendment that gave African-Americans citizenship in 1868; The Immigration and Nationality Act of 1952; permanent status to nurses who have worked in U.S. for 3 years in 1989

2. Answers will vary. Possible response: The Displaced Persons Act allowed 205,000 refugees for the 2 years between 1948 and 1950. World War II had just ended in 1945.

3. Answers will vary. Possible response: The Immigration and Nationality Act eliminated race as a bar to immigration and citizenship. In previous acts and policies, people of certain races faced barriers to entering the United States.

4. Answers will vary. Possible response: Throughout immigration history, certain groups of people were not allowed to enter the United States. However, after time, these policies changed. The types of immigrants who enter the U.S. can largely impact language and culture of a given area.

5. Answers will vary. Possible answer: There have been certain periods where it appears that U.S. policy was geared more to lower levels of immigration; especially with certain groups of people. This could be due to increased levels of xenophobia and economic hardship. Raised levels of immigration could be due to a desired to bring more skilled immigrants into the United States.

6. Answers will vary. Some policies may focus on continuing to bring diverse groups of people from around the world to the United States, and offering a number of services that will help them integrate easily. Others may focus on capping the amount of immigrants at a certain level so that the country is not overpopulated or short on resources.
Activity 4: To Move or Not to Move

Overview
Students analyze different scenarios and in groups, recommend whether an individual should migrate from a specific country or not based on a variety of factors. In addition to the scenario they receive, students will research information to make an informed decision on this migration. Groups will present their recommendations to the class.

Objectives
Students will:
• analyze various factors that would cause people to migrate from their country
• identify the pros and cons of remaining within a country or migrating to a new country

Inquiry/Critical Thinking Questions
• When is migration necessary for an individual?
• What can governments do to prevent forced migration from happening?

Time Required
Two 45-minute classes

Key Concepts
• sustainability
• socioeconomic status
• religious persecution
• brain drain
• religious tolerance

National Standards Addressed
National Council for the Social Studies
1. Culture
3. People, Places and Environments
5. Individuals, Groups, and Institutions
6. Power, Authority, and Governance
9. Global Connections
10. Civic Ideals and Practices

National Efs Standards
2.2 Interconnectedness: Systems Thinking
2.3 Economic Systems: Human Rights

Materials/Preparation
Handout: Country Profiles, 1 per each groups of 4 students
Handout: To Move or Not to Move, 1 per student
Internet Access
Activity 4: To Move or Not to Move  continued

**Activity**

**Introduction**

1. Ask students if they have ever had to migrate from one place to another (another town, city, state, country).
2. Ask students to brainstorm reasons why people decide to migrate.
3. Ask if there are ever situations when reasons for migration are more dire or important than others. Explain that they will read profiles of individuals from specific countries and take on those individuals’ perspectives to assess whether a person should leave or stay within his or her country.
4. In order to assess if a person should migrate or not, students will look at a number of factors (i.e., existing type of government, literacy rates, employment, average income, socioeconomic status, religious background).

**Steps**

1. Divide students into groups of 4.
2. Provide each group a specific Country Profile. If you have more than 16 students, you might have 2 groups reading over the same profile.
3. After students have read their profile, distribute a copy of the handout, To Move or Not to Move, to each group.
4. Explain to students that they can make an informed decision on whether they should migrate or not based on additional research.
5. After making their assessments as a group, they will present their decisions to the class.

**Discussion Questions**

1. Was the decision your group made to stay or leave challenging? Why or why not?
2. What risks are involved when leaving a country?
3. What other types of individuals do you think would contemplate migrating from the country you researched?
4. What sustainable actions can governments take to ensure forced migration is not an issue? Are there any other key stakeholders that can also help decrease different types of forced migration?

**Literature Extension**

Students can compile a list of literature, films, and art related to the topic of migration. They can share this list with their classmates as a resource for them to learn more about the topic.

**Additional Resource**

- **Book:** *The Joy Luck Club*  
  This novel documents the immigration of story of 4 women from China to the United States, and their relationships with their daughters who are raised in San Francisco. (Amy Tan, Untied States: G. P. Putnam's Sons, 1989)
Country Profile 1: Cuba

You live in the city of Havana, Cuba, in the year 1961. You have made a comfortable life for yourself and your family. You are the head of a company and have owned the business for 20 years. You have started to sense major changes in your country, and you’re not sure if you should remain or leave. Two years ago, Fidel Castro came to power. Before Castro, you lived under the rule of Fulgencio Batista. Havana was an ideal place to live under Batista’s rule. The economy was doing well, literacy rates were high, and per capita income was one of the highest in the hemisphere. At the same time, you didn’t like that Batista tended to favor the upper class and deny the rights of those who were more impoverished. Ideally, you want to live under a government that takes care of everyone and doesn’t leave those in poverty behind.

You’ve noticed Fidel Castro has a very different approach than Batista. When Castro came to power, he passed the Agrarian Reform Act in 1959, which took over one thousand acres of land from private owners. Peasants received titles to this land. You have heard him comment on how the Cuban government is not “for” the privileged classes. You can appreciate what he is doing for the impoverished, but you wonder if it’s necessary to do so at the expense of those who have worked hard to own land. Recently, a few events have made you question whether or not you should remain within the country:

- Certain government officials have been executed for speaking out against Castro.
- Rationing of food has started to happen more frequently. You have 2 children, and the thought of not providing them enough food scares you.
- You’ve started to hear rumblings through the media about how the professional class makes too much money. You think you make enough money to provide your spouse and your two children everything they need to live a good quality of life, including an excellent education and a safe neighborhood. You don’t believe what you make is excessive, but you’re not sure if others would agree.
- Two of your close friends have had their private businesses taken into state control.

Colleagues and other friends have mentioned they are not going to stay much longer in Havana and are planning to migrate to the United States. You are unsure of whether this is the right decision.

What should you do?

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2 Ibid.
Country Profile 2: The Maldives

You live in the Maldives, a beautiful country close to Sri Lanka. The Maldives includes more than 1,200 islands with white sands and tropical beaches. The islands are surrounded by thousands of reefs. It is one of the lowest-lying countries in the world; average elevation is around 3 feet above sea level.¹ You work in the tourism industry, which is one of the largest industries in the country. Years ago, in 1992, the President at the time, Maumoon Abdul Gayoom, made a frightening claim at the United Nations Earth Summit. He stated that because of global warming and sea-level rise, the Maldives could potentially disappear underwater.² Because of this real threat, the capital city of Male is surrounded by a 10-foot wall that took 14 years to build. The wall protects the island from tidal surges, but not rising sea level. In 2004, the tsunami hit the Maldives, and 69 islands were completely flooded.³

You’ve noticed more and more that rising sea levels pose a major threat to your livelihood. More than 60% of residents of the island where you reside, Kandholhudhoo, have volunteered to leave in the next 15 years. You’re not sure of what you should do. You’ve lived in this country your whole life. Uprooting to somewhere entirely new, where you would have to learn a foreign language and adapt to another culture, sounds very challenging. You think there are solutions to prevent the country from going under water in the next 100 years. Your tourist agency has developed an ecotourism component that teaches people how to support the islands through efforts like sea turtle conservation. The government has also started encouraging more forestation so beach erosion will decrease.⁴

The government has decided to allocate a portion of the billion-dollar tourist revenue it has to purchase new homeland just in case anything happens to the Maldives.⁵ There have been potential negotiations with Sri Lanka and India because they are neighboring countries with somewhat similar cultures.⁶ Nobody you know wants to leave this country voluntarily, but at the same time, nobody wants to be a climate refugee down the road. You’ve seen more and more intense storms happening and river erosion washing away farmland crucial to providing many people sustenance. You’re deeply concerned and are not sure what to do.

What should you do?

⁶ Ibid.
You live in the city of Kampala with your family. Your husband is a teacher and you are a nurse. Your 3 daughters are in elementary and middle school. You work mainly with patients infected by HIV. There are approximately 1.2 million people living with HIV in Uganda, 150,000 of who are children.¹ Your hospital has 40 nurses; at least a fourth of them speak about leaving the country when possible. This is because many other countries are offering excellent opportunities for training and work including: Australia, the United States, and Canada.

You can understand why these nurses want to leave. You are all overburdened with more patients than you can handle. The hospitals don’t have the resources necessary to help these patients. You also know that in developed countries, you can earn up to four times the amount you earn in Uganda. Generally, the situation in sub-Saharan Africa looks dismal. Clinics and hospitals have closed throughout the region because there are just not enough health care professionals available.² One of your daughters speaks of becoming a doctor in the future, and you worry about her prospects if you all remain in Uganda. You want to ensure your children have the best educational and career opportunities available.

At the same time, you love living in Kampala and you love the people and culture of Uganda. You are deeply saddened by the HIV epidemic that has struck your country. A part of you wants to invest in working with other health care professionals to strengthen the national health care system. The Ministry of Health has asked if you would be interested in joining a taskforce whose goal would be to retain health care workers in Uganda. This seems like an incredible opportunity, but you can’t seem to determine what will be the best decision for you, your family, and your country. A good quality of life in a foreign country seems more and more tempting. Your husband has said several times he will support whatever decision you make.

What should you do?

Country Profile 4: Indonesia

You live in the city of Jakarta within Indonesia. Because you are a practicing Christian, you are in the religious minority. Most people in Indonesia are Muslim. The area where you live has gone through rapid development and you have seen an increase in religious and ethnic diversity. Lately, you have also seen a large increase in tensions among religious groups. There are approximately 1,500 people within your religious community, but there is no church where you are allowed to practice. Instead, you have been worshiping in private homes for over fifteen years; you would rather practice in a designated place of worship, like a church.

The only way you would be allowed to build a church is if 60% of people within your local community supported it. Many do not support the creation of a church. In fact, some in your neighbors resent the fact that they have seen Christians trying to convert Muslims into becoming Christian. While the constitution supports freedom of worship, more than 200 religious attacks have happened in recent times and mostly to people who are Christian. In the last few weeks, police have had to protect your weekly religious services. You are afraid tensions could lead to riots in the near future.

You attend an excellent university and you want to continue your schooling in Indonesia, but you don't want your religious freedom to be taken away. You were born and raised in Jakarta and have friends who are Hindu, Muslim, and Christian. You don't understand why people can't openly practice their faith. You've started to question whether you should remain in the country or not. You have family who live in other parts of Asia; they have had no problems practicing their religion openly. You have an exciting career ahead of you in Indonesia, but you're not sure the risks are worth it.

What should you do?

<table>
<thead>
<tr>
<th>Habit</th>
<th>Challenge</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

To Move or Not to Move?

Group Members: ________________________________________________________________

Assigned Country: ______________________________________________________________

1. Why are you considering migrating?

____________________________________________________________________________

____________________________________________________________________________

2. Complete information about your country in the table below.

<table>
<thead>
<tr>
<th>Type of Government</th>
<th>Literacy Rate</th>
<th>Employment Rate</th>
<th>GDP</th>
<th>Life Expectancy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. What threat, if any, exists if you decide to remain in your country?

____________________________________________________________________________

____________________________________________________________________________

4. What are the benefits of remaining in your country?

____________________________________________________________________________

____________________________________________________________________________

5. Based on the information you have researched, should you stay or should you leave?

____________________________________________________________________________

____________________________________________________________________________
Chapter 19

Economics

CHAPTER BIG IDEAS

- The GDP, globalization, and international economic institutions play a significant role in how economies are structured.
- Governments, the private sector, and individuals can make economic choices that contribute to sustainable development.
Guiding Questions
• How do we define and measure economic progress?
• How can economic progress be sustainable?

Key Concepts
• economy
• market
• microeconomics
• macroeconomics
• subsidies
• externality
• gross domestic product (GDP)
• free trade

Supporting Vocabulary
• opportunity costs
• market economy
• mixed economy
• command economy
• free market system
• shareholders
• International Monetary Fund (IMF)
• World Bank

Service Learning Component
Service Learning Project Idea
• Question: What are ways to teach elementary students about financial literacy?
• Hook resource: Financial literacy is elementary
This 4-minute video looks at how students invest in stocks at a school in Chicago.
• Project: Students create a lesson that teaches younger students about economic principals and the importance of financial literacy.

• Additional Resources:
  • Lesson: A Perfect Pet
    This lesson teaches students about economics and scarcity.
  • TV program: Biz Kid$
    http://bizkids.com/
    This public television show features kids teaching other kids about money and business
Project Based Learning Component

Project Based Learning Idea

• Overview: Students assess the triple bottom line of one business in their school neighborhood and help the business to consider triple bottom line accounting by making recommendations that take people, profit, and planet into consideration.

• Driving Question: As an economist, what recommendations would you make to improve a local business’s triple bottom line?

• Hook Resource:
  • Video: Profitable do-good biz
    This 4-minute video looks at businesses that focus on sustainability.

• Individual Project: Students write a persuasive essay that identifies how a local business can address its triple bottom line.

• Group Project: Students will create a number of interview questions for the business they have chosen to analyze. They will determine what kinds of changes the business could make to have a better triple bottom line. They will then create a presentation and share this presentation with the business they researched to share specific ideas for how to limit negative externalities and consider profit, people, and the planet when doing business.

• Additional Resources:
  • Article: Triple Bottom Line: It consists of three Ps: profit, people, and planet
    This article is from The Economist (November 17, 2009) and presents a helpful overview of triple bottom line.

Summative Assessment

Chapter Test

Connections

World History connections:
Industrial Revolution; international economic institutions

Economics connections:
Mixed economies; subsidies; externalities

Geography connections:
Impacts of globalization

Civics connections:
Personal and structural solutions to economic issues
Activities in Teacher’s Guide: Suggested Sequence

Day 1

**Reading:** *Introduction to Economics*

**Activity 1:** *The Costs of Education*—After researching information provided to them, students analyze the economic costs of dropping out of school. After gathering this information, students will individually write argumentative essays on the long-term economic consequences of dropping out and pose solutions that would encourage more students to graduate.

Day 2

**Reading:** *Background on Economics*

**Activity 2:** *What’s Up with the GDP?*—In this economics simulation, students graph changes in the personal incomes of different community residents and in the community’s proportion of the gross domestic product (GDP) following an oil spill. The lesson explores the effect of an environmental disaster on the GDP, and the accuracy of GDP as a measurement of a community’s overall health.

Day 3

**Reading:** *Economics Today*

**Activity 3:** *Pondering Economic Policies*—Students take on roles of different world leaders tasked with reviewing real-world economic policies before deciding whether to move forward with them or not. After drawing their own conclusions, they learn about the real results of these economic policies.

Day 4

**Reading:** *Pathways to Progress: Economics*

**Activity 4:** *The Choice Is Yours*—Students take a closer look into the benefits and consequences of purchasing certain kinds of food. They determine which food is the best choice based on information they are provided and share their reasoning with the class.
Discussion Questions from the Chapter Reading

**Introduction to Economics**
1. Describe a time when you had to face trade-offs.
2. What’s an example of a positive externality? What’s an example of a negative externality?
3. If a country decides to allocate more money to its health system than its education system, what might be opportunity costs related to this choice?

**Background on Economics**
4. How did the Industrial Revolution transform economies around the world?
5. Why would Franklin Roosevelt push for regulation of private businesses and banks?

**Economics Today**
6. What does the Easterlin Paradox assert? Do you agree or disagree with this claim?
7. What are positive and negative impacts of globalization?

**Pathways to Progress: Economics**
8. Describe how the “Chile Solidario” program was an example of how subsidies can be sustainable.
9. Describe how triple bottom line accounting can help businesses make sustainable decisions.
Chapter Assessment: Economics,  page 1

Recall
Match the following words on the left with their definitions on the right.

1. Macroeconomics  the system of production, distribution, and consumption of goods and services
2. GDP  the study of finances and the market at a national level
3. Subsidy  a tool used to measure the total value of goods and services produced within a country
4. Economy  a financial incentive that supports businesses or individuals in making economic decisions

Reasoning/Explanation
Complete the following multiple choice questions by choosing one correct answer.

5. Which statement best replaces X in the flow chart?

   a. Small-scale economies shift to mass-production economies.
   b. People are able to trade a number of goods to their neighbors at much higher prices.
   c. Factories and industries are able to produce and sell goods at local levels instead of global levels.
   d. Working conditions improve as more and more people work outside of the home.

6. Which example below best describes the economic principle that people respond to incentives?

   a. People pay additional money when a good is high in demand but not readily available.
   b. People send their children to school because they are given a voucher to pay for books.
   c. People pay annual taxes to ensure that fuel prices are affordable for all.
   d. People send family members to participate in the war to be patriotic.
7. Which statement best explains an example of local control of a budgeting process?
   a. Citizens pay taxes, and government decided how money was spent.
   b. Citizens pay taxes, and they participated in decisions regarding budget.
   c. Citizens pay taxes, and the private sector made decisions regarding budget.
   d. Citizens pay taxes, and the upper class made decisions regarding budget.

8. Which statement best explains why the GDP was developed as a tool?
   a. The GDP was developed to measure the impacts of economic globalization.
   b. The GDP was developed as a way to bring the United States out of the Great Depression.
   c. The GDP was developed as a way to ensure countries were progressing economically.
   d. The GDP was developed to measure the well-being of citizens throughout the United States.

9. Use the graphic organizer to the right to answer the question.
   Which statement is an accurate representation of an externality that would replace the X in the graphic organizer?
   a. inefficient energy use required to keep fruit cold while traveling
   b. a sickness you develop from eating strawberries with pesticides
   c. chemicals sprayed on the strawberries to help them grow
   d. consumers spending more money to pay for the fruit

10. Which statement below best explains 1 impact of a free market?
    a. Globalized economies decrease poverty and discrimination around the world.
    b. Developing nations economically develop at the same rate as developed nations.
    c. Businesses compete with each other by potentially lowering their prices and labor standards.
    d. Children spend part of their time working and part of their time attending school.
11. Which statement below **best** describes 1 of the critiques of economic institutions like the World Bank and the International Monetary Fund?
   a. These organizations only help developing nations without taking into consideration the needs of developed countries.
   b. These organizations give foreign aid liberally to nations without monitoring how those nations spend the money.
   c. These organizations force nations to spend money on things that do not necessarily support sustained economic progress.
   d. These organizations fund loans related solely to humanitarian needs, without considering economic progress.

12. What is the **main** purpose of triple bottom line accounting in businesses?
   a. to ensure companies make as much profit as possible when selling a product
   b. to ensure companies provide workers health care, a living wage, and education before selling a product
   c. to ensure companies consider air pollution, carbon emissions, and water availability when selling a product
   d. to ensure companies consider profit, people, and the environment when selling a product

13. Which statement explains why Franklin Roosevelt chose to regulate the private sector (i.e. businesses, banks, and industries) during his presidential term?
   a. He wanted to give the private sector an opportunity to make as much profit as possible after the Great Depression.
   b. He wanted to make sure that the private sector did not make the same mistakes that led to the Great Depression.
   c. He wanted to protect the private sector's long-term well-being, and restricted any outside organizations from regulating their decisions.
   d. He wanted to support what was originally written in the U.S. Constitution regarding government control over the private sector.

14. Which statement **best** illustrates how subsidies could support sustainable practices for a business?
   a. Subsidies can encourage businesses to charge less for their goods and services.
   b. Subsidies can encourage businesses to economically grow by lowering worker wages.
   c. Subsidies can encourage businesses to do much of their work in developing countries.
   d. Subsidies can encourage businesses to invest in environmentally safe practices.
Chapter Assessment: Economics, page 4

Application/Complex Reasoning
Answer the following short answer questions below.

15. Use the excerpt related to GDP below and what you learned from the chapter to help answer the questions that follows.

“GDP, and the broader set of national income, product and wealth accounts, has stood the test time and no other measure has proven a worthy alternative...”
—Steve Landefeld, Director of the U.S. Bureau of Economic Analysis

Part A. Explain 1 reason why people support the GDP as a tool to measure economic progress.

Part B. Explain 1 reason why people support alternative indicators to measure economic progress.

16. Use the excerpt related to externalities below and what you learned from the chapter to help answer the questions that follow.

“An externality is the effect of a transaction between 2 individuals on a third party who has not consented to, or played any role in the carrying out of that transaction. And there are real problems in that area. There’s no doubt about it.”
—Milton Friedman, American Economist

Part A. Provide 1 example of a negative externality.

Part B. Provide 1 example of a positive externality.

Part C. Propose 1 way in which a negative externality can transform into a positive externality.
Recall (4 points)
1. Macroeconomics—the study of finances and the market at a national level
2. GDP—a tool used to measure the total value of goods and services produced within a country
3. Subsidy—a financial incentive that supports businesses or individuals in making economic decisions
4. Economy—the system of production, distribution, and consumption of goods and services

Reasoning/Explanation (10 points)
5. a 10. c
6. b 11. c
7. b 12. d
8. b 13. b
9. a 14. d

Application/Complex Reasoning (6 points)
15. Part A. Answers will vary. (1 point)
   • GDP can help create policies that support economic progress
   • GDP is a comprehensive measure of a society’s well being
   • GDP helps guide decisions related to economic stability within a country
   Part B. Answers will vary. (1 point)
   • GDP does not take into consideration other indicators of well-being like education and health
   • GDP considers monetary profits that support economic growth that can lead to costs such as resource depletion, pollution, family breakdown, and crime

16. Part A. Answers will vary. (1 point)
   • Air pollution
   • Low wages for workers
   • Child labor
   Part B. Answers will vary. (1 point)
   • Less air pollution
   • Conserving natural resources and space
   • Reducing packaging for products
   Part C. Answers will vary. (2 points)
   • A clothing company could enforce labor regulation laws so that people are paid fair wages and children are not forced to work.
   • A factory could make sure that it only produces a certain amount of pollution to decrease the amount of air pollution.
   • A farm could decide to make sure animals are treated fairly and not exposed to inhumane living conditions


**Activity 1: The Costs of Education**

**Overview**
After researching information at different stations, students analyze what the economic costs of dropping out of school are. After gathering this information, students will individually write a persuasive essay on these economic costs and possible solutions to decreasing drop-out rates.

**Objectives**
Students will:
- analyze the economic consequences of dropping out of school
- consider ways that students who are at-risk of dropping out can be convinced to stay in school

**Inquiry/Critical Thinking Questions**
- What are the economic costs of dropping out of school?
- What incentives would help students to stay in school?

**Time Required**
One 60-minute class, plus time outside of class to write essay

**Key Concepts**
- opportunity costs
- economic incentives

**National Standards Addressed**

**National Council for the Social Studies**
5. Individuals, Groups, and Institutions  
10. Civic Ideals and Practices

**National Efs Standards**
2.3 Economic Systems: Poverty  
3.1 Personal Action: Personal Responsibility  
3.2 Collective Action: Organizational and Societal Change Skills and Strategies

**Materials/Preparation**

**Set up 5 stations** around the classroom. Each station will have different information related to the economic costs of dropping out of school.

**Station 1:** Make copies of the following article and keep the copies at this station.


**Station 2:** Set up a computer with Internet access at this station so students can listen to this audio portion.


**Station 3:** Set up a computer with Internet access at this station so students can review this website.

**Website:** American Graduate, Let’s Make It Happen, [http://www.americangraduate.org/learn/research-center.html](http://www.americangraduate.org/learn/research-center.html).

**Station 4:** Make copies of the following articles and keep copies at this station.


**Station 5:** Set up a computer with Internet access at this station so students can watch this video.


**Handout:** Cost Much?, 1 per student
Activity 1: The Costs of Education  continued

Activity

Introduction

1. Ask students if they know the percentage of students in the United States who drop out of school.

2. Explain that of the 4 million students who enter school, approximately 1.3 million drop out by the time of graduation.1

3. Ask them why students may choose to drop out of school. What are the benefits? What are the costs? Which are more short-term considerations: the benefits or the costs?

Steps

1. Explain to them that they are going to research these questions by visiting different stations around the room.

2. Pass out the handout, Cost Much?, to each student. Divide them up into groups of 4 to 5 students.

3. Point out the 5 stations around the room. As they learn information at each station, either by reading articles, watching a video, or listening to an audio recording/clip, they will record relevant information on the handout.

4. Point each group toward a different station. Have students spend 10 minutes at the first station, giving them a 1-minute warning after 9 minutes.

5. Have them rotate clockwise to the next station and repeat the process.

6. After students have accumulated all the information, have them write an essay on the economic costs of dropping out of school. They can use facts and statistics from the different stations they gathered information from (emphasize they should also include citations when using these facts/statistics). They can then include solutions designed to decrease the drop-out rate.

Option: Have students publish this information in a blog or share with their school community through newspaper or journal.

Discussion Questions

1. What are the costs of dropping out of school?

2. What are personal solutions to ensure students stay in school?

3. What are structural solutions to ensure students stay in school?

4. If the costs of dropping out of school are high, why would students choose to do so?

Math Extension

Have students research the benefits of continuing their education beyond high school (e.g., trade school, college, community college, joining the armed forces). Based on career choices for the future, they can research what their salary would be if they dropped out of school versus if they continued their education.

Additional Resource

• Website: Is College Worth It?
  An interactive that looks at the costs and benefits of a college education.

---

## Cost Much?

<table>
<thead>
<tr>
<th>Station (write citation down)</th>
<th>Facts and statistics related to dropping out of school</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>
Activity 2: What’s Up with the GDP?

Overview
In this economics simulation, students graph changes in the personal incomes of different community residents and in the community’s proportion of the gross domestic product (GDP) following an oil spill. The lesson explores the effect of an environmental disaster on the GDP and the accuracy of GDP as a measurement of a community’s overall health.

Objectives
Students will:
• graph and evaluate the change in personal income and proportion of the GDP of a fictional community before and after an environmental disaster
• consider the appropriateness of GDP as a measurement of the overall health of a community
• identify and discuss other indicators to measure a community’s health and well-being

Time Required
One 60-minute class

Inquiry/Critical Thinking Questions
• How do we measure the economic, social, and environmental health and well-being of a community?
• What are the limitations of using the GDP to measure the health and well-being of a community?
• What are other ways we can measure progress?

Key Concepts
• gross domestic product
• community indicators of well-being
• economic growth

National Standards Addressed
National Council for the Social Studies
5. Individuals, groups, and institutions
7. Production, distribution, and consumption
8. Science, Technology, and Society
9. Global Connections
10. Civic Ideals and practices

National EfS Standards
2.3 Economic Systems: Alternative Indicators and Indexes of Progress

Materials/Preparation
Tape and scissors
Handout: Role Cards, copy and cut as many as the table below indicates. One set of cards is enough for a class of 30.
Handout: 100-Dollar Bills, copied and cut into strips (refer to amounts in table below; for 20 students, 180 bills or 12 sheets; for 30 students, 270 bills or 18 sheets)
Handout: Income Graphs, 1 per student
Handout: After Spill Cards, copied and cut (refer to amounts in table below; 1 set of cards is enough for a class of 30)

<table>
<thead>
<tr>
<th>Community Roles</th>
<th>Percent of Community</th>
<th>A Class of 20 Students</th>
<th>A Class of 30 Students</th>
<th>Before Spill $100 Bills Per Student (total $$ per person)</th>
<th>After Spill $100 Bills Per Student (total $$ per person)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil Executive</td>
<td>5%</td>
<td>1</td>
<td>1</td>
<td>20 ($2,000)</td>
<td>+15 ($3,500)</td>
</tr>
<tr>
<td>Attorney</td>
<td>5%</td>
<td>1</td>
<td>2</td>
<td>15 ($1,500)</td>
<td>+15 ($3,000)</td>
</tr>
<tr>
<td>Doctor</td>
<td>5%</td>
<td>1</td>
<td>2</td>
<td>15 ($1,500)</td>
<td>+10 ($2,500)</td>
</tr>
<tr>
<td>Retail Business Owner</td>
<td>5%</td>
<td>1</td>
<td>2</td>
<td>10 ($1,000)</td>
<td>+5 ($1,500)</td>
</tr>
<tr>
<td>Environmental Technician</td>
<td>10%</td>
<td>2</td>
<td>3</td>
<td>10 ($1,000)</td>
<td>+5 ($1,500)</td>
</tr>
<tr>
<td>Oil Pipeline Worker</td>
<td>25%</td>
<td>5</td>
<td>7</td>
<td>10 ($1,000)</td>
<td>-3 ($700)</td>
</tr>
<tr>
<td>Service Worker</td>
<td>20%</td>
<td>4</td>
<td>6</td>
<td>5 ($500)</td>
<td>-2 ($300)</td>
</tr>
<tr>
<td>Commercial Fisher</td>
<td>25%</td>
<td>5</td>
<td>7</td>
<td>5 ($500)</td>
<td>-4 ($100)</td>
</tr>
</tbody>
</table>
Activity 2: What’s Up with the GDP? continued

Activity

Introduction

1. Begin by defining and discussing gross domestic product (GDP): GDP is the total market value of the goods and services provided within a region’s borders.

2. Explain that GDP is often used as the primary means of measuring a nation’s economic health.

3. Tell the students that they are going to examine the applicability of GDP as a measurement of the overall health of a community and explore other possible indicators of a community’s health and progress.

Steps

1. Read the following scenario to the class:
“You are a community of people living in the town of Salmon Bay, Alaska, located on the Pacific coast adjacent to Salmon Sound, an area containing an important ocean fishery. Salmon Bay’s economy is based primarily on oil development, commercial fishing, and small retail and service businesses. The Majestic Oil Company’s pipeline, carrying 2,000 gallons of oil per minute, runs through the town of Salmon Bay. Each of you will represent 1 of the following roles in the community: Majestic Oil Company chief executive officer, a doctor, an attorney, a business owner, an oil pipeline worker, an environmental technician, a commercial fisher, and a service worker (restaurant cooks and waiters, grocery store clerks, hotel workers, etc.).”

2. Randomly assign roles (pass out role cards), and give each of the students their starting money as indicated in the table in the Materials and Preparation section (the oil executive gets 20 $100 bills, the doctors get 15, the retail business owners get 10, etc.).

3. Have students write their name on their role card.

4. Have each of the students tape their $100 bills together to form a lengthwise strip and then tape their role card, with their name written on it, to the bottom of the strip.

5. Holding their strip of money, students line up in a row in order of shortest to longest strip, forming a human graph of income distribution in the town of Salmon Bay.

6. Have them tape the strips to the wall or chalkboard in the same order as step 5, keeping the bottom edges even to form a graph. Make sure role cards and student names are visible at the bottom of the strip.

7. Pass out the handout Income Graphs and have students make a bar graph of “Individual Incomes in the Starting Economy” based on amounts from the main graph posted on the board.

8. Calculate the total income in the starting economy and write it in the space next to the graph.

9. Arrange students in groups based on their community roles (put all the fishers together, etc.). Group the CEO, attorney, doctor, and business owner together. If needed, subdivide the groups so each has no more than 5 students.

10. Read the following scenario:
“A pipeline worker accidentally runs a piece of heavy equipment into the pipeline, causing a severe rupture. The pipeline rupture is right next to an estuary that opens directly into the Salmon Sound fishery. Oil begins to flow out of the ruptured pipeline at the rate of 2,000 gallons per minute, directly into the estuary and into Salmon Sound. It takes Majestic Oil Company 4 hours to discover the damaged pipeline and stop the flow of oil. Officials from the Environmental Protection Agency (EPA) and the Department of Oil and Gas (DOG) arrive on site to assess the damage.”

Option: Have students calculate how many gallons of oil are spilled.
Activity 2: What’s Up with the GDP? continued

11. Ask the students to predict how this event will affect their personal income and Salmon Bay’s overall proportion of the GDP.

12. One at a time and starting with the lowest economic group, give each group the After Spill Card that pertains to them, and have them read the card aloud to the class and follow the card’s instructions. Some students will make more money, and others will lose their money. Students either cut their dollars off the top of their strip or tape new dollars onto it, depending on what the card says.

13. Have students complete the bar graph of “Individual Incomes Post-Spill” and calculate the total post-spill income using the bottom graph on the handout.

14. Conclude with the following questions.

Discussion Questions

1. What happened to personal incomes and the GDP? Is this what you predicted would happen?

2. What professions/vocations seem to benefit the most? Which suffer the most? Explain why.

3. What happened to the overall health and well-being of the Salmon Bay community?

4. Did the GDP give an accurate picture of the community’s overall health? If not, where did it fall short and why?

5. Is there a difference between well-being and progress? Explain.

6. What are some indicators besides GDP that could more accurately gauge the well-being of a community (e.g., education levels, human health, number of parks, air and water quality)?

Writing Extension

Have students design a new “Index of Progress” to measure advances or declines in the human condition. Each student’s Index of Progress should include at least 10 indicators the student believes are important in measuring human progress. Include indicators of environmental, economic, physical, and social health. Rank these indicators in terms of importance, and determine how to measure them. Additionally, students can compare rankings on their indexes to conventional measures such as the GDP, the stock market, or the Consumer Price Index.

Additional Resource

- Article: Oil Spill May End Up Lifting GDP Slightly

This article by Luca Di Leo in the Wall Street Journal looks at how the oil spill in the Gulf of Mexico may have contributed to the growth of the U.S. economy.
<table>
<thead>
<tr>
<th>Role Cards, page 1</th>
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<tbody>
<tr>
<td>(for a class of 30)</td>
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</table>

<table>
<thead>
<tr>
<th>Role</th>
<th>Company/Office</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chief Executive Officer</td>
<td>Majestic Oil Company</td>
</tr>
<tr>
<td>Attorney</td>
<td>Salmon Bay Law Firm</td>
</tr>
<tr>
<td>Attorney</td>
<td>Salmon Bay Law Firm</td>
</tr>
<tr>
<td>Doctor</td>
<td>Salmon Bay Clinic</td>
</tr>
<tr>
<td>Doctor</td>
<td>Salmon Bay Clinic</td>
</tr>
<tr>
<td>Retail Business Owner</td>
<td>Salmon Bay Clinic</td>
</tr>
<tr>
<td>Retail Business Owner</td>
<td>Salmon Bay Clinic</td>
</tr>
<tr>
<td>Environmental Technician</td>
<td>Salmon Bay Clinic</td>
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Economics
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<th>Role Cards, page 2</th>
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<th>Service Worker</th>
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<td>Oil Pipeline Worker</td>
<td>Oil Pipeline Worker</td>
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</tr>
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<tr>
<td>Service Worker</td>
<td>Service Worker</td>
<td>Commercial Fisher</td>
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<td>Commercial Fisher</td>
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## 100-Dollar Bills

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Income Graphs

Individual Incomes in Starting Economy

<table>
<thead>
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<th>Income Level</th>
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<tbody>
<tr>
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Individual Incomes Post Spill

<table>
<thead>
<tr>
<th>Income Level</th>
<th>Period</th>
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<tbody>
<tr>
<td>$3,500</td>
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<tr>
<td>$500</td>
<td>7</td>
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<tr>
<td>$0</td>
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</table>
Chief Executive Officer of Majestic Oil Company

Majestic Oil Company will spend up to $2 million on cleanup operations and legal fees. We will hire the best law firm in town to fight any lawsuits. However, the company plans to raise the per-barrel price of our oil from $15 to $20 to pay these costs. Unfortunately, the company has decided that I must step down from my duties as CEO, but in honor of my many years of service, I have received a “golden handshake.” The CEO earns $1,500.

Attorneys with Salmon Bay Law Firm

We are pleased to announce that Majestic Oil Company has just hired the Salmon Bay Law Firm to defend it in a lawsuit filed by “Save Salmon Bay”. Majestic Oil is willing to pay whatever it costs to win this pending lawsuit. We are working day and night on this case, and therefore our incomes double. Attorneys earn $1,500 each.

Doctors with Salmon Bay Clinic

As a result of the oil spill, several Majestic Oil Company workers have been exposed to toxic fumes and require immediate medical attention. Salmon Bay’s fresh water has also been contaminated, and many townspeople have come to the hospital complaining about headaches and stomach problems. Because of this increase in medical demand, our income increases by almost 70 percent. Doctors earn $1,000 each.

Retail Business Owners

We are sorry to say that some oil workers and fishers are out of work and are now spending less at the grocery store, movie theaters, and gas stations. However, the good news is that hotels and restaurants have been very busy since the spill, as there are many officials in town reviewing and monitoring the cleanup operations. We are experiencing a 50% increase in business. Business owners earn $500 each.
The environmental technicians have started immediate oil-spill monitoring and cleanup operations. We are monitoring wildlife impacts, testing water quality, and starting oil cleanup procedures. We are very busy these days, and our incomes have increased by 50%. Each technician earns $500.

Since the spill, regular operations on the pipeline have stopped and a few of us have been laid off, although some of us are working overtime on pipeline operations. Because of the spill, we also have medical costs from exposure to toxic fumes and contaminated water supplies. Our overall income is reduced by 30%. Each pipeline worker loses $300.

Salmon Bay’s commercial business is booming these days because there are so many government officials and news reporters here looking over the cleanup operations. However, we haven’t been feeling too well since the spill because our water supply is now contaminated. We are spending our money on bottled fresh water and on doctor visits. Service workers each lose $200.

The Salmon Sound fishery has been wiped out by the oil spill. The oil dumped into the Sound killed most of the adult fish, and the fish breeding ground in the bay is devastated. There will be no fishing in this area for several years. We will have to take our fishing boats out of the Sound and look for fish in other areas. Each fisher loses $400.
Activity 3: Pondering Economic Policies

Overview
Students take on roles of different world leaders tasked with reviewing real-world economic policies before deciding whether to move forward with them or not. After drawing their own conclusions, they learn about the real results of these economic policies.

Objectives
Students will:
• take on the role of government leaders to choose economic policies with sustainability in mind
• learn about real-world impacts of various economic policies

Inquiry/Critical Thinking Questions
• How can governments make decisions that support sustainability when considering economic policies?
• What are barriers to making sustainable economic decisions?
• What long-term consequences should governments consider when deciding upon a policy?

Time Required
One 60-minute class

Key Concepts
• economic policies
• sustainability

National Standards Addressed
National Council for the Social Studies
5. Individuals, Groups, and Institutions
6. Power, Authority, and Governance
9. Global Connections

National EfS Standards
2.3 Economic Systems: Poverty
2.3 Economic Systems: Globalization
2.4 Social and Cultural Systems: Governance
3.2 Collective Action: Public Discourse and Policy

Materials
Handout: Pondering Policy, 1 per group of 4 to 5 students. Each group will receive 1 of 4 different policies. For classes of more than 20 students, some groups will receive duplicate policies.
Internet access

Activity
Introduction
1. Have students think-pair-share about economic decisions they think governments make that impact their lives and their families.

Steps
1. Explain to students that they are going to take on the role of economic experts who work for the government. Their task will be to determine whether a proposed economic policy should be passed or not.
2. Divide students up into groups of 4 to 5.
3. Pass out 1 of the Pondering Policy handouts to each group of students. There are 4 different versions of the policy that lay out 4 different economic policies.
4. Give students 15 minutes to complete the handout in their groups. Explain that when they complete the handout, they will be making a recommendation to you on whether the policy should move forward or not.
5. After everyone has provided their recommendations, ask them if they’ve ever heard of these policies before. Reveal to students that each of the policies they have read about have actually been real policies governments have enacted.

• Cash for Clunkers was an economic policy created during the President Obama’s administration in 2009.
• The Economic Recovery Act was passed in 1981 by President Reagan.

• Cuba began transforming its health care system and in 1976 included a statement in its constitution that declared that everyone has the right to health protection and care.

• South Africa was internationally isolated between 1948 and 1994. Countries imposed economic sanctions, pressuring them to end Apartheid. When Apartheid ended and sanctions were lifted, South Africa was finally able to accept foreign investments.

Option: Give students time to research if the economic policies they reviewed were successful or not. They can share their findings with the class.

Discussion Questions

1. What lessons can be learned from economic policies that governments implemented that did not work?

2. What kind of things would an economic policy that considered the 3 pillars of sustainability take into account?

3. Why would developing countries choose economic policies that would not necessarily be supportive of its citizens?

4. What policies seemed to consider long-term interests over short-term gain? Why might economic policies be made for short-term gain?

Additional Resources

• Movie: Life in Debt
  http://www.lifeanddebt.org/
  Directed by Stephanie Black, this 80-minute documentary looks at how globalization policies and organizations such as the IMF, World Bank and Inter-American Development Bank have on developing countries.

• Website: Green Growth
  http://www.greengrowth.org/
  Green Growth is a website that focuses on policy for the Asia and Pacific region and emphasizes environmentally sustainable economic progress. Visit the policies and instruments tab to learn more about green growth policies.

• Website: The Organization for Economic Co-operation and Development (OECD)
  www.oecd.org
  The OECD was created to promote policies in countries around the world that improve economic and social well-being.
Pondering Policy #1: Cash for Clunkers

Group Names: __________________________________________________________

Directions: Read the information on the given policy. Answer the questions below.

You work for the U.S. government and review economic policies. The United States has been going through somewhat of an economic recession. Cash for Clunkers has been created with a three-fold goal: to help stimulate the economy, improve the environment, and reduce income inequality. This $3 billion program provides economic incentives for U.S. residents to trade in their less efficient cars for more fuel-efficient ones. In other words, when people turn in their cars, they would receive a voucher for up to $4,500 that could be used to buy a newer car. The car has to have been registered and in use for at least 1 year. It also needs to have a fuel-economy rating of 18 or fewer miles per gallon.¹

Approximately 23,000 car dealers will participate in this program. When people sell their cars, they will receive government checks administered to them at the motor vehicle bureau office. Governments are allowed to sell the cars to recyclers for scrap or refit and resell them. They are not allowed to sell cars to developing countries.

Cars that are 13 years and older emit 75% of the country’s road-related air pollution. Getting rid of them would clean up the air by reducing emissions. These clunkers are typically used by people who have low-incomes. Involving them in this program would help provide them with purchasing power.² Additionally, those who receive the money will most probably spend the payment in its entirety, helping to boost the economy.

1. Does this economic policy take sustainability into consideration? Why or why not?

2. What are possible unintended consequences of this policy?

3. Would you recommend this policy? Why or why not?

Pondering Policy #2: Economic Recovery Act

Group Names: 

Directions: Read the information on the given policy. Answer the questions below.

You work for the U.S. government and review economic policies. Your task is to decide whether the following Economic Recovery Act is worth pursuing. The United States has had the largest rate of unemployment and inflation in the past several decades. Pondering Policy #2, rephrase 4th and 5th sentences to read: This policy is looking to help bring economic stability to the country since it is struggling with unemployment. It will attempt to increase economic stability by creating millions of jobs, decreasing unemployment, and increasing the gross domestic product (GDP). Policymakers are pushing for a plan that would help do 2 things: create the largest tax cut in history and reduce regulation (governments role in the market). Tax cuts would equate to approximately $750 billion of tax cuts over a period of 5 years.¹ With these tax cuts, the wealthy will be able to keep more of their money because they will not have to pay as many taxes. The idea is that the extra income they make will trickle down the economic ladder to people of all socioeconomic classes in the form of increased payrolls and pay rates and the increased consumption of goods.

Government deregulation will decrease the amount of power that government has in controlling businesses and industries. Businesses will have greater freedom with how they are allowed to operate. Economists who support deregulation believe that it will raise the level of competitiveness within the country and create higher productivity. Economists who do not support deregulation believe it will cut down on social services (i.e., nursing homes, foster care homes, day care centers), give big businesses too much leeway to take advantage of workers, and lead to environmental degradation.

1. Does this economic policy take sustainability into consideration? Why or why not?

2. What are possible unintended consequences of this policy?

3. Would you recommend this policy? Why or why not?

Pondering Policy #3: The Health Investment Act

Group Names: __________________________________________

Directions: Read the information on the given policy. Answer the questions below.

You work for the Cuban government. Your job is to review economic policies before they are passed. The Health Investment Act has been brought to you. This policy would make health care a national priority. The country is facing economic challenges at this point, and experts who have drafted this Act believe that providing health care to everyone is important. The act would include a system that has 5 levels of health care: hospital centers, provincial hospitals, municipal hospitals, area health centers, and mini clinics. It would prioritize health care for all and provide preventative care so that life expectancy and well-being would improve. A few of the specific goals would be to ensure there is a control of infectious disease like tuberculosis, malaria, and HIV; a reduction in infant mortality; and the establishment of a biotechnology industry. Critics are worried that the physician-to-population ratio will be too high and that too much of the nation's budget will be spent on health care.

Part of this Health Investment Act would include government-to-government agreements. These agreements would place Cuban physicians, nurses, dentists, and other medical professionals in different developing countries to support these countries' health needs. This would be an opportunity for the country to develop good relationships with these countries. Countries participating in this program would be able to compensate the Cuban government for this medical support. Some countries would do so financially and others would be able to do so through providing oil at discounted prices. Additionally, this medical support would help to eliminate trade barriers and improve relationships between Cuba and other countries for future work.

1. Does this economic policy take sustainability into consideration? Why or why not?

2. What are possible unintended consequences of this policy?

3. Would you recommend this policy? Why or why not?

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Pondering Policy #4: Foreign Investment Act

Group Names: ____________________________________________________________

Directions: Read the information on the given policy. Answer the questions below.

You are an economist working for the South African government. You review economic policies before they are passed. South Africa has the opportunity to accept a Foreign Investment Act. This act would specifically support diamond and gold mining investments to help build infrastructure, decrease unemployment, and stimulate economic growth. It could be a huge boost for the country as the rate of growth in GDP has slowed considerably from the 1960s when it was around 5.8% to about 1.4% in the 1990s.¹

South Africa has fairly liberal labor laws. This means that if a foreign company comes into the country to do business, the company does not have to hire South African citizens. South African companies will have to compete with these foreign-owned companies. Proponents of the Foreign Investment Act policy believe that foreign-owned firms pay higher than domestic ones. However, critics say that these investments can decrease wages and jobs at home while also exploiting workers.² For example, the foreign-owned mining industry in the past has been known to include a lot of work that is not legal (i.e., child labor and poor working conditions). Mines have been known to have poorly constructed shafts with poor ventilation. They have also been known to lead to cave-ins and rock falls. An estimated 69,000 miners have died since 1900 because of unsafe mining conditions.³ Some unions in South Africa have started to protest foreign ownership of mines and have called for the nationalization of all of South Africa’s mines. This would mean that the government would control the mines instead of foreign companies.

1. Does this economic policy take sustainability into consideration? Why or why not?

2. What are possible unintended consequences of this policy?

3. Would you recommend this policy? Why or why not?

Activity 4: The Choice Is Yours

Overview
Students take a closer look into the benefits and consequences of purchasing certain kinds of food. They determine which food is the best choice based on the information they are given and share their reasoning with the class.

Objectives
Students will:
• analyze benefits and consequences related to food choices
• understand that the purchase price of goods often do not capture hidden costs

Time Required
One 60-minute class

Inquiry/Critical Thinking Questions
• What kinds of hidden costs and externalities are associated with foods for sale?
• If the food industry and governments were more transparent about the true cost of our food, what kinds of impacts would this have on the individual/household economies?

Key Concepts
• externalities
• factory farming
• fair trade
• organic

National Standards Addressed
National Council for the Social Studies
5. Individuals, Groups, and Institutions
7. Production, Distribution, and Consumption
9. Global Connections

National Efs Standards
2.3 Economic Systems: True (or full) Cost Accounting
3.1 Personal Action: Personal Responsibility

Materials/Preparation
Handout: What’s the Cost?, 1 per student pair (There are 5 different handouts. For classes of 20 or more students, you can give duplicate handouts to multiple pairs).

A cigarette box

Activity
Introduction
1. Show students a cigarette box.
2. Ask them why warning labels are put on cigarette boxes.
3. Ask students why information about resources we consume are not necessarily provided when we purchase the product (e.g., wages people receive, environmental impacts, health impacts). Would they change their mind about a food product for example that increased possibility for diabetes?
4. Ask students to define externalities (when 2 groups of people conduct a business transaction that has an effect on a non-involved third party, the unintended effect is called an externality).
5. Have students differentiate between a negative and positive externality. (A negative externality harms the third party, and a positive externality benefits the third party).

Steps
1. Ask students to think-pair-share about possible consequences and externalities related to the choices we make when we purchase food.
2. Have students read the Time article, “Getting Real about the Price of Cheap Food.”
3. Based on the article, ask them what they learned about food that they didn’t know before.
Activity 4: The Choice Is Yours  

4. Explain to students that student pairs will be asked to analyze 2 similar foods. They will determine whether they would choose food option A or B. When making their decision, they will determine both personal consequences and externalities for each option.

5. Divide students up into pairs.

6. Hand each pair of students a “What’s It Worth?” handout. There are 5 different handouts (chocolate, honey, beef, eggs, and strawberries). Multiple pairs may receive the same food depending on how many students you have in your class.

7. Give students 10 minutes to complete the handout.

8. With the whole class, have student pairs share what food choices they were given, externalities they found for choice A and choice B of this specific food, and which choice they made based on these facts.

9. Lead them in the following discussion questions.

Discussion Questions

1. Were you surprised by any of the food related information you read about?

2. Food that is more affordable is often less healthy in the United States. What can be done to ensure that people from all backgrounds are able to eat healthy and affordable food?

3. What are long-term impacts of some of the externalities you learned about in this lesson?

4. Rick Weiss, a writer for the Washington Post, states, “Factory farming takes a big, hidden toll on human health and the environment, is undermining rural America’s economic stability and fails to provide the humane treatment of livestock demanded by American consumers…” Are these costs worth the cheap cost of foods that we are able to get from these farms?

5. Meat consumption has increased around the world as people move into middle-class status. What trends might happen related to this increase in meat consumption?

Additional Resources

• Documentary: Food Inc.  
  Directed by Robert Kenner, this 94-minute documentary looks at the United States food industry, questioning how the push for profit has impacted the food we eat, the livelihood of the American farmer, the safety of workers, and the environment.

• Website: Sustainable Table  
  Sustainable Table educates consumers about issues related to food production and sustainability. A number of informative resources such as The Meatrix interactive video (a video that looks at specific farming practices) are included on this website.
**What’s the Cost?, page 1**

**Directions:** Read the following information below about both food choices. Answer the questions below.

### Choice A: Chocolate Bar

**Ingredients:** milk chocolate, peanuts, corn syrup, sugar, milkfat, skim milk, lactose, salt, egg whites, chocolate, artificial flavor

**Labor practices:** The cocoa beans were picked by children in Cote d’Ivoire. Young boys ages 12 to 16 were sold into labor to pick these beans. The chocolate bars are manufactured throughout the United States in places like Illinois, Texas, and Alabama.

**Possible health impacts:**
- Total fat content: 14.2 grams
- Calories: 286
- Saturated fat: 10.2 grams

**Average cost:** $1.00

### Choice B: Chocolate Bar

**Ingredients:** chocolate liquor, raw cane sugar, cocoa butter, cocoa beans, caramel, sea salt, fair trade vanilla beans, almonds, pecans

**Labor practices:** The cocoa beans were picked by people in the Dominican Republic, Panama, Ghana, and Venezuela who are given fair wages. No child labor is involved when making this chocolate bar. The cacao is then roasted in a factory in the United States. The chocolate bars are also assembled in the U.S.

**Possible health impacts:**
- Total fat content: 20 grams
- Calories: 210
- Saturated fat: 10 grams

**Average cost:** $3.50

1. **What are the benefits and costs of choice A?**

2. **What are the benefits and costs of choice B?**

3. **Based on the information above, would you choose Choice A or Choice B? Why?**
What’s the Cost?, page 2

**Directions:** Read the following information below about both food choices. Answer the questions below.

**Choice A: Dozen eggs**

**Labor practices:** People work on this farm under somewhat hazardous conditions. Hens are confined to indoor cages where manure piles up. There are harmful gases produced by decomposing manure. Laborers and animals breathe in this toxic air. Laborers are paid below minimum wage.

**Impacts on animals:** Hens are crowded together in cages. A cage is roughly the size of a microwave oven; approximately 4 to 11 hens fit inside. Jumping, flying, and wing-flapping are not possible.

**Possible health impacts:** When hens are put in these cages, they produce large amounts of manure. This manure runs off into waterways and can lead to nutrient pollution and algae blooms in lakes.

**Average cost:** $1.30

**Choice B: Dozen eggs**

**Labor practices:** People working on this farm receive overtime pay, safety training, and worker’s compensation.

**Impacts on animals:** Hens are free range hens meaning they are able to walk on the farm and exercise more fully.

**Possible health impacts:** Free-range chickens have higher levels of the pesticide PCB because they are out in the open and can peck anywhere. This pesticide is found on the ground where they peck. Research on free-range eggs has shown that these eggs contain one-third less cholesterol than factory farmed eggs. Omega-3 fatty acids, known as essential fatty acids, have been found to be 2.5 times higher in free range eggs than caged eggs.

**Average cost:** $3.99

1. What are the benefits and costs of choice A?

2. What are the benefits and costs of choice B?

3. Based on the information above, would you choose Choice A or Choice B? Why?

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What’s the Cost?, page 3

Directions: Read the following information below about both food choices. Answer the questions below.

**Choice A: steak**

**Labor practices:** This steak comes from a large ranch; the size of the ranch means that each cow can be sold for a small profit margin. Laborers are paid less than minimum wage.

**Impacts on animals:** When cows are put into these farms, 2/3rds of their tails are removed because they are easier to milk them without their tails. Many are also typically injected with rBGH which is an artificial growth hormone.

**Possible health impacts:** Cows often have to stand in their own manure with many other cows in crowded areas. They are also unable to graze on grass. Overcrowded facilities can lead to diseases spreading more easily. Bacteria can also get onto cow hides when they enter slaughterhouses. This can lead to widespread contamination.

**Average cost:** $9.99

**Choice B: steak**

**Labor practices:** Those working on this farm have livable wages, proper washing facilities, and employee benefits.

**Impacts on animals:** On this fairly small ranch, cows are able to feed on tall grass prairie on a 1,000 acre lot. They are moved from field to field often so that the grass will not be overgrazed.

**Possible health impacts:** A grass-only diet for cows makes beef lower in saturated fats. This diet has also been known to prevent breast cancer and diabetes.

**Average cost:** $26

1. What are the benefits and costs of choice A?

2. What are the benefits and costs of choice B?

3. Based on the information above, would you choose Choice A or Choice B? Why?

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Economics
**What’s the Cost?, page 4**

**Directions:** Read the following information below about both food choices. Answer the questions below.

<table>
<thead>
<tr>
<th>Choice A: 1-pound package of strawberries</th>
<th>Choice B: 1-pound package of strawberries</th>
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</thead>
<tbody>
<tr>
<td><strong>Labor practices:</strong> These strawberries are grown and picked in Washington state. There has been controversy over the fact that some growers have used children between ages of 6 and 11 to work in the strawberry fields. Adults who work in the fields are not provided minimum wage when working. Many of those picking fruit have been illegal immigrants.</td>
<td><strong>Labor practices:</strong> These strawberries are grown in California. The strawberry growers are family farmers who live near fields. The strawberry pickers are typically illegal immigrants.</td>
</tr>
<tr>
<td><strong>Possible health impacts:</strong> These specific berries are organically grown. Therefore, they are pesticide free. The berries have many antioxidants and have been known to prevent heart disease, diabetes, and cancer.</td>
<td><strong>Possible health impacts:</strong> Historically, farmers have used methyl bromide in the soil before planting the strawberries. This chemical was banned by the Montreal Protocol (an international treaty to limit destruction of Earth’s ozone layer) because it was found to deplete the ozone. Farmers then began to use methyl iodide instead. Methyl iodide has been known to cause neurodevelopmental disorders like autism and attention-deficit hyperactivity disorder. The chemical has also been known to deplete the ozone layer.</td>
</tr>
<tr>
<td><strong>Average cost:</strong> $5.99</td>
<td><strong>Average cost:</strong> $3.99</td>
</tr>
</tbody>
</table>

1. What are the benefits and costs of choice A?

2. What are the benefits and costs of choice B?

3. Based on the information above, would you choose Choice A or Choice B? Why?

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What’s the Cost?, page 5

Directions: Read the following information below about both food choices. Answer the questions below.

<table>
<thead>
<tr>
<th>Choice A: 24 ounces of honey</th>
<th>Choice B: 24 ounces of honey</th>
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</thead>
<tbody>
<tr>
<td><strong>Labor practices:</strong> Honey is smuggled out of China and India. Beekeepers in these countries are typically impoverished and live in remote locations. They sell their honey at a heavily reduced price to smugglers. Many U.S. beekeepers have been forced out of the business because of these low prices.¹</td>
<td><strong>Labor practices:</strong> The beekeepers who sold this honey are part of a cooperative in which they are given fair trade prices for the honey they provide. Honey is produced in rural areas and sold within the country at places like farmer’s markets and small grocery stores.</td>
</tr>
<tr>
<td><strong>Treatment of bees:</strong> Bees are given antibiotics to increase production of honey.²</td>
<td><strong>Treatment of bees:</strong> No chemicals are used in the bee colonies. Beekeepers also situate their hives near plenty of fruit crops that bees can pollinate (i.e. raspberries, apples, melons).</td>
</tr>
<tr>
<td><strong>Possible health impacts:</strong> This honey has been known to have traces of lead and illegal animal antibiotics. These antibiotics are used to get queen bees to lay more eggs.³ There are hardly any traces of pollen that can be found in this honey, thus taking away the health benefits of the product.</td>
<td><strong>Possible health impacts:</strong> Beekeepers keep a careful eye on what plants bees forage (i.e. fruits and vegetables). Therefore, the honey produced is therefore a product with high levels of vitamins, minerals, and antioxidants.</td>
</tr>
<tr>
<td><strong>Average cost:</strong> $6</td>
<td><strong>Average cost:</strong> $12.99</td>
</tr>
</tbody>
</table>

1. What are the benefits and costs of choice A?

2. What are the benefits and costs of choice B?

3. Based on the information above, would you choose Choice A or Choice B? Why?

CHAPTER BIG IDEAS

- Root causes of poverty have had long-lasting impacts.
- Structural solutions can help to alleviate poverty
Poverty

Guiding Questions
• What factors contribute to poverty and the unequal distribution of resources?
• What steps can individuals, organizations, and governments take to alleviate poverty?

Key Concepts
• poverty
• economic development
• human development
• colonization
• resource scarcity
• developing countries

Supporting Vocabulary
• extreme poverty
• structural poverty
• relative poverty
• World Bank
• International Monetary Fund (IMF)
• structural adjustment programs (SAPs)
• microcredit

Service Learning Component

Service Learning Project Idea
• **Question:** What are ways to educate your local community about hunger and poverty?
• **Hook resource:** *Silent Killer: The Unfinished Campaign against Hunger*
  [http://www.silentkillerfilm.org/index.html](http://www.silentkillerfilm.org/index.html)
  This feature-length documentary is about chronic hunger around the world.

• **Project:** Organize a hunger banquet to build awareness and raise money to alleviate global poverty. The Hunger Banquet is a project of Oxfam America. Each person attending this hunger banquet is randomly assigned a role: 15% of the people get a role in the high income group; these people sit at a table and enjoy a three-course meal; 25% of the people get a role in the middle income group; they sit in chairs and eat rice and beans; 60% of the attendees sit on the floor, and receive only rice and water. They are the low income group, and for one meal, they experience the fate of the millions of people throughout the world who live in poverty. To receive necessary materials for this banquet, you can sign up on Oxfam, [https://www.oxfamamerica.org/take-action/](https://www.oxfamamerica.org/take-action/).

• **Additional Resources:**
  • **Website:** *One*
    [http://www.one.org/us/](http://www.one.org/us/)
    This website provides information about the One Campaign and campaigns happening around the world to help alleviate poverty.
  • **Website:** *Oxfam*
    [https://www.oxfamamerica.org/take-action/](https://www.oxfamamerica.org/take-action/)
    Learn more on the Oxfam website about how to take actions against global poverty and hunger.
**Project Based Learning Component**

**Project Based Learning Idea**

- **Overview:** Students are asked to create a microfinance organization and work successfully to fund two recipients.
- **Driving Question:** How can you run a microcredit organization and successfully award grantees to help alleviate poverty?
- **Hook Resource:** *Small Fortunes: Microcredit and the Future of Poverty*
  

  This 1-hour documentary describes the impact of microcredit on people throughout the world.
- **Individual Project:** Students write up an explanation of why they have granted funding to 2 recipients in particular.
- **Group Project:** In groups of 5 to 6, students run a microcredit finance group charged with funding 2 individual loan applicants. The group can have several people working on different tasks such as fundraising money to provide loans and determining what organizations to donate money to. Through research, their goal is to determine which people from which countries should receive funding. They will also determine how much money they need to raise to support both people. There are several microcredit organizations they can research to learn about projects that need funding (i.e., Kiva, Vittana).

- **Additional Resources:**
  - **Website:** *The Meadows School Microbank*
  - **Article:** *Turning Around the Idea of Student Loans*
    [http://www.nytimes.com/2008/12/01/education/01microbank.html?pagewanted=all&_r=0](http://www.nytimes.com/2008/12/01/education/01microbank.html?pagewanted=all&_r=0)

  This *New York Times* article by Steve Friess looks at how students at a high school made decisions about who to provide microcredit loans.

**Summative Assessment**

Chapter Test

**Connections**

**World History connections:**
Age of Exploration; colonization, civil, and international conflicts

**Economics connections:**
Measures of poverty; economic development; human development

**Geography connections:**
Regional differences in poverty; good governance; global inequity

**Civics connections:**
Personal and structural solutions to poverty
### Activities in Teacher’s Guide: Suggested Sequence

#### Day 1

**Reading:** *Introduction to Poverty*

**Activity 1:** *Take a Step for Equity*—Students are randomly assigned an economic class, and then hear poverty and wealth statistics describing their economic class as they step forward in a line. Ultimately, a distance is created between the wealthiest and the poorest, illustrating the economic gap between the rich and poor. Students then brainstorm and discuss ways to alleviate poverty and hunger.

#### Day 2

**Reading:** *Background on Poverty*

**Activity 2:** *Shop Till You Drop*—Students experience how resources are distributed and used by different people based on access to wealth. Students discuss and work toward personal and structural solutions to address the environmental impacts of resource consumption, and to help alleviate poverty.

#### Day 3

**Reading:** *Poverty Today*

**Activity 3:** *What’s Debt Got to Do with It?*—Students model the impact of debt on the social and economic health of developing countries. Working in “very poor country” groups, students choose how to allocate limited funds to different sectors of their country’s economy. The groups take on loans to help their country develop and experience what happens when their funds are diverted to debt repayment and away from investment.

#### Day 4

**Reading:** *Pathways to Progress: Poverty*

**Activity 4:** *Microcredit for Sustainable Development*—Students research a developing country and then apply for a $100 microcredit grant to start a small business, as if they were a person living in that country. A business plan and an illustrated poster are presented to a “sustainable development panel of experts” (students) who determine whether or not the business plan is economically, socially, and environmentally sustainable.
Discussion Questions from the Chapter Reading

**Introduction to Poverty**
1. What kinds of challenges exist for people whose basic needs aren’t met?
2. How do you think poverty should be measured around the world? Why?

**Background on Poverty**
3. Explain how colonization is 1 root cause of poverty today.
4. How does analyzing the history of poverty provide us a way to understand poverty?

**Poverty Today**
5. Why would a country with a strong middle class help to increase a country’s national income? How do you think economic equity in our country stacks up?
6. Do you agree with Kofi Annan that good governance is the single most important factor in eradicating poverty and promoting development? Why would governance be such an important factor? If not good governance, what else seems more important?

**Pathways to Progress: Poverty**
7. What are structural and personal solutions to ending poverty?
8. How is microcredit 1 way to alleviate poverty in developing countries?
Chapter Assessment: Poverty, page 1

Recall
Match the following words on the left with their definitions on the right.

1. Poverty — an effort by policymakers and community members to promote a stable standard of living for all
2. Human development — a decrease in well-being when basic needs are not met
3. Economic development — when humans have wants and needs but have limited access to them
4. Resource scarcity — expanding the choices people have so they can lead lives they value

Reasoning/Explanation
Complete the following multiple choice questions by choosing 1 correct answer.

5. Which of these best explains why people live in structural poverty?
   a. People live in structural poverty because they do not work hard enough and spend money on the wrong resources.
   b. People live in structural poverty because they are born into poverty and raised in conditions of limited opportunity.
   c. People live in structural poverty because they are consistently unemployed and live off welfare instead of trying to work.
   d. People live in structural poverty because the government discriminates against them.

6. Which of these statements best explains how good governance can help to effectively alleviate poverty?
   a. by creating policies that support urban migration
   b. by creating policies that support natural resource extraction
   c. by creating policies that support foreign aid dependency
   d. by creating policies that support infrastructure for all

7. Which of these statements best explains how colonization impacted the state of poverty in many countries?
   a. It helped to increase stability throughout the world, therefore decreasing poverty.
   b. It increased employment throughout the world, therefore decreasing poverty.
   c. It left former colonies in a state of instability, therefore increasing poverty.
   d. It increased urbanization throughout the world, therefore increasing poverty.
8. Use the graphic organizer below to answer the question.

Which statement best fits the X in the graphic organizer to the right?

a. Socially, gold extraction would decrease the amount of poverty throughout the country because of the increase in exports.

b. Socially, gold extraction would increase health issues related to mining waste and impact local communities.

c. Socially, gold extraction would increase the number of jobs throughout the country and improve human development.

d. Socially, gold extraction would decrease employment for citizens as foreign migrants would work for cheaper wages.

9. Which sentence best explains the connection between the system Apartheid in South Africa and poverty?

a. Apartheid increased poverty for people of all races because the international community put economic sanctions on South Africa.

b. Apartheid increased poverty for black Africans who lost land rights, business ownership, and access to high-quality education.

c. Apartheid worsened the conditions of those living in extreme poverty; while the rest of the country was able to progress economically.

d. Apartheid worsened the conditions of immigrants living in South Africa as their rights to become citizens decreased.

10. Which statement below best describes the economic benefits of microcredit?

a. It provides finances to poor families and they do not have to worry about paying this money back.

b. It provides loans to help those living in poverty attend school so that they can advance their education.

c. It provides loans to families who often invest in projects that help them and their community move out of poverty.

d. It provides finances to women who are then able to survive on their own instead of depending on men.
11. Women in certain counties in the United States have a lower life expectancy than people living within countries like El Salvador. What is the main reason for this lower life expectancy?
   a. Food scarcity happens far more often in these areas than others because of droughts.
   b. Chronic diseases related to conditions like obesity and high blood pressure are prevalent.
   c. Natural disasters impact this region of the country more so than other places.
   d. People in these counties have had a genetic disposition to living shorter lives.

12. Use the graphic below to answer the question.
   During wars in developing countries, men are typically called on to become soldiers and are taken away from their families.

Which statement best replaces the X in the graphic?
   a. More women go to work and can earn enough for their families comparatively to what men make.
   b. Men are usually the ones who economically contribute to their families. When they go to war, this economically drains a country.
   c. Money used to support the men fighting in wars helps to increase the country’s Gross Domestic Product.
   d. Children are forced into labor and made to drop out of school to help support their families.

13. As populations increase dramatically in cities around the world, which of these choices will be a key issue to address alleviating poverty?
   a. improving living conditions of people living in slums
   b. promoting migration back to rural areas
   c. developing more green buildings
   d. training more teachers
14. Which statement best explains the relationship between water scarcity and education?
   a. When there is water scarcity, children tend to stay at home rather than going to school in order to help families collect water from far distances.
   b. When there is water scarcity, families tend to teach their children at home rather than sending them to school.
   c. When there is water scarcity, families send their children to school so they can become well-educated and find work that pays well.
   d. When there is water scarcity, children spend more time in hospitals than school.

**Application/Complex Reasoning**

Answer the following short answer questions below.

15. **Part A.** Explain 1 way people measure poverty through economic development.

   **Part B.** Explain 1 way people measure poverty through human development.

16. **Part A.** Provide 1 example of a benefit of foreign aid.

   **Part B.** Provide 1 example of a consequence of foreign aid.

   **Part C.** Propose 1 way in which a country could provide foreign aid to help alleviate poverty while helping the country to sustainably develop.
Teacher Master
Chapter Assessment: Poverty

Recall (4 points)
1. Poverty—a decrease in well-being when basic needs are not met
2. Human development—expanding the choices people have so they can lead lives they value
3. Economic development—an effort by policymakers and community members to promote a stable standard of living for all
4. Resource scarcity—when humans have wants and needs but have limited access to them

Reasoning/Explanation (10 points)
5. b 10. c
6. d 11. b
7. c 12. b
8. b 13. a
9. b 14. a

Application/Complex Reasoning (6 points)
15. Part A: Answers will vary. 1 point
   • One way people measure poverty through economic development is through income. People who live on less than $1.25 per day, live in poverty.
   Part B: Answers will vary. 1 point
   • If a family home has a dirt or dung floor
   • If family members have to walk more than thirty minutes to get clean water to drink
   • If a family lives without electricity
   • If school aged children are not enrolled in school

16. Part A. Answers will vary. 1 point
   • Less debt
   • Economic development
   Part B. Answers will vary. 1 point
   • Dependency on foreign aid
   • Increased debt
   • Environmental degradation
   • Decrease in human development
   Part C. Answer will vary. 2 points
   • Aid that provides money to microfinance
   • Aid that provides money for the purposes of increased electricity generation
   • Aid that improves population health
   • Aid that provides cell phone and Internet access equitably
   • Aid that improves education opportunities for children
Activity 1: Take a Step for Equity

(Adapted from “The World Sits Down to Dinner,” created by Torkin Wakefield. Statistics were also gathered from the United Nations Development Program (UNDP) and Oxfam America’s “Hunger Banquet.”)

Overview
Students are randomly assigned an economic class, and then hear poverty and wealth statistics describing their economic class as they step forward in a line. Ultimately, a distance is created between the wealthiest and the poorest, illustrating the economic gap between the rich and poor. Students then brainstorm and discuss ways to alleviate poverty and hunger.

Objectives
Students will:
• experience what it feels like to be part of a specific economic class
• consider social, environmental, and economic impacts of poverty and scarcity
• consider and write about ways to help alleviate poverty and create a just and sustainable world

Inquiry/Critical Thinking Questions
• How are resources distributed throughout the world?
• What are the factors contributing to the inequitable distribution of resources?
• What are the consequences of poverty?
• What steps can be taken to alleviate hunger and poverty?

Time Required
15 to 30 minutes

Key Concepts
• poverty and scarcity
• economic class
• structural solutions
• inequity

National Standards Addressed
National Council for Social Studies
3. People, Places, and Environments
4. Individual Development and Identity
5. Individuals, Groups, and Institutions
9. Global Connections

National Science Education Standards
F. Science in Personal and Social Perspectives

National Efs Standards
2.3 Economic Systems: Poverty
3.2 Collective Action: Organizational and Societal Change Skills and Strategies

Materials/Preparation
Construction paper, card stock or tickets in 4 colors, 1 card/ticket per student (see Table below for card color and distribution)
Large hat or bowl
Teacher master: Take a Step for Equity—Readings
Clear a large space in the room so that students can stand in a line in the back of the class and step about 25 feet forward
Prepare/gather enough colored cards or tickets so that you have 1 for each student in accordance with the guidelines in the Table below:

<table>
<thead>
<tr>
<th>Economic Class</th>
<th>% World Population</th>
<th># of students and card color for a class of 20</th>
<th># of students and card color for a class of 30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wealthiest</td>
<td>20% (1.3 billion)</td>
<td>4 blue</td>
<td>6 blue</td>
</tr>
<tr>
<td>Middle Income</td>
<td>35% (2.3 billion)</td>
<td>7 red</td>
<td>11 red</td>
</tr>
<tr>
<td>Working Poor</td>
<td>25% (1.7 billion)</td>
<td>5 yellow</td>
<td>7 yellow</td>
</tr>
<tr>
<td>Poorest of the Poor</td>
<td>20% (1.3 billion)</td>
<td>4 white</td>
<td>6 white</td>
</tr>
</tbody>
</table>
Activity 1: Take a Step for Equity  continued

**Activity**

**Introduction**

1. Ask students: “What percentage of the people living on Earth are poor? What percentage are rich?” Have them write down their estimates and hold on to them for later.

**Steps**

1. Put the colored cards/tickets in a hat or bowl and have each of the students randomly select 1.
2. Have students line up at the back of the class facing forward.
3. Stand in front of the class and tell them, “Today, by random chance in the lottery, you now belong to a temporary economic class. Although there are nearly 7 billion people living on this planet together, we are separated by our diverse fortunes and are divided by economic groups. Some of us are rich or poor by the circumstances of our behavior or opportunities, others by our birth.”
4. Read aloud to the class from the teacher master, *Take a Step for Equity—Readings*. Each economic class will be directed to step forward before hearing the description of their class. Students in the “wealthiest” group will end up farthest away from those in the “poorest of the poor” group.
5. Conclude with a discussion, using the following reflection questions.

**Discussion Questions**

1. Look back at the predictions you made before this activity. Were you surprised to learn what percentage of the world’s people are poor? Middle class? Wealthy? Do you think people should work to change the statistics, or do you think there is not any way to change the situation?
2. How are poverty and hunger connected to other global issues such as population growth, environmental degradation, discrimination, and conflict? Which group do you think has the highest population growth rate? Which do you think contributes most to environmental degradation?
3. What are some of the social, environmental, and potential security consequences of poverty?
4. Do you think that people in the middle and wealthiest income groups have a responsibility to help those in the other groups become more economically secure?
5. What do you think some solutions are to these issues?

**Additional Resources**

- **Film:** *For Richer, For Poorer*
  [www.bullfrogfilms.com](http://www.bullfrogfilms.com)
  This documentary looks at the gulf between the rich and the poor, how it is one of the biggest in the world, and what work is being done to combat inequity.
- **Website:** *TakingITGlobal*
  [www.takingitglobal.org](http://www.takingitglobal.org)
  This website is the largest online community of youth interested in global issues and creating positive change. Visit their section on poverty to learn more about the issue, who it’s impacting, and what can be done.
The Poorest of the Poor

Those of you with white cards please take one step forward. You represent the world’s poorest of the poor. There are about 1.3 billion of you. You are 20% of the world’s population and you live on less than the U.S.-equivalent of $1.25 a day; 70% of you are women and girls.

You own virtually nothing. You are the one who lives in a train station in India or on top of a garbage dump in Guatemala City. You are a girl in Zambia orphaned at age 2 when your parents died of AIDS. You are an Afghan farmer living through 3 years of drought, famine, and war. You tend to die young, whether from disease or a hidden land mine. You don’t go to school, nor do you go to the doctor when you are sick.

You and your family spend your entire day trying to feed yourselves. You’re always hungry. About 25,000 of you die every day from hunger or hunger-related causes. That’s 1 person every 3.6 seconds. Three-fourths of these deaths are children under the age of 5; $16 billion a year could meet the basic food needs of all of the world’s poor. Many of you could have a sustainable livelihood. Programs promoting education, access to health care, and support of democratic governments could all help to break the cycle of poverty in the world. Everyone else please take 2 steps forward.

The Working Poor

Now the working poor, those of you with yellow cards, take 1 step forward. You represent about 25% of the world’s people, and you live on less than 2 U.S. equivalent dollars a day. You are the factory workers and farm laborers of the world. You make sport shoes in Vietnam, jeans in Mexico, and designer dresses in El Salvador. You produce the goods and services that are used by those wealthier than you. Often, you can be found living in slums or shantytowns.

You own the simplest possessions—1 or maybe 2 changes of clothes and a few household items. You have no savings. In case of illnesses, accidents, or other bad luck, you have no safety net. While there are exceptions, generally there are few opportunities for you to move up the economic ladder. In spite of the hardships you face, many of you live with great dignity. You often have close connections to family and to the land. The remaining people, those with the blue and red cards, take 2 steps forward.

The Middle Income People

Now, the middle-income people with the red cards take a step forward. You represent 35% of the world’s people. You are striving to move up the economic ladder, to be part of the wealthy group. You have possessions—most of you own a television; some of you own your own car. Many of you have been to school, some have a high school education, and a few of you have been to college. A handful of you may even have some savings.

Poverty
You occasionally eat at restaurants, although more often you eat fast food because you are on the run, working hard, and trying to stay on top.

You are in a position to make changes in the world. Because of your numbers and status in the world’s workforce, you have the power to change some things. You can do this by supporting policies that help the poor and provide for better working conditions. You can choose to spend your money on products from socially responsible companies. You can be a strong advocate for people with less than yourselves.

**The Wealthy**

Now, those of you with the blue cards take 3 steps forward. You represent 20% of the world’s population but you control about 86% of the world’s resources. You own homes and cars and have closets full of clothes and shoes. Many of you fly around the world for business trips and exotic vacations. You have a diet rich in meat, dairy products, fresh vegetables, and fruit. Since most of you exceed your daily requirement of calories, you sometimes face health problems such as heart disease, diabetes, and obesity; however, you have access to the best health care in the world.

Even among the wealthy there are the richest. If you are standing the furthest to the right, please take 2 more steps forward to represent the 3 richest people in the world. Your combined net worth is more than $115 billion. You have more wealth than the 48 poorest countries combined.

The wealthy have many opportunities to make a difference in the world. You can choose to buy from companies that are socially responsible, and you can reduce your consumption by choosing to use less. If you own a company, you can make sure that it treats employees, customers, and environmental resources well. Because of your education, money, and resources, you have great power to help others. You have connections; you can gather networks of people. When you set your mind and your resources to something, you can make it happen.

**Everyone**

That’s all of us. We live in a world where a few have a lot and many have very little. Although the world today produces enough food to supply everyone on Earth with about 3,000 calories each day, not everyone gets enough to eat. In the United States alone, 34.6 million people are hungry or don’t have a secure source of food, 26 million people could be fed if the amount of edible food wasted in the United States each day was reduced by one-third.

The roots of hunger and poverty lie in the inequity of access to education, resources, and power. The results are illiteracy, illness, and powerlessness. But it doesn’t have to be that way. The first step starts with imagining a world without hunger, poverty, environmental destruction, and deadly conflict; then we can work toward a just and sustainable future for all.
Activity 2: Shop Till You Drop

Overview
In this simulation, students experience how resources are distributed and used by different people based on access to wealth. Students discuss and work toward personal and structural solutions to address the environmental impacts of resource consumption, and to help alleviate poverty.

Objectives
Students will:
• determine and explain purchasing/consumption choices
• compare different purchasing/consumption choices and their social and environmental effects
• discuss and begin to implement personal choices to help alleviate poverty

Inquiry/Critical Thinking Questions
• What are the choices that people with relatively little access to wealth/income can make compared to people with relatively high access?
• What are the impacts of each of those choices and decisions?
• What personal choices can we make to help reduce some of these impacts, and what actions can we take to help alleviate poverty?

Time Required
One 60-minute class

National Standards Addressed
National Council for Social Studies
3. People, Places, and Environments
4. Individual Development and Identity
5. Individuals, Groups, and Institutions
7. Production, Distribution, and Consumption
9. Global Connections

National Science Education Standards
F. Science in Personal and Social Perspectives

National EfS Standards
3.1 Personal Action: Personal Change Skills and Strategies
3.2 Collective Action: Organizational and Societal Change Skills and Strategies

Materials/Preparation
Handout: Global Mall Dollars, 1 card per student (there are 6 cards per sheet)
Handout: Global Mall Items, 1 sheet per student (Optional) Teacher master: Global Mall Impacts, 1 copy as teacher reference
Butcher paper, 1 sheet per group
Marking pens, 2 to 3 pens for each group
Make enough copies of the Global Mall Dollars sheets so that there is 1 card for each student. (Each sheet has three $200 cards, two $1,000 cards, and one $2,500 card to reflect income distribution around the world. Therefore, more students will end up with $200 cards and $1,000 cards than $2,500 cards.) Cut the sheets along the dotted lines and fold each card so the amount is not visible.
Activity 2: Shop Till You Drop  continued

Activity

Introduction

1. Have the class brainstorm human needs (food, water, energy, clothing, health care, etc.).
2. Tell the students that today, as global citizens, they will have a chance to shop for these needs at the “Global Mall.” The Global Mall sells all of the resources that humans depend on to live, as well as some “nonessential” items.

Steps

1. Pass out the handout, Global Mall Items, which lists the items available. Tell students they can select items from the list to purchase with their Global Mall Dollars, but that they must first meet their basic needs by selecting items from the categories of food, water, and fuel, and only then can they buy any of the other items.
2. Pass around a basket with the Global Mall Dollars and instruct each student to take 1 card and not show it to anyone.
3. Instruct students to write the items they purchase on the lines on their card (or on the back), along with the cost of each item (be sure they do this part of the activity individually).
4. While students are making their purchasing choices, you should keep the pressure on to instill a sense of urgency. Ask, “Who’s done shopping?” Say, “The mall is closing soon!” Students with $200 Global Mall Dollars will likely finish much sooner than those with $1,000 and $2,500.
5. When students finish their shopping, have them break into 3 groups, putting students with the same dollar amounts ($200, $1,000, $2,500) together (there will be more students with $200; if necessary, subdivide groups so you have between 3 and 5 students per group).
6. In their groups, have students share and compare what they chose to purchase, and why. Ask them to discuss anything they could not afford to purchase and how not having those items might affect their lives.
7. Have each group report to the class on the decisions they made and the impact that these decisions would have on their lives.
8. You can choose to stop the lesson here and conclude with the reflection questions below, or continue with the following part of the activity.
9. Give each group a large sheet of paper and some pens, and ask students to list 3 to 5 items that members of their group purchased. Have them create 2 columns titled “Social Impacts” (effects of the choices on people) and “Environmental Impacts.” For each item listed, have groups write all of the impacts they can think of, positive or negative, for each category. Give them the following example: “If your group chose ‘Firewood Gathering,’ you might list such Social Impacts as women and children spending their time gathering wood rather than going to school, harvesting food, cooking, or engaging in recreation activities. Environmental Impacts might include deforestation, habitat destruction, and soil erosion.
10. Circulate among the groups and suggest impacts they might not have considered. Use the handout Global Resource Mall Impacts as a teacher reference.
11. Have each group present and discuss their findings with the class.
12. Conclude with the following reflection questions.
Activity 2: Shop Till You Drop  continued

Discussion Questions

1. How many of you could not afford education? What would your lives be like if you could not go to school?
2. What would you do if forced to choose between food and health care?
3. What is the effect on people when a small group is consuming the majority of resources?
4. What were the impacts caused by people with fewer Global Mall Dollars, and what were the impacts caused by people with more Global Mall Dollars?
5. What are some specific examples of how to reduce the social or environmental harm of some choices?
6. Which income group from this game is most prevalent in our country? In the world?

Math Extension

Have students create a monthly budget for a family of 4 based on an annual income of $22,350, which is the average annual poverty threshold in the U.S. for a family this size. Have students take into account expenses such as housing, food, clothing, medical, insurance, transportation, etc. The y can research local organizations in their community that may be able to help meet the needs of their family.

Additional Resources

- **Book:** *Plan B: Mobilizing to Save Civilization*  
  Lester Brown calls for a worldwide mobilization to stabilize population and climate before they spiral out of control. It provides a plan for sustaining economic progress worldwide. (Lester Brown, W.W. Norton & Company, New York, 2008)

- **Website:** *The United Nations Development Program (UNDP)*  
  www.undp.org  
  The UNDP is the UN’s global development network—an organization advocating for ending global poverty and connecting countries to knowledge, experience, and resources to help people build a better life.

- **Film:** *The End of Poverty*  
  This documentary by Philippe Diaz from Cinema Libre Production shows how poverty is not something that came out of nowhere, but is instead linked to military conquest, slavery, and colonization.

- **Lecture:** *TED Talk—Jacqueline Novogratz*  
  http://www.ted.com/talks/lang/eng/jacqueline_novogratz_on_an_escape_from_poverty.html  
  Jacqueline Novogratz, Founder of Acumen Fund, uses a businesslike approach to address poverty and improve the lives of the poor.
Global Mall Dollars

$200 $1,000 $2,500

$200 $200 $1,000

Poverty
<table>
<thead>
<tr>
<th><strong>Global Mall Items</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Food</strong></td>
</tr>
<tr>
<td>Rice and beans once or twice a day. All of this food is locally grown.</td>
</tr>
<tr>
<td>$100</td>
</tr>
<tr>
<td>Beans, vegetables, and rice daily, plus meat/dairy about once a month. Most of this food is locally grown.</td>
</tr>
<tr>
<td>$300</td>
</tr>
<tr>
<td>A variety of fast foods 2 to 3 times a day, such as a hamburger, chicken sandwich, tacos, French fries, soda, and ice cream. Most of this food is highly processed.</td>
</tr>
<tr>
<td>$600</td>
</tr>
<tr>
<td>High quality food 3 times a day, including eggs, meat, fish, fresh vegetables, fresh imported fruit, bread, milk, imported cheese, and chocolate. Much of this food is organically grown using few chemicals.</td>
</tr>
<tr>
<td>$900</td>
</tr>
<tr>
<td><strong>Heat/Fuel</strong></td>
</tr>
<tr>
<td>Firewood cut from a local forest, sometimes hours away. Most of this work is done by children and women.</td>
</tr>
<tr>
<td>No cost</td>
</tr>
<tr>
<td>Coal purchased in the market and used for cooking and heating.</td>
</tr>
<tr>
<td>$250</td>
</tr>
<tr>
<td>Oil used for cooking and heating.</td>
</tr>
<tr>
<td>$600</td>
</tr>
<tr>
<td>Solar panels using the sun's energy to heat home and water; natural gas for cooking.</td>
</tr>
<tr>
<td>$1500</td>
</tr>
<tr>
<td><strong>Transportation</strong></td>
</tr>
<tr>
<td>One bicycle shared by your family; walk when distance is less than 10 miles.</td>
</tr>
<tr>
<td>$75</td>
</tr>
<tr>
<td>Community bus with 4 scheduled pick-up times in your community daily.</td>
</tr>
<tr>
<td>$125</td>
</tr>
<tr>
<td>Older car for driving short distance; gets poor gas mileage. For long distances you have to take a bus or train.</td>
</tr>
<tr>
<td>$700</td>
</tr>
<tr>
<td>Car large enough to carry a family of 5 people comfortably; includes air conditioning and a radio.</td>
</tr>
<tr>
<td>$1200</td>
</tr>
<tr>
<td><strong>Shelter</strong></td>
</tr>
<tr>
<td>Small home made from sticks and mud. This home is in a rural area with no electricity.</td>
</tr>
<tr>
<td>No cost</td>
</tr>
<tr>
<td>1-bedroom apartment in a large apartment building in a large city.</td>
</tr>
<tr>
<td>$500</td>
</tr>
<tr>
<td>Suburban 2-bedroom house with a small front yard.</td>
</tr>
<tr>
<td>$1000</td>
</tr>
<tr>
<td>Large 3-bedroom house with a pool in the backyard. This home is 15 miles away from where you work.</td>
</tr>
<tr>
<td>$2000</td>
</tr>
<tr>
<td><strong>Luxury Item</strong></td>
</tr>
<tr>
<td>Radio running on batteries.</td>
</tr>
<tr>
<td>$50</td>
</tr>
<tr>
<td>Small color television in your house.</td>
</tr>
<tr>
<td>$150</td>
</tr>
<tr>
<td>Refrigerator in your house and air conditioning.</td>
</tr>
<tr>
<td>$500</td>
</tr>
<tr>
<td>Hawaii surf vacation, including airline ticket, hotel, and souvenirs.</td>
</tr>
<tr>
<td>$800</td>
</tr>
</tbody>
</table>
## Global Mall Impacts

<table>
<thead>
<tr>
<th>Category</th>
<th>Example</th>
<th>Environmental Impacts</th>
<th>Social Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Food</strong></td>
<td><strong>Rice and beans</strong></td>
<td>- <strong>Environmental:</strong> no/less agricultural chemicals; little tilling of the soil</td>
<td>- <strong>Social:</strong> lack of essential vitamins results in more malnutrition</td>
</tr>
<tr>
<td></td>
<td><strong>Beans, veggies, meat</strong></td>
<td>- <strong>Environmental:</strong> tilling soil releases carbon dioxide (CO₂), which contributes to climate change; livestock release methane and require much food and water</td>
<td>- <strong>Social:</strong> good nutritional value</td>
</tr>
<tr>
<td></td>
<td><strong>Fast foods</strong></td>
<td>- <strong>Environmental:</strong> water/feed for beef production, deforestation for cattle grazing; raising livestock and making fertilizers release greenhouse gases (climate change)</td>
<td>- <strong>Social:</strong> convenient but unhealthy, some fats linked to heart disease</td>
</tr>
<tr>
<td></td>
<td><strong>High quality food</strong></td>
<td>- <strong>Environmental:</strong> deforestation for cattle grazing; greenhouse gas emissions and air pollution from transportation of imports; agricultural chemicals; air and water pollution</td>
<td>- <strong>Social:</strong> healthy but cash crops take away from staple food crops</td>
</tr>
<tr>
<td><strong>Heat/Fuel</strong></td>
<td><strong>Firewood</strong></td>
<td>- <strong>Environmental:</strong> deforestation; desertification; fewer trees for carbon storage and oxygen production; air pollution</td>
<td>- <strong>Social:</strong> poverty (time away from school, work, food production); smoke linked to lung disease</td>
</tr>
<tr>
<td></td>
<td><strong>Coal</strong></td>
<td>- <strong>Environmental:</strong> CO₂ emissions; air pollution; water pollution from mining</td>
<td>- <strong>Social:</strong> easier to use than firewood, but may result in lung disease if cooking area is not ventilated; miners susceptible to lung disease and injuries</td>
</tr>
<tr>
<td></td>
<td><strong>Oil/Gas</strong></td>
<td>- <strong>Environmental:</strong> oil drilling, spills, pipeline impacts; greenhouse gas emissions; air pollution; loss of habitat</td>
<td>- <strong>Social:</strong> convenient, but results in dependency on oil/gas supplies, often from foreign regions</td>
</tr>
<tr>
<td><strong>Transportation</strong></td>
<td><strong>Bicycle and walk</strong></td>
<td>- <strong>Environmental:</strong> no greenhouse gas emissions, except from manufacturing the bike</td>
<td>- <strong>Social:</strong> good for physical health; often takes longer to bike or walk than to use motor transportation</td>
</tr>
<tr>
<td></td>
<td><strong>Bus</strong></td>
<td>- <strong>Environmental:</strong> relies on fossil fuels and causes air pollution, but less than if each rider drove a single automobile</td>
<td>- <strong>Social:</strong> less air pollution (better for lung health); time spent waiting for bus</td>
</tr>
<tr>
<td></td>
<td><strong>Older car/Bus/Train</strong></td>
<td>- <strong>Environmental:</strong> burns fossil fuels; exhaust pollutes air; train and bus pollute less per passenger</td>
<td>- <strong>Social:</strong> freedom to go to nearby places at any time</td>
</tr>
<tr>
<td></td>
<td><strong>Newer car</strong></td>
<td>- <strong>Environmental:</strong> air pollution and greenhouse gas emissions; environmental resources to make car (e.g., metal from mining, plastic from petroleum)</td>
<td>- <strong>Social:</strong> freedom to drive anywhere and carry large items</td>
</tr>
<tr>
<td><strong>Home</strong></td>
<td><strong>Hut</strong></td>
<td>- <strong>Environmental:</strong> removing sticks from forest leads to erosion and reduction of soil nutrients</td>
<td>- <strong>Social:</strong> continual maintenance required; difficult to keep out heat/cold and flies</td>
</tr>
<tr>
<td></td>
<td><strong>Small apartment</strong></td>
<td>- <strong>Environmental:</strong> living in dense housing uses fewer environmental resources and requires less heating</td>
<td>- <strong>Social:</strong> close community; no yard; less privacy than a single-family home</td>
</tr>
<tr>
<td></td>
<td><strong>Two-bedroom house</strong></td>
<td>- <strong>Environmental:</strong> suburban neighborhoods have many dead-end streets, requiring extra driving; water used to maintain yard</td>
<td>- <strong>Social:</strong> yard for recreation; potential stress of driving into city (traffic, accidents, etc.); gas expense</td>
</tr>
<tr>
<td></td>
<td><strong>Large house with pool</strong></td>
<td>- <strong>Environmental:</strong> energy required to heat and cool large house; water and chemicals for pool; pollution from driving</td>
<td>- <strong>Social:</strong> economically exclusive neighbor-hood is often less culturally diverse; time and gas spent driving to/from work</td>
</tr>
<tr>
<td><strong>Luxury Items</strong></td>
<td><strong>Radio</strong></td>
<td>- <strong>Environmental:</strong> energy required to manufacture and use; batteries toxic to soil</td>
<td>- <strong>Social:</strong> access to information; entertainment</td>
</tr>
<tr>
<td></td>
<td><strong>Color TV</strong></td>
<td>- <strong>Environmental:</strong> resources to manufacture and use; pollution from improper disposal or recycling</td>
<td>- <strong>Social:</strong> access to information; entertainment</td>
</tr>
<tr>
<td></td>
<td><strong>Refrigerator</strong></td>
<td>- <strong>Environmental:</strong> greenhouse gas emissions; resources to manufacture and use</td>
<td>- <strong>Social:</strong> convenient access to fresh food</td>
</tr>
<tr>
<td></td>
<td><strong>Surf vacation</strong></td>
<td>- <strong>Environmental:</strong> burning jet fuel releases CO₂; resources to make airplane; land used for airport and runways</td>
<td>- <strong>Social:</strong> lower stress; enjoyable; expensive</td>
</tr>
</tbody>
</table>

**Poverty**
Activity 3: What’s Debt Got to Do With It?

Overview
Students model the impact of debt on the social and economic health of developing countries. Working in groups, students choose how to allocate limited funds to different sectors of their country’s economy. The groups take on loans to help their country develop and experience what happens when their funds are diverted to debt repayment and away from investment.

Objectives
Students will:
• experience how to budget for development with limited funds
• understand the impact of debt on a poor country’s budget
• understand how debt contributes to a cycle of poverty

Inquiry/Critical Thinking Questions
• How do poor countries plan and allocate for sustainable development?
• How does debt contribute to the cycle of poverty in developing countries?
• Should donor nations consider forgiving debt?

Time Required
One 60-minute class

Key Concepts
• budgeting and debt
• international debt relief
• international lender organizations
• poverty cycle

National Standards Addressed
National Council for Social Studies
3. People, Places, and Environments
5. Individuals, Groups, and Institutions
6. Power, Authority, and Governance
9. Global Connections
10. Civic Ideals and Practices

National Efs Standards
2.3 Economic Systems: Poverty
2.4 Social and Cultural Systems: Governance
3.2 Collective Action: Organizational and Societal Change Skills and Strategies

Materials/Preparation
Poker chips (9 chips per group of 3 to 4 students)
Handout/Overhead: Debt Vocabulary, 1 copy per student or 1 overhead
Handout: Resource Allocation Sheet, 1 copy for every 3 to 4 students
Activity 3: What’s Debt Got to Do With It? continued

Activity

Introduction

1. Ask students if they have ever bought something with a credit card. Ask how many of them (or their parents) have ever made a partial payment on their card. Tell them that if this is the case, they have accrued debt and paid interest on their credit card loan.

2. Write on the board or overhead: “$47,000 per person” and “$300 per person.” Tell the class that these 2 amounts (in U.S. dollar equivalents) represent the annual average amount of money earned per person in 2 different countries. This is the total Gross National Income (GNI), or all the money that is generated in that country divided by the country’s total population. These numbers represent a very wealthy country (U.S.) and a very poor country (Burundi).

3. Ask the students what they think might be some of the implications of this difference. Ask what they think a very poor country does to meet the needs of its people. How can a poor country get the money it needs? (Students may or may not raise the issue of borrowing money.)

4. Go over the Debt Vocabulary list either as an overhead or handout.

Steps

1. Tell the class that they will work in small groups, with each group representing a poor country (like Burundi) of about 8 million people with very few resources. For their country to survive, they must take out loans to invest in their country’s health care, education, and infrastructure (e.g., roads, water projects, hospitals). However, the loans must be paid back with interest. (Note to teacher: There are other areas in which countries spend money, such as military defense. However, the 3 areas of health care, education, and infrastructure were chosen for this activity because they are essential elements of a country’s development.)

2. Show the Resource Allocation Sheet and tell the class that they will be allocating their funds using this sheet. Go over the 4 areas where they can allocate funds.

3. Break the class into groups of 3 to 4 students. Give each group 1 copy of the Resource Allocation Sheet and have them choose a name for their country and write their own names on the sheet.

4. YEAR 1: Tell the class that they will begin in year 1; the starting budget of their country is $600 million dollars. This includes some past loans that the country must pay back. They will receive 6 poker chips each worth $100 million. Pass out 6 chips to each group.

5. Tell them that since the countries must pay back their loans, $200 million (2 of the poker chips) must be placed in the Debt section on the Resource Allocation Sheet. The groups must decide where to invest the remaining $400 million (4 poker chips). Give them a few minutes to decide where they will allocate the 4 remaining poker chips and have them place those chips in the section indicated on the allocation sheet. Have them fill out the year 1 lines, indicating how much they allocated in each sector.

6. YEAR 2: Tell the class that it is now year 2 and the International Monetary Fund and the World Bank have agreed to give their country another loan (at a lower interest rate) to help with their debt and invest in their country’s development. Each country will receive $300 million dollars (3 additional chips) and can move $100 million dollars (1 chip) currently in the Debt section to another sector on the Resource Allocation Sheet. However, they will have to pay back this new loan in a few years, along with interest. Hand out 3 additional poker chips to each group, and give students a few minutes to allocate those chips and the chip from the Debt section. Have them fill out the year 2 lines.
Activity 3: What’s Debt Got to Do With It?  continued

7. YEAR 3: Tell the class that it is now year 3, and while their country’s economy has improved a bit, it has not grown nearly enough to pay off all their loans and interest. To pay off the loans, they must move more of their budget to the Debt section or they will not be able to borrow any more money in the future. Tell the groups to select $300 million (3 poker chips) currently invested in Health, Education, and/or Infrastructure, and move them to the Debt section. Have them fill out the year 3 lines.

8. YEAR 4: It is now year 4 and unfortunately they are falling further into debt. They must therefore move another 300 million (3 poker chips) into the Debt section and fill out the year 4 lines.

9. YEAR 5: Tell the class it is now the fifth year of their country’s budget, and the IMF, World Bank, and other lenders have agreed to grant their country debt relief. The groups can take all the money (chips) in the Debt section and allocate them to other sectors on the Resource Allocation Sheet. Since this relief is permanent, they will not have to move any money back to the Debt section. Give the groups a few minutes to complete their final reallocation of money (chips) and fill out the Year 5 lines.

10. Bring the class back together for reflection questions.

Discussion Questions

1. When you did not have to put money in the Debt section, where did you choose to invest it and why?

2. How does investment in health, education, and/or infrastructure contribute to a poor country’s development?

3. Did you have any second thoughts about taking the loan from IMF and World Bank? Why is it hard to say no to this type of investment?

4. What happened in years 3 and 4 when you had to allocate most of your budget to debt? How did your country’s debt affect other areas of development?

5. Do you think it is fair that your country should have to pay back loans and interest even if there is no money for schools or medicine? What about the countries that gave you the money—is it fair that they do not get paid back?

6. Often a country accepting an IMF loan must give up control of resources like electricity, oil, and telephone lines to private companies, including companies from outside the country. Do you think this makes sense? Why do you think the IMF would make this a condition of the loan?

Accounting/Business Extension

To help students understand that debt is not limited to developing countries only, and that developed countries also incur debt, have students research the total debt of their country and the percentage of GDP that goes to foreign aid. An Internet search for “[country] total debt” is a good place to start the research.

Additional Resources

- Film: The Debt Police
  This short film by Steve Bradshaw documents Uganda’s search for external debt relief and its fight against internal corruption.

- Film: Life and Debt
  This feature-length documentary by Stephanie Black addresses the impact of the international lending organizations and current globalization policies can have on a developing country.
Debt Vocabulary

**debt**—Money that is owed to a person or organization.

**debtor**—A person, company, or country owing debt.

**creditor**—An entity to whom debt is owed.

**developing world debt**—The debt of a developing country owed to outside creditors.

**developing world debt relief**—The partial or total forgiveness of debt, or the slowing or stopping of debt growth, owed by developing world countries.

**International Monetary Fund**—An international organization of 184 countries whose primary function is to provide temporary loans to poor countries. Money loaned from the IMF can only be used to help a country balance its budget.

**World Bank**—An independent specialized agency of the United Nations that provides loans and grants to poor countries. Money loaned and granted from the World Bank can be used for development projects.
Resource Allocation Sheet

Name of Country: ____________________________________________________________

Students in group: _________________________________________________________

(1 chip = 1 million)

<table>
<thead>
<tr>
<th></th>
<th>Year 1:</th>
<th>Year 2:</th>
<th>Year 3:</th>
<th>Year 4:</th>
<th>Year 5:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Care</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infrastructure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Debt</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Poverty
Activity 4: Microcredit for Sustainable Development

Overview
Students research a developing country and then apply for a $100 microcredit grant to start a small business, as if they were a person living in that country. A business plan and a Power Point presentation are presented to a “sustainable development panel of experts” (students) who determine whether or not the business plan is economically, socially, and environmentally sustainable.

Objectives
Students will:
• conduct Internet research on a developing country—including economic, cultural, and demographic factors
• prepare a microcredit business plan as if they were a person living in that country
• evaluate their peers’ business plans
• understand how structural solutions can help alleviate poverty

Inquiry/Critical Thinking Questions
• What are some structural causes of poverty?
• What is sustainable development?
• What is microcredit and how can it help alleviate poverty?

Time Required
Two 60-minute classes, plus out-of-class time for research and poster preparation

Key Concepts
• sustainable development
• microcredit
• structural solutions

National Standards Addressed
National Council for Social Studies
1. Culture
3. People, Places, and Environments
4. Individual Development and Identity
5. Individuals, Groups, and Institutions
7. Production, Distribution, and Consumption
8. Science, Technology, and Society
9. Global Connections

National Science Education Standards
F. Science in Personal and Social Perspectives

National Efs Standards
2.3 Economic Systems: Microcredit
3.2 Collective Action: Community-Based and Societal Level Decision-Making

Materials/Preparation
Overhead: Sample Microcredit Business Plan
Handout: Grant Application, 1 copy per student
Handout: Microcredit Business Plan Presentation
Handout: Microcredit for Sustainable Development Panel Role Cards
Internet access for each student (or students can do their research out of class)
Activity 4: Microcredit for Sustainable Development  continued

Activity—Day 1

Introduction
1. Write this quote on the board or overhead and have students do a freewrite on it: “Give a man a fish and he’ll eat for a day; teach him how to fish and he’ll eat for a lifetime.”
2. Have students share their thoughts on the quote. What does it mean? What might fish represent? To what global issues might this quote apply?

Steps
1. Show students the Sample Microcredit Business Plan and ask if they can figure out what it is. After students have shared their ideas, explain that this is an actual application from a person in India who applied for a microcredit grant from Trickle Up, a micro-granting organization that gives extremely poor people $100 grants to start a business.
2. Tell students that they are going to research a developing world country and, as if they were a person living in that country, they are going to apply for a microcredit grant to start a small business.
3. Go over the assignment sheet, Microcredit Business Plan Presentation. This assignment includes Internet research, a business application, and a poster presentation.
4. Pass out the Microcredit Business Plan Application and go over it with them. (You can either have students do this assignment individually or they can work in small groups of 2 to 3).
5. Give students assignment deadlines for when they will be required to bring their poster and business applications to class. They will need a few days of outside class time to complete their research, paper, poster, and business application. Alternatively, you can have the students do some of the work in class if they have in-class Internet access and poster supplies.

Activity—Days 2 & 3

1. In Day 2 (and 3, if necessary) students present their posters and business plans to a panel of experts that include a microcredit funder, an environmentalist, and a community activist.
2. Go over the panelist instructions on the assignment sheet. Each student will have a chance to present his/her business plan and serve on the panel.
3. Call on any 3 students to take the role of a panelist for each plan presented. Pass out the role cards and give them a few minutes to review their role.
4. The panel will listen to the applicant’s presentation, ask questions, and then assign points (as indicated in the assignment sheet) to the business proposal.
5. Proposals receiving a minimum of 15 points will be granted a microcredit grant. Those that do not receive the minimum points will have a chance to revise their plan until they receive the grant.
6. Conclude with the following reflection questions.

Discussion Questions
1. How do you think it would feel if your life was like the person you represented in your business plan?
2. What business would you start if you were given a microcredit grant?
3. Does this process of micro-granting seem like it works well as a way to alleviate poverty?
4. What can you do personally to help alleviate poverty?
5. What do you think might be potential flaws or problems associated with microcredit? Can you imagine a situation where microcredit would not be a good solution for poverty alleviation?
6. What are other ways to alleviate poverty aside from microcredit?
Activity 4: Microcredit for Sustainable Development  continued

Communications/Marketing Extension
Have students create a marketing pitch they would need to show to investors. To convince investors that their project is worth funding, they can also create a pamphlet and a business card with this marketing pitch.

Additional Resources

• Film: Credit Where Credit is Due
  www.bullfrogfilms.com
  This documentary film recounts how taking out a loan revolutionized the lives of Bangladeshi village women Jahanara, Bilkis, Nargis, Minara, Majeda and Shonda—not only increasing their incomes but also helping to improve their health and the health of their children.

• Film: Small Fortunes: Microcredit and the Future of Poverty
  This documentary describes the impact that microcredit is having throughout the world through the stories of 12 microentrepreneurs living in Bangladesh, India, Kenya, Peru, the Philippines, and the United States. Microcredit luminaries and experts describe how microcredit is a powerful tool in fighting poverty and provide insights into the issues confronting the microcredit movement.

• Website: Grameen Foundation
  www.grameenfoundation.org
  Grameen Foundation is a global nonprofit organization that combines microfinance, new technologies, and innovation to empower the world’s poorest people to escape poverty.

• Website: Trickle Up
  www.trickleup.org
  The Trickle Up Program’s mission is to help the lowest income people worldwide take the first step up out of poverty by providing conditional seed capital and business training essential to the launch of a small business.
**Microcredit Business Plan Application,** (adapted with permission from Trickle Up)

**PLEASE PRINT**

Country: ___________________________________________________________________________________

Our country’s currency is the: ___________________________. The exchange rate is _____________ = US $1.  
(*Provide figures in local currency*)

**PRODUCT**

1. What is your product or service? _____________________________________________________________

2. Where is your product sold?  
   - [ ] In the market  
   - [ ] Door to door  
   - [ ] At Home  
   - [ ] Other

3. What is the name of your business? _____________________________________________________________

**COSTS**

4. What do you need to start or expand your business? *(List only items that last a long time, such as equipment and tools.)*

<table>
<thead>
<tr>
<th>Items</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**One Time Costs: No. 4 Total =**

5. What do you need to buy to keep your business going each month? *(List items such as raw materials, rent, transportation, animal feed.)*

<table>
<thead>
<tr>
<th>Items</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Monthly Operating Costs: No. 5 Total =**

6. Add No. 4 and No. 5 for total cost for first month of operations:

\[
\text{NO. 4 TOTAL} + \text{NO. 5 TOTAL} = \text{TOTAL COST 1ST MO.}
\]

**MEETING THE COSTS**

<table>
<thead>
<tr>
<th>Items (cash/tools/materials)</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Investment: No. 10 Total =**

7. What will you bring to the business?

8. What will others contribute?

9. What will you buy with the $50?

10. Total resources available: (7, 8, 9)

<table>
<thead>
<tr>
<th>Items (cash/tools/materials)</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Investment: No. 10 Total =**

11. Are the total funds available (No. 10) greater than or equal to your total costs for the 1st month (No. 6)?

   - [ ] Yes  
   - [ ] No  
   - If yes, please answer the rest of the questions. If no, you should reconsider your business plan.
12. How much money do you think you can make in sales in 1 month?

13. What are your costs each month (from No. 5)?

14. a. Your monthly profit is ___________________ – ___________________ = ________________________

       SALES (NO. 12)                  COSTS (NO. 13)                MONTHLY PROFIT

       b. What will your profit be in 3 months (No. 14a x 3)?

The Business Report is based on sales in a 3-month period

15. How will you use your profits? Check all that apply.

   a. Reinvestment: □ Buy tools/equipment  □ Buy raw materials/merchandise

   b. □ For family/personal use  □ For savings

16. Does your business involve? (check all that apply)  □ growing crops  □ raising animals

       □ Food processing or making something  □ Services  □ Buying and selling ONLY

       □ Other (please describe): ______________________________________________________________

17. How will you use the $50 grant? □ To start a new business  □ To expand an existing business

18. Will this be your main source of money? □ Yes  □ No

19. Is this a family business? □ Yes  □ No

20. How many people work in the business? ________

       Of these, __________ are female, and __________ are male.

21. Is your business in a (check one)  □ Rural area  □ Urban area  □ Semi-urban/Suburban area?
LONG-TERM GOALS

22. How will your business plan affect structural change and help to alter the cycle of poverty for you and your family?

________________________________________________________________________________

________________________________________________________________________________

________________________________________________________________________________

________________________________________________________________________________

23. How will the business plan be environmentally sustainable?

________________________________________________________________________________

________________________________________________________________________________

________________________________________________________________________________

________________________________________________________________________________

24. How will the business plan be socially and culturally sustainable?

________________________________________________________________________________

________________________________________________________________________________

________________________________________________________________________________

________________________________________________________________________________

I apply for a Conditional Grant of US$100 for this business. I have read and agree to the following conditions:

1. I will start a profit-making enterprise that generates continuing income;
2. If this plan is approved, the microcredit funder will make an immediate payment of $50 in the form of a conditional grant;
3. I will save or reinvest at least 20% of our profit in the business;
4. Each person in the business will work at least 250 hours within the first 3 months;
5. The final $50 payment will be made only if our business is continuing and if we submit a Business Report within 12 months, showing that the conditions of the grant have been met.

Signature: ________________________________________________________________
The project consists of 3 parts:

- **Internet Research**—Research and take notes on a developing country, focusing on its economic situation
- **Microcredit Business Plan**—Prepare a *Microcredit Business Plan* and apply for a $100 microcredit grant as if you were a person living in that country
- **Poster Presentation**—Present your *Microcredit Business Plan* to a panel of experts who will decide if your plan is economically, environmentally, and socially sustainable

## I. Internet Research

Choose a developing country and identify an economic challenge there. For example, in India an economic focus could be farmers whose topsoil has eroded away. Research the following questions about your country and take notes:

- **What are the essential geography and demographics of the country?** (physical geography, such as climate and topography, and vital statistics of population density, GDP, per capita income, infant mortality, and other key quality-of-life indicators for the region)
- **What are the economic challenges and effects of long-term poverty in the region?**

### Some good websites to start your research:

- World Resources Institute: [www.wri.org](http://www.wri.org)
- Population Reference Bureau: [www.prb.org](http://www.prb.org)

## II. Microcredit Business Plan

As you conduct the research, think about what sort of business plan you will offer as a solution to pressing economic challenges. Then, as if you were a local person from that region, complete a *Microcredit Business Plan* for a $100 grant. Your plan should be convincing and promising in terms of the realities of the region and economy, as well as in terms of the hypothetical person that you portray as the business owner. In completing the application, you will address these questions.

- **Product:** What is a realistic product or service? Consider local resources, market, and skills.
- **Costs:** What are realistic one-time and ongoing monthly costs?
- **Meeting the Costs:** What will the owner’s monetary and capital investment be? What other financial resources will they need?
- **Profits:** Calculate and project monthly profit and 3-month profit.
- **Long Term Goals:** How will the plan affect structural change and help alter the cycle of poverty for the owner? The owner’s family? What are the environmental impacts of the proposed business? How will the business plan affect the local and regional culture?
III. Poster Presentation

You will present your Microcredit Business Plan in the form of a poster session before a 3-person committee representing different interests, including a Microcredit Funder, Environmentalist, and Community Activist.

- Your poster must include a business logo and other visual aids, such as a map, graph, table, diagram, flow chart, timeline, photographs, and drawings. Think about what type of business logo and visual aids will make your proposal more convincing and promising.
- When presenting your plan, be confident, knowledgeable, audible, clear, and organized.
- The committee will vote for or against funding your plan based on how factually convincing and how promising the proposal is in terms of structural change/poverty alleviation, economic feasibility, environmental sustainability, and effect on society and culture.

Panel of Experts

Each of you will also serve on the panel representing 1 of the 3 experts: Microcredit Funder, Environmentalist, and Community Activist. As an expert, you will analyze the business plan for its economic, environmental, and social sustainability.

- Read your panel role carefully.
- During the presentation, listen carefully, pay close attention, and take notes.
- After the applicants present their proposal you may ask questions from the perspective of your role.
- Without conferring with fellow panel members, rate the plan for each of the 2 categories listed in the rubric below.
- Converse and debate with the other panelists. You may ask panel members any clarifying question, but may disagree with their rating only if you can cite clear evidence why they should change their rating.
- Present to the applicant the final (total from all 3 panelists) rating.
- A Total Final Rating of 15 is Required for Plan Approval

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<tr>
<th>Category</th>
<th>3 Points</th>
<th>2 Points</th>
<th>1 Point</th>
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<tr>
<td>Is the plan convincing? Does it rely on accurate information and include details that are relevant to your area of concern?</td>
<td>Very well researched, with thorough consideration of background information</td>
<td>Reasonably well researched, contains most, but not all relevant background information</td>
<td>Poorly or incompletely researched, lack of convincing background information</td>
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<tr>
<td>Is the plan promising? Does it offer positive change for your area of concern?</td>
<td>Not only sensible, but offers exciting promise and does not contain significant obstacles</td>
<td>Offers significant promise, but some obstacles remain</td>
<td>Seems completely unrealistic and does not offer realistic promise</td>
</tr>
</tbody>
</table>

Your Assigned Points

Total Points (From all 3 panelists)
Activity 4: What’s Debt Got to Do With It?

Role: Microcredit Funder
You work for a nonprofit microcredit organization that grants money for microenterprises. They will fire you if you waste their hard-won donations. You must be rational in sorting out which plans deserve funding and which plans do not merit your limited financial resources. You are concerned with the success and longevity of microenterprises—as are your contributors!

Your primary concern is that your nonprofit organization’s microcredit grants go only to microenterprises that offer convincing evidence and promising hope that the project can alleviate poverty and be sustained for years after the initial investment.

Initially and over time, will the plan alter the cyclical and structural nature of poverty for the business owner, community, and region?

Role: Community Activist
You work for a local organization devoted to the integrity of regional culture and the promotion of democratic citizenship. You oppose the negative effects of modernization and globalization (is there another way to phrase this without sounding like modernization and globalization are evil?). You are passionate about preserving local culture—traditions, arts, and language. While you are concerned about poverty, you are unwilling to sacrifice quality-of-life for one individual’s short-term economic gain.

Your primary concern is that the microenterprise offers convincing evidence and promises that it will preserve and advance culture, quality of life, and civic participation.

Initially and over time, will the microenterprise offer genuine progress, enhance local culture, and promote democracy for the business owner, community, and region?

Role: Environmentalist
You work for a large international nonprofit organization that is devoted to monitoring and preventing environmental degradation. Your job survival depends on how carefully you attend to possible environmental consequences of the microenterprises. You must be critical and creative in anticipating environmental effects of the microenterprise.

Your primary concern is that the microenterprise offers convincing evidence and promises that it will be ecologically sustainable. The plan should not be approved simply because it seems to be financially viable or meets the personal needs of the business owner.

Initially and over time, will the environmental impact (ecological footprint) of the microenterprise be acceptable for the business owner, community, and region?
Globalization

CHAPTER BIG IDEAS

- Globalization is the reduction and removal of barriers between national borders to facilitate the flow of goods, capital, services, and labor.
- Globalization links people, economies, and environments around the world.
- There are positive and negative impacts of globalization.
Guiding Questions
- What are benefits and drawbacks of economic globalization?
- How can we live sustainably in an increasingly globalized world?

Key Concepts
- globalization
- tariffs
- comparative advantage
- multinational corporation
- fair trade

Supporting Vocabulary
- race to the bottom
- General Agreement on Tariffs and Trade (GATT)
- European Union (EU)
- World Trade Organization (WTO)
- North American Free Trade Agreement (NAFTA)
- maquiladoras
- outsourcing

Project Based Learning Component
Project Based Learning Idea
- **Overview:** Students determine which fruit choices at their local grocery store are sustainable options for consumers. They create a presentation sharing this information with their classmates and invite local grocery store owners and community members to attend.
- **Driving Question:** How can grocery stores and consumers make positive food choices that impact the globalization process?

Service Learning Component
Service Learning Project Idea
- **Question:** How can we support local economies to help people to thrive sustainably?
- **Hook Resource:** Heifer International
  [http://www.youtube.com/HeiferInternational](http://www.youtube.com/HeiferInternational)
  This short video clip discusses the organization’s work in Haiti to rebuild rural communities.

- **Project:** Students will develop a fundraising project through Team Heifer. They will decide upon how much money they want to raise, the way they would like to do so (i.e., bake sale, concert, etc.) and donate to Heifer, an organization that works with communities to end hunger and poverty. They help families improve nutrition and generate income sustainably.

  **Additional Resources:**
  - **Website:** Education World
    [https://www.educationworld.com/a_admin/admin/admin105.shtml](https://www.educationworld.com/a_admin/admin/admin105.shtml)
    This website provides fundraising tips on how to raise money without selling door to door.
  - **Website:** Heifer International
    [http://www.heifer.org/getinvolved/fundraising-ideas](http://www.heifer.org/getinvolved/fundraising-ideas)
    This webpage describes the organization’s fundraising programs and resources.
https://worldmapper.org
Have students examine fruit exports and imports using these maps and analyze any trends they notice.

• **Individual Project**
  Students write a persuasive letter to a local grocery owner explaining which fruit choices are more sustainable than others based on research they have done with their groups.

• **Group Projects:**
  In groups of 3 to 4, students choose one type of fruit at a local grocery store (i.e., bananas, apples, pears). They research the different choices for this specific fruit offered (i.e., variety, organic, local, international) and determine which choices are most sustainable. They can decide these choices based on how different types of fruit have impact on people, environments, and economies. In their research, they can find answers to questions such as:
  • Is the fruit connected to a large fruit company? If so, what are the labor and environmental practices of this fruit company?
  • Where does the fruit come from?
  • Has land been cleared to grow this fruit? Who owns the land farmers or a corporation?
  • Is the fruit sold through direct or fair trade? They will then create a presentation to share this information with the local community and invite grocery store owners to learn about their research.

• **Additional Resources**
  • **Book:** *Bananas: The Fate of the Fruit that Changed the World*

  This book by Dan Koeppel uncovers how banana production has caused damage to the environment and people. (Penguin, 2008)

• **Film:** *Good Food*
  This 73-minute documentary by Moving Images features organic farmers and ranchers, as well as the grocery stores and farmers markets where their food is sold. Viewers witness organic methods of production for a number of crops grown in the Pacific Northwest.

**Summative Assessment**
Chapter Test

**Connections**

**World History connections:**
History of globalization; spice trade; Vikings

**Economics connections:**
Liberal trade policies; restrictions on trade; General Agreements on Tariffs and Trade (GATT); North American Free Trade Agreement (NAFTA); World Trade Organization (WTO); fair trade, comparative advantage; multinational corporations; maquiladoras; labor standards

**Geography connections:**
Production practices in different countries; human migration; global trade

**Civics connections:**
Personal and structural solutions to globalization issues
Activities in Teacher’s Guide: Suggested Sequence

Days 1 and 2

Reading: Introduction to Globalization

Activity 1: Globalizing My World—As an introductory activity, students spend a day analyzing how trade has impacted their daily lives. As they spend time analyzing products, food, and media they consume, they can start to identify potential trends and patterns that connect directly to globalization.

Day 3

Reading: Background on Globalization

Activity 2: Do You Want Fries with That?—Students take on perspectives of different stakeholder groups involved in determining whether or not a fast-food chain should be allowed within a community located in France. Stakeholder groups share their point of view to a panel who will ultimately decide whether a fast-food chain should be allowed within this given community.

Day 4

Reading: Globalization Today

Activity 3: To Trade or Not to Trade—Students are introduced to the North American Free Trade Agreement (NAFTA) and its stated goals. In small groups, they will research either the pros or cons of NAFTA from the point of view of the United States, Mexico, or Canada. After researching this information, the pro and con groups for each country will join together to share and listen to both sides of the argument. As a country group, they will decide whether NAFTA has overall been a worthwhile effort to improve their country’s economy. If not, they will analyze what provisions need to be met to meet its original goals. Each country group will present their position to the entire class.
Day 5

**Reading:** *Pathways to Progress: Globalization*

**Activity 4:** *A Cartoon is Worth a Thousand Words*—Students analyze different political cartoons related to globalization. They identify the cartoonist’s point of view, noting persuasive techniques used to convey a specific message.

Day 6

**Reading:** *Pathways to Progress: Globalization*

**Activity 5:** *Globalizing for the Future*—Students analyze an argument in support of globalization. After considering the positive outcomes of globalization, they are then given a number of scenarios in which economies, environments, and people have been impacted negatively.
Discussion Questions from the Chapter Reading

Introduction to Globalization
1. What are ways you’ve experienced globalization?
2. What tension developed as a result of the ban on shrimp caught without turtle excluder devices? Do you think this ban was fair or unfair?

Background on Globalization
3. What historical development helped to revolutionize economic exchange between countries?
4. Kofi Annan, former Secretary General of the United Nations, states, “We must ensure that the global market is embedded in broadly shared values and practices that reflect global social needs, and that all the world’s people share the benefits of globalization.” What sort of values and practices is Kofi Annan referring to? Do you agree with his statement?

Globalization Today
5. What might be the economic consequences for countries or communities that are unable to connect with the outside world because they lack technological infrastructure? What are possible cultural impacts of this isolation?

Pathways to Progress: Globalization
6. What are sustainable behaviors that can help prevent some of the negative impacts of globalization?
7. Can increasing cultural awareness help to create a sense of global community?
Chapter Assessment: Globalization, page 1

Recall
Match the following words on the left with their definitions on the right.

1. Globalization the practice of moving certain jobs overseas to be done by foreign workers for lower wages
2. Tariff the increased global relationships of culture, people, and economic activity
3. Multinational corporation a tax on imports or exports in and out of a country
4. Outsourcing an enterprise that manages production or provides services in more than one country

Reasoning/Explanation
Complete the following multiple choice questions by choosing one correct answer.

5. Which of the following examples best demonstrates how globalization can create a race to the bottom?
   a. the loss of linguistic diversity and increase in a global monoculture
   b. the increase of illicit trade including the selling of narcotics, weapons, and human beings
   c. the relaxation of national health, safety, and environmental standards
   d. the outsourcing of jobs from one country to another for economic benefits

6. A country has just joined the World Trade Organization. Which of the following is a potential benefit of this membership?
   a. military security during times of conflict
   b. increased value of national currency
   c. economic growth through newly created jobs
   d. decreased wages for minimum wage
Chapter Assessment: Globalization, page 2

7. A developing country known for its abundant apple harvest has lowered its tariffs on apple imports from other countries after joining the World Trade Organization. Imports of cheap apples have started to infiltrate the developing country’s market because of these lowered tariffs. Which statement below best demonstrates a consequence of these cheap, imported apples?
   a. Local farmers lose business and fall into unemployment because they cannot match prices of the imported apples.
   b. Apples are able to be sold and bought across borders; for the first time the developing country can sell internationally at low rates.
   c. The apple becomes a very popular international product which produces an increased need for production.
   d. The increased labor needed for apple production increases the need for additional farmers.

8. What is a sustainable choice a government can make to ensure its citizens do not feel the negative impacts of globalization?
   a. engage in war with other countries if economic needs of citizens aren’t met
   b. collaborate with other governments to ensure labor standards are fair to citizens around the world
   c. avoid signing on to any trade policies that promote opening their borders up to trade
   d. increase the amount of cash crops available within the country to increase economic development

9. Which of the following examples best demonstrates the theory of comparative advantage?
   a. Country A creates as many products as possible to sell through international markets.
   b. Country B creates high tariffs on imports to maintain its own economy.
   c. Country E chooses to grow coffee and bananas and Country F chooses to grow bananas. Country E’s intention is to outsell Country F in bananas.
   d. Country C chooses to grow coffee and Country D chooses to grow bananas. Neither try to grow each other’s commodities.

10. What is one of the main challenges the European Union (EU) faces?
    a. Not all countries in the EU have equally strong national economies.
    b. Different currencies are used throughout the European Union.
    c. Barriers have come up because of free trade policies and labor laws.
    d. Others countries outside of the EU are too dependent on the EU.
Chapter Assessment: Globalization, page 3

11. Which of the following best describes the purpose of the North American Free Trade Agreement?
   a. to increase the number of jobs in Mexico, Canada, and the United States
   b. to give multinational corporations power to manage factories with no regulations
   c. to limit environmental regulations and increase the number of toxic chemicals
   d. to allow Mexico, Canada, and the United States to trade with each other more freely

12. Which of the following best describes why fair trade is a sustainable way of dealing with economic globalization?
   a. countries are able to trade with each other without any regulations
   b. producers are able to earn livable wages that support the work they do
   c. businesses are allowed to change the prices of goods they sell depending on who is purchasing
   d. individuals are allowed to purchase products that are priced equitably

13. Which best replaces X in the flow chart?

   Before the 1900s, bananas were not a popular product in the United States. 
   By 1910, 3 billion bananas were brought into the United States annually.  
   X 
   Certain countries developed a dependency on exporting bananas.

   a. Major fruit companies increased banana plantations in developing countries.
   b. Certain developing countries decided to export bananas at very high costs.
   c. Countries who exported bananas only did so if there were fair trade regulations.
   d. The U.S. government only accepted bananas from countries that were part of the World Trade Organization.
14. Use the photo to answer the question.

Which of these statements best explains one of the following impacts of globalization?

a. Barriers between national borders are removed so businesses can sell their products anywhere around the world.

b. Corporations import products into countries around the world and can do so at different prices.

c. Individuals around the world consume similar products and become more culturally tolerant.

d. Countries who historically have not consumed commercial products from other countries are forced to do so.

Application/Complex Reasoning

Answer the following short answer questions below.

15. “The WTO has one of the most impressive records in global economic governance, by promoting trade liberalization and economic development.”

—Anna Lindh, former Minister for Foreign Affairs in Sweden

Part A. Identify 1 way WTO trade policies have had a positive impact on countries.

Part B. Identify 1 way WTO trade policies have had a negative impact on countries.

16. Use the excerpt below to help answer the question.

“Globalization has pulled millions of people out of poverty in India and China, and multiplied the size of the global middle class. It has raised the global standard of living faster than at any other time in the history of the world, and it is supporting astounding growth.”

—Thomas Friedman, New York Times columnist

Part A. Identify 1 positive impact of globalization.

Part B. Identify 1 negative impact of globalization.

Part C. Propose 1 way a country could help to prevent the negative impact of globalization.
Teacher Master
Chapter Assessment: Globalization

Recall
1. Globalization—the increased global relationships of culture, people, and economic activity
2. Tariff—a tax on imports or exports in and out of a country
3. Multinational corporation—an enterprise that manages production or provides services in more than one country
4. Outsourcing—the practice of moving certain jobs overseas to be done by foreign workers for lower wages

Reasoning/Explanation
5. C 10. A
6. C 11. D
8. B 13. A

Application/Complex Reasoning
15. Part A. Answers may vary. (1 point)
   • WTO trade policies have provided guidance to help countries settle their trade disagreements
   • WTO trade policies have protected people’s inventions and original creations

   Part B. Answers may vary. (1 point)
   • WTO trade policies have eliminated tariffs on imports coming into a country. This elimination can hurt local competition
   • WTO trade policies have not always taken labor and environmental standards into account.

16. Part A. Answers may vary. (1 point)
   • Rising standards of living
   • Economic efficiency
   • The spread of ideas around the world

   Part B. Answers may vary. (1 point)
   • Illicit trade
   • Lowered standards
   • Cultural homogenization

   Part C. Answers may vary. (2 points)
   • Creating policies that prevent illicit trade from happening
   • Government created regulations that monitor environmental health and sustainable wages for labor
   • Cultural heritage programs that increase tolerance between different cultures
Activity 1: Globalizing My World

Overview
As an introductory activity, students spend a day analyzing how trade has impacted their daily lives. As they spend time analyzing products, food, and media they consume, they can start to identify potential trends and patterns that connect directly to globalization.

Objectives
Students will:
• analyze products they consume and how they are influenced by globalization
• brainstorm potential impacts (both positive and negative) of globalization

Inquiry/Critical Questions
• How does globalization relate to our personal lives?
• What are impacts of globalization on peoples, economies, and environments?
• Are there sustainable choices we can make when we consume?

Time Required
15 minutes in class on day 1 and day 2, and outside time for students

Key Concepts
• globalization

National Standards Addressed
National Council for the Social Studies
3. People, places and environments
7. Production, distribution, and consumption
9. Global Connections

National Science Education Standards
F. Natural Resources

National Efs Standards
3.1 Personal Action: Personal Change Skills and Strategies

Materials/Preparation
Handout: Global Trekking, 1 per student (After you introduce the activity in Day 1, students will complete the handout at home. They should bring back the completed handout on Day 2.)

Activity—Day 1

Introduction

1. Ask students how they would define globalization in economic terms (e.g., the reduction and removal of barriers between national borders to facilitate the flow of goods, capital, services, and labor; in other words, when you buy products such as cell phones or computers made in China or coffee grown in Ethiopia, you are participating in the global economy).

2. Have them brainstorm with a partner how they think globalization impacts their personal lives (it's possible they will say globalization doesn't have an impact on them).

Steps

1. Explain to them that they will do an activity in which they will take note of everything that they consume/eat/use, where it's made, and possible impacts of consuming such products.

2. To demonstrate this point, you can show them an object such as a cell phone or computer. Once you identify where it was made (e.g., China), brainstorm as a class what could be potential impacts on people, economies, and environments in China because of this product you now own.

3. Have them consider how these impacts in China might eventually be felt in North America (i.e., lower wage jobs shipped overseas, air pollution traveling across the ocean, political instability from widening economic disparity).

4. Pass out the hand-out, Global Trekking handout, to each student.
Activity 1: Globalizing My World continued

5. Have students individually complete this hand-out at home, listing at least 10 different things they have used/consumed/eaten within a single day (they can list products like toothpaste and shampoo, clothes, food, computers, phones, etc.)

Note: Some products or things they consume may be created in the United States. Prompt them to think about the pros and cons of local production.

Activity—Day 2

Steps
1. Have students come prepared with their handouts completed.

Discussion Questions
1. What patterns/trends did you notice about what you consume/use/eat each day? What surprised you?
2. What are possible impacts on people, economies, and the environment of consuming such things?
3. What is the personal connection between these impacts and your life?
4. Do you believe you have a personal connection to globalization?
5. Are there ways you can consume products in a global economy with sustainability in mind?

Additional Resources

- Article: Behind Roses Beauty, Poor and Ill Workers
  This 2003 New York Times article by Ginger Thompson looks at the hidden labor, health, and environmental impacts of roses coming from Ecuador, the fourth largest rose producer in the world.

  Chapter 11 of this United Nations report looks specifically at young people in a globalizing world. The chapter examines how there have been a number of economic opportunities and benefits with this process, but a number of social costs that have impacted young people disproportionately.
**Global Trekking**

**Directions:** Identify and record at least ten different things you consume and use throughout the day. Things you might consume or use include clothing, food, a cell phone, or music. Take note of where the product has been made and consider potential impacts to people and/or places based on given locations.

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<tr>
<th>Product</th>
<th>Where was it made?</th>
<th>Possible impacts</th>
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Activity 2: Do You Want Fries with That?

Overview
Students take on perspectives of different stakeholder groups involved in determining whether or not a fast-food chain should be allowed within a community located in France. Stakeholder groups share their point of view to a panel who will ultimately decide whether a fast-food chain should be allowed within this given community.

Objectives
Students will:
• take on perspectives of community stakeholders
• understand interrelated economic, social, and environmental factors related to globalization
• negotiate ways to come to consensus
• recognize there are pros and cons of globalization for individuals, communities, and countries

Inquiry/Critical Thinking Questions
• How does globalization affect people, environments, and economies?
• What kinds of questions can a community ask before allowing businesses in?

Time Required
One 60-minute class

Key Concepts
• globalization
• multinational

National Standards Addressed
National Council for the Social Studies
1. Culture
3. People, places, and environments
5. Individuals, groups, and institutions

National Science Education Standards
F. Natural Resources

EfS Standards
2.4 Social and Cultural Systems: Multiple perspectives

Materials/Preparation
Handout: Scenarios, 1 per student (there are 4 to a page; print and cut one Scenario for each student)
Handout: Groups 1–5, 1 per group of 4 to 5 students

Activity
Introduction
1. Show students photos of popular fast-food chains that can be found around the world. Photos of these images can be found by doing a search with specific names of these restaurants followed by ‘around the world’ on Google. Once you input this information in the search box, click on images.

2. Explain that the first McDonalds didn’t come to India until 1996, even though the first McDonalds started in the United States in 1955.

3. Ask students to consider why a country or community would want a fast-food chain, and why they would not want one.

4. Ask students to reflect on why fast-food chains would spread around the world.

5. Explain that businesses that are able to cross national borders are known as multinational corporations: corporations that manage production in more than one country. They play a large role in local and global economies and have a significant impact on globalization. Fast food companies have become multinational corporations and have created a massive industry that has influenced the world.
Activity 2: Do You Want Fries with That? continued

Steps

1. Distribute one Scenario reading to each student. Read through this scenario with the class.

2. Divide the class into 5 equivalently sized groups. Each student group will take on the role of a particular stakeholder group: a family that owns a local restaurant, an organization for environmental preservation, a ministry of economic development, executive leadership of Buckley’s, and a town panel.

3. Distribute a different Stakeholder Meeting handout to each group. There are 5 total.

4. Give students 10 to 15 minutes to read through the handout and respond to the questions with their group members.

5. Call the class back together. Explain to students that today there will be a panel of citizens, government officials, and organizations from the community you all belong to. Their role is to listen to everyone’s plan on whether or not Buckley’s should be allowed to set up a number of chain restaurants within this community. Each group will present its perspective. After every group has presented, explain that the panel will choose the plan from the group that has the most compelling point of view on the matter.

6. Allow each group to explain their perspective and share their position in just a few minutes.

7. The panel will take notes after each presentation and convene for 5 minutes to decide whether or not the fast-food chain should be allowed in the community.

Discussion Questions

1. Are there any other groups who should have attended the stakeholder meeting? Why?

2. Why are multinational corporations a symbol of globalization?

3. Ralph Nader has said the following about globalization, “The essence of globalization is a subordination of human rights, of labor rights, consumer, environmental rights, democracy rights, to the imperatives of global trade and investment.” Do you agree with this statement? How would fast food chains relate to this quote?

Additional Resources:

• Article: Russia Becomes a Magnet for U.S. Fast Food Chains
  This New York Times article by Andrew E. Kramer speaks to how the increase in Russia’s disposable income has also increased the amount of fast food chains available.

• Article: Unhappy Meals
  In this New York Times article Emily Eakin interviews Jose Bove, the farmer famous for protesting against McDonald’s in his local community in France.

• Book: Jihad vs. McWorld: How Globalism and Tribalism are Shaping the World
  This book by Benjamin Barber looks at the tensions between a growing consumerist culture versus religious and tribal fundamentalism. Consumer capitalism is on the rise transforming the world into a common market, while ethnic and religious tensions are creating divisions between people around the world. (Toronto: Random House, 1996)
A major fast-food chain, Buckley’s, wants to start a number of restaurants throughout small towns within France. There have been major debates on whether or not to allow these chains in these local communities. Up to this point, there has been a law that bans them. The government is grappling with what to do and has called a stakeholder meeting to bring all voices to the table to decide what the course of action should be. You represent one of these stakeholder groups and will be sharing what your thoughts are on the matter. At the end of the meeting, the decision will be made on whether or not to repeal a law banning foreign owned fast-food chains.
Group 1: Family that Owns a Local Restaurant

You live in a small town within France. You own a local restaurant that serves traditional French food. The recipes have been passed down generationally in your family for years. All the food you cook is fresh, organic, and healthy. You are strongly opposed to Buckley’s coming to your town. You’ve read about the types of food Buckley’s serves and the type of preparation they involve. The portions served are quite large and unnecessary. You’ve also read about how Buckley’s has displaced local restaurants and undermined local foods in different places around the world. Just because the food chain knows how to make “French fries” flavored with local seasonings, it does not mean the food is local cuisine. More than local foods, this fast food has been known to include too much salt, sugar, and fats.

Another issue that you have with Buckley’s: hardly any time that goes into preparing this type of fast food. Similarly, there is not a lot of time that goes into consuming this food. The concept of fast food conflicts with the way your people have eaten food for centuries. Food was not meant to be prepared quickly and in an industrial way. It is not meant to be preheated or precooked. Food is meant to be cooked slowly and intentionally. You have customers stay at your restaurant for hours. Because you know that fast-food restaurants encourage people to eat food quickly and then leave, you worry about how it will affect the next generation. This lack of importance around food, culture, and traditions could impact what your culture will become in years to come.

1. List compelling reasons for the panel to vote yes or no based on your arguments above.
2. Who do you think will agree with your perspective?
3. Create a 2- to 3-minute persuasive argument to share with this panel.
Group 2: Organization for Environmental Preservation

You are representatives from an environmental group who strongly oppose Buckley’s opening a chain in your local community. You have studied the environmental impacts of these types of fast-food chains around the world for quite some time. The products created by Buckley’s have contributed to the depletion of rainforests to make beef products. The production of beef requires a huge amount of resources; it takes 1,200 gallons of water and 16 pounds of feed (soybeans and grain) to produce a pound of meat. Rainforests have been burned down for soybean plantations and cattle farms. For every pound of red meat, poultry, and eggs produced, farms lose 5 pounds of irreplaceable top soil. The resulting impacts include land degradation, water shortages, biodiversity loss, and pollution.¹ In fact, livestock farms have contributed to more than one-fifth of the world’s greenhouse gases.² While people in your region traditionally eat lots of meat, they usually come from local ranches and butchers in contrast to meat raised with these larger farms.

Because of the high demand for meat production from these increasing fast food chains, animals have been forced into factory farms where they eat grains like soy and corn instead of foods like grass. Cows and chickens are fed large amounts of cheap protein and with limited space to move around, so they put on weight quickly.³ You’ve heard about local farmers in different countries protesting against these types of industrial farms. You were inspired when you read that 1 million farmers protested against opening up markets that would force them to potentially lose their farms.

In addition to beef production, you have researched the amount of waste fast-food chains produce. The amount of plastic food containers they use produces a large amount of garbage through excessive packaging. A study in Britain monitored littering on streets and showed that fast food litter was the second largest amount of litter found on the streets after cigarette ends.⁴

1. List compelling reasons for the panel to vote yes or no based on your arguments above.
2. Who do you think will agree with your perspective?
3. Create a 2- to 3-minute persuasive argument to share with this panel.

³ Ibid.
Group 3: Ministry of Economic Development

Your ministry works to ensure your town is economically developing. You want to make sure that your country keeps up with the pace of economic growth in other countries. One way of doing so is to pay attention to how successful countries have improved their standard of living and economic health. Watching trends around the world, you have observed how countries who have had positively aligned with the values of globalization (i.e., open markets, increased consumer choices, and lower tariffs) have been able to improve their international status. You’ve talked to regional economists and have learned that allowing fast-food chains within your country is likely to contribute positively to economic growth.

In speaking to other countries that have allowed fast food chains into their economy, you understand that doing so will help improve development for a number of reasons:

- Employees working within the restaurants can learn life-long skills that they will be able to use at any type of job (including responsibility, cooperation, and punctuality). These skills will create an effective and competent workforce.
- Local citizens hired to run the stores will be able to receive business management degrees and development courses.
- The introduction of these fast-food chains into local economies will help increase competition between different restaurants.
- Increasing tourism is another way of economically developing your country. You have learned the importance of having the same fast-food chains, supermarkets, and designer brand shops tourists are used to seeing in their homeland so that they have a positive experience in your country.

Therefore, you very much support the idea of these chains and believe they will give your country the boost of growth it has needed for the past few years.

1. List compelling reasons for the panel to vote yes or no based on your arguments above.
2. Who do you think will agree with your perspective?
3. Create a 2- to 3 minute persuasive argument to share with this panel.

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1 Adrian E. Tschoegl, “McDonald’s Much Maligned, But an Engine of Economic Development,” *Global Economy Journal, Vol. 7, Iss. 4, 2007*, [https://repository.upenn.edu/cgi/viewcontent.cgi?article=1003&context=mgmt_papers](https://repository.upenn.edu/cgi/viewcontent.cgi?article=1003&context=mgmt_papers).
You are one of the CEOs of Buckley’s and have a strategic plan to increase the number of restaurants around the world from 25,000 to 35,000. One of the places you think will help your multinational corporation to grow will be the country of France. The country has one of the strongest GDPs in Europe and is a leader in the global economy. You have the capacity to make more than $50 billion in global sales if you can reach out to several more countries. Since France has a lot of potential, you want to make sure it’s included in this growth plan.

You have seen the positive impacts of growing fast-food chains throughout the world. For one, the company has expanded from a fairly local food chain to an expansive global enterprise. Because of this global enterprise, people all around the world can connect culturally as consumers. Children from Tanzania have something in common with children from Germany and the Philippines, all because of strategic global marketing on Buckley’s end. At the same time, you understand how modifying food to fit local cultures is important and have created ethnic versions of your food to meet the needs of the many different customers you serve around the world.

You’ve been working hard to ensure that Buckley’s practices environmental sustainability and have hired environmental consultants who are helping repackage many of the products you sell to decrease the amount of waste created.

1. List compelling reasons for the panel to vote yes or no based on your arguments above.
2. Who do you think will agree with your perspective?
3. Create a 2- to 3-minute persuasive argument to share with this panel.
Group 5: Town Panel

You represent a number of different constituents from the town. You have been elected by your town to make decisions regarding the quality of life of its citizens. You take this job seriously as you want to ensure that the town is thriving economically, socially, and environmentally. You know that you will hear very different points of view and want to give everyone a fair and equal chance to present their arguments. You will hear from the following groups:

• a family that owns a local restaurant
• an organization for environmental preservation
• ministry of economic development

After preparing a few questions you will have for each group, create an agenda for the meeting in which you provide a few opening words and the order in which people will speak. You will take notes after each group presents their point of view. As a panel, you will then vote by majority rule on whether you believe the law against fast-food chains should be repealed or not. You will share this information with everyone at the meeting.
Activity 3: To Trade or Not to Trade?

Overview
Students are introduced to the North American Free Trade Agreement (NAFTA) and its stated goals. In small groups, they will research either the pros or cons of NAFTA from the point of view of the United States, Mexico, or Canada. After researching this information, the pro and con groups for each country will join together to share and listen to both sides of the argument. As a country group, they will decide whether NAFTA has overall been a worthwhile effort to improve their country’s economy. If not, they will analyze what provisions need to be met to meet its original goals. Each country group will present their position to the entire class.

Objectives
Students will:
• become familiar with the goals of the North American Free Trade Agreement
• identify the pros and cons of this agreement and impacts on the countries included in the agreement
• determine whether modifications need to be made to better meet the needs of a specific country

Inquiry/Critical Thinking Questions
• How do international trade agreements impact different groups of people?
• What are ways to create sustainable trade policies that benefit societies, economies, and environments?

Time Required
One 60-minute class

Key Concepts
• NAFTA
• globalization
• maquiladoras

National Standards Addressed
National Council for the Social Studies
5. Individuals, groups, and institutions
6. Power, authority, and governance
9. Global Connections

National Science Education Standards
F. Environmental quality, Personal and community health

EFS Standards
2.4 Social and Cultural Systems: Governance
2.4 Social and Cultural Systems: International Summits, Conferences, Conventions, and Treaties

Materials/Preparation
NAFTA Preamble (http://www.worldtradelaw.net/nafta/preamble.pdf), display with a document camera
Handout: To Trade or Not to Trade, 1 per student
Internet access
Activity 3: To Trade or Not to Trade? continued

Activity

Introduction

1. Ask students if they are familiar with the North American Free Trade Agreement (NAFTA).
2. Explain to them that NAFTA is an agreement signed in 1992 by President Bush of the United States, President Salinas of Mexico, and Prime Minister Mulroney of Canada. The agreement began on January 1, 1994 and created a trade bloc in North America among the 3 countries. This meant that barriers with trade were eliminated, fair competition between countries was promoted, and cooperation among all 3 countries was emphasized.
3. On a document camera, introduce students to the NAFTA Preamble.
4. Ask them how they think NAFTA would impact the economies of the United States, Mexico, and Canada.
5. Explain to students that there has been much debate on the effectiveness of this trade agreement. Their task will be to research the pros or cons of NAFTA based on an assigned country and position. They will do this research on the Internet.

Steps

1. Divide the class into 6 groups of roughly equal size.
2. Assign each group one of the following identities/perspectives:
   - U.S. pro
   - U.S. con
   - Canada pro
   - Canada con
   - Mexico pro
   - Mexico con
3. Pass out the To Trade or Not to Trade handout they will need to complete as they research.
4. Explain to students that when they research, each group should find at least three pieces of evidence to support their point of view. Option: Guide students to the following websites for additional support on research about NAFTA.
   - “The Broken Promise of NAFTA” by Joseph Stiglitz https://www.globalpolicy.org/component/content/article/162/27934.html
   - “Mexico: Was NAFTA Worth It?” by Geri Smith and Cristina Lindblad http://www.businessweek.com/magazine/content/03_51/b3863008.htm
   - “NAFTA’s Economic Impact” by Lee Hudson Teslik http://www.washingtonpost.com/wp-dyn/content/article/2008/03/24/AR2008032401562.html
   - “NAFTA’s Winners and Losers” by Dan Barufaldi http://www.investopedia.com/articles/economics/08/north-american-free-trade-agreement.asp#axzz1b9kaO2nQ
5. Allow students about 25 minutes to complete their research in groups and complete Part I of the handout.
6. After students have researched for 25 minutes and taken notes, have them meet with the counterpart from their country (i.e., Mexico pro and con groups meet).
Activity 3: To Trade or Not to Trade? continued

8. In these larger groups, have the pro group of each country present their findings to the con part and vice versa.

9. Give these country groups 10 minutes to decide as an entire country (pro and con groups) whether they believe NAFTA has had a positive or negative impact on their country. If they believe NAFTA has had a negative impact on their country, ask them to be prepared to present a provision they would like to be seen made to the agreement. Each student should complete Part II of the handout.

10. Ask a representative from each country group to present their country’s viewpoint on NAFTA based on consensus.

11. Conclude with a discussion using the following questions.

Discussion Questions

1. Why might policies that have good intentions be difficult to uphold?

2. Who do you believe NAFTA has benefited?

3. Who do you believe NAFTA has not benefited?

4. Overall, do you think NAFTA should be continued or repealed? Why?

5. Do you think NAFTA is sustainable? That is, does it contribute to the well-being of people and economies while preserving environmental resources?

6. What are ways trade agreements can be made to be sustainable and meet the needs of everyone?

Additional Resources

• Film: Maquilapolis: City of Factories
  This 60-minute documentary by Vicky Funari and Sergio De La Torre depicts the struggle of a group of women from Tijuana, Mexico working in maquiladoras while fighting for justice against the system.

• Article: Narco, No’s, and NAFTA
  [http://www.nytimes.com/2010/05/02/opinion/02friedman.html](http://www.nytimes.com/2010/05/02/opinion/02friedman.html)
  This New York Times article by Thomas Friedman looks at the up and coming Mexican middle class that has been created by NAFTA industries and the benefits of this new middle class.
To Trade or Not to Trade?

PART I

Directions: Research your position on NAFTA

Country: ______________________________ Position: ___________ (pro/con)

Research to support your position: Find and document at least 3 pieces of evidence to support your position.

1. __________________________________________________________________________

2. __________________________________________________________________________

3. __________________________________________________________________________

PART II

Directions: Share your research with the opposing group from your country. Discuss whether you believe, as an entire country, that NAFTA has been beneficial to you. Include your reasoning below.

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

PART III

Directions: If your country believes NAFTA has not been beneficial to your economy, what is one provision you would make to the agreement that would meet your needs?

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________
Activity 4: A Cartoon Is Worth a Thousand Words

Overview
Students analyze different political cartoons related to globalization. They identify the cartoonist’s point of view, noting persuasive techniques used to convey a specific message.

Objectives
Students will:
• analyze political cartoons about globalization
• identify ways cartoonists convey messages
• identify different points of view on a global issue

Inquiry/Critical Thinking Questions
• How do political cartoons represent a point of view?
• How do political cartoons and critical media literacy relate to each other?

Time Required
One 45-minute class

Key Concepts
• political cartoons

National Standards Addressed
National Council for the Social Studies
5. Individuals, groups, and institutions
6. Power, authority, and governance
9. Global Connections

EfS Standards
2.4 Social and Cultural Systems: Governance

Materials/Preparation
Overhead: Andy Singer’s “Invading New Markets” cartoon displayed as an overhead or with a document camera
Handout: Analyzing Globalization, 1 per 3 to 4 students
Internet access

Activity

Introduction
1. Ask students why it is often said that, “A picture is worth a thousand words.”

Steps
1. Show them Andy Singer’s cartoon, Invading New Markets.
2. Ask them to analyze what they believe the message of the cartoon is. Is it confusing? Biased? Compelling?
3. Explain that political cartoons may include a number of elements to help convey a message:
   • Symbols: Simple objects are used to stand for larger ideas and concepts
   • Exaggeration: Physical characteristics of people or things are exaggerated
   • Labeling/captions: Objects or people are given labels/captions to indicate what they stand for
   • Analogy: A comparison between 2 unlike things that share some characteristics
   • Irony: Incongruity between the actual result of a sequence of events and the normal or expected result
4. Have students look at the cartoon again and analyze what elements the cartoonist used to get his message across.
5. Ask students what kinds of images they would associate with the idea of globalization.
6. Tell students they are going to analyze different political cartoons related to the topic of globalization. One that is anti-globalization and one that is pro-globalization.
7. Distribute the handout, Analyzing Globalization, to groups of 3 to 4 students.
8. Give students time to research 2 different political cartoons online related to globalization.
Activity 4: A Cartoon Is Worth a Thousand Words  continued

9. They can print these cartoons out.
10. Have them interpret the significance of these cartoons and complete their handouts.
11. After they have analyzed 2 different cartoons, they can share what they learned to the whole class.
   **Option:** Students can print out political cartoons. Have them post these cartoons around the room with their attached analysis to create a ‘Cartoon Gallery.’ Students can then walk around the room, viewing different political commentaries on globalization, and reading student interpretations.
12. Lead students in a discussion using the following questions.

**Discussion Questions**
1. How might a political cartoon related to globalization differ from country to country?
2. Do you think cartoons can be more effective than articles or written materials? Why, or why not?
3. What are other forms of media that are ways for people to convey a political message?
4. Pat Oliphant, a famous political cartoonist, once said, “Cartooning should challenge the status quo.” Do you agree with this statement? Why, or why not?

**Art Extension**
Have students create their own political cartoon related to globalization. They can utilize at least 2 elements of cartooning to convey their message.

**Additional Resources:**
- **Book:** *VIVA La Historieta! Mexican Comics, NAFTA, and the Politics of Globalization*
  This book by Bruce Campbell examines the role of Mexican comic books in the debate of globalization in Mexico. (University Press of Mississippi, 2009).
- **Film:** *Mickey Mouse Monopoly-Disney, Childhood & Corporate Power*
  This 52-minute documentary by Chyng Sun and Miguel Picker analyzes the impacts of Disney, a transnational media corporation that has created a specific childhood culture throughout the world.
Andy Singer Cartoon: “Invading New Markets”
Analyzing Globalization through Political Cartoons

Political Cartoon 1

1. What elements of political cartoons does the author use?

2. What is the message you believe the cartoonist is attempting to convey about globalization?

3. Do you think this message is effective? Explain why or why not.

4. Explain how the message could be made more effective.

5. Who do you think would disagree with the message of the cartoon?

Political Cartoon 2

1. What elements of political cartoons does he or she use?

2. What is the message you believe the cartoonist is attempting to convey about globalization?

3. Do you think this message is effective?

4. Is there any way in which the message could be made more effective?

5. Who do you think would disagree with the message of the cartoon?
Activity 5: Globalizing for the Future

Overview
Students analyze an argument in support of globalization. After considering the positive outcomes of globalization, they are then given a number of scenarios in which economies, environments, and people have been impacted negatively. Their task is to consider ways in which these scenarios can be reframed to positively benefit from globalization.

Objectives
Students will:
• identify potentially positive outcomes of globalization
• consider ways in which economies, environments, and people can positively benefit from globalization

Inquiry/Critical Thinking Questions
• How can governments make decisions about globalization with sustainability in mind?

Time Required
One 60-minute class

Key Concepts
• tariffs
• sweatshops
• economic development

National Standards Addressed
National Council for the Social Studies
5. Individuals, groups, and institutions
6. Power, authority, and governance
9. Global Connections

National Science Education Standards
F. Environmental quality, Personal and community health

EfS standards
2.4 Social and Cultural Systems: Governance
2.4 Social and Cultural Systems: International Summits, Conferences, Conventions, and Treaties

Materials/Preparation
Handout: Reframing Globalization, 1 for each student

Activity
Introduction
1. Share with students the TED talk, “How ideas trump crises.”
2. Ask them to articulate Alex Tabarrok’s perspective on globalization (i.e., it has helped to bring down walls in communication, trade, and politics around the world).
3. See if they can identify other positive outcomes of globalization. Ask them how ideas, foods, and products from other places have positively influenced their lives. Do they love pizza? Like to sing karaoke? Enjoy music from other parts of the world?
4. Have them deliberate on why there have been arguments against globalization.

Steps
1. Explain to them that they will analyze a few different scenarios related to globalization’s negative impacts and consider ways to reframe the scenario so that groups are able to benefit from the process. This may mean students will create a policy, new international standards, a trade agreement, etc., to improve the outcome of each scenario.
2. Divide students into groups of 3 to 4 students.
3. Pass out the handout, Reframing Globalization.
4. Have students read through the scenarios and create a positive solution for each one.
5. Have each group present solutions they created. As an extension, students can see if the solutions they developed have in fact been enacted in different countries.

6. Lead students in the following discussion.

**Discussion Questions**

1. What types of economies, people, and environments appear to be impacted positively by globalization?

2. What types of economies, people, and environments appear to be impacted negatively by globalization?

3. What can governments do to help prevent or address the negative impacts of globalization?

4. What can individuals do to help prevent or address the negative impacts of globalization?

5. Can you imagine a world where national borders are closed to products and ideas from other places? How would that affect people and economies where you live?

**Additional Resources**

- **Book:** *In Defense of Globalization*
  This book authored by Jagdish Bhagwati takes the point of view that globalization has a human face, but it’s important to make this face more agreeable for everyone. (Oxford University Press, 2004).

- **Film:** *Battle in Seattle*
  This 99-minute film by Stuart Townsend is inspired by the WTO protests that occurred in Seattle, Washington and takes an in-depth look at several characters during the 5 days of the protests.
**Scenario 1**

Your African country has agreed to the provisions of the World Trade Organization and is a member of the organization. You joined the WTO because it offered ideal end goals of raising incomes and stimulating economic growth for your country. However, the results of globalization and trade policies have not worked in your favor. You’ve discovered an effective way to participate in the global economy is to farm cash crops. A few problems have risen because of this demand for these crops. These crops are not what your farmers typically grow on their farmland. Therefore, they are being forced to grow crops for money to boost the economy, but in the meanwhile, they are not able to grow crops for their own subsistence. In some situations, large corporations have bought farms; some farmers have been forced to work on these corporate-owned farms, changing radically the way they have traditionally grown food. Additionally, countries that purchase these crops from you have put high tariffs on products you sell to them that you have to pay. By the time they have purchased these crops, you have not benefitted economically.

**Scenario 2**

You work in a clothing factory in Vietnam. You have heard a lot about globalization; the more you hear about it, the more you feel negatively towards the whole process. When your older sister told you that you could earn a decent income by working in the factory, you decided to leave school to pursue employment. You wanted to support your family. Looking back, you wish you had never made this choice. The factory you work in is dirty, has no fire exits, and allows for toxic chemicals to circulate freely. Although there are labor standards to protect workers in Vietnam, your factory does not abide by those rules. You have had friends develop serious health issues; you are worried that you will develop the same problems. You are only 19 years old and have dreamt of owning your own clothing business. These days, you’re far from reaching that goal. You work 70 hours a week, are forced to live in a small room with 9 other people, and have no legal work contract. You feel like you are learning nothing on the job and don’t see a bright future ahead of you.

**Scenario 3**

You are part of an indigenous tribe living in Latin America. Your subsistence depends heavily on the nearby land, water, and other natural resources. Large mining companies have started coming to your area. This mining has increased pollution, degraded water, and destroyed land. You have started to see the loss of precious medicines and resources that your tribe has used for centuries. You understand that globalization is a means towards economic growth and this could help your country develop tremendously, but the corporate take-over of land without consideration of your tribes’ needs has been detrimental. You suspect that the government does not want to intervene to protect your rights because you cannot contribute economically like these big companies can. All of this mining seems like a short-term strategy with long-term consequences. You are concerned this persistent destruction of land for economic growth will harm ecological systems. You wonder if companies have considered other means of growth that don’t involve environmental destruction.

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1. What is the impact of globalization in each scenario presented?

<table>
<thead>
<tr>
<th>Scenario 1</th>
<th>Scenario 2</th>
<th>Scenario 3</th>
</tr>
</thead>
</table>

2. Who is directly impacted by each scenario in a negative way? Who might be impacted by each scenario in a positive way?

<table>
<thead>
<tr>
<th>Scenario 1</th>
<th>Scenario 2</th>
<th>Scenario 3</th>
</tr>
</thead>
</table>

3. What do you propose should be done to help alleviate these impacts of globalization in each scenario?

<table>
<thead>
<tr>
<th>Scenario 1</th>
<th>Scenario 2</th>
<th>Scenario 3</th>
</tr>
</thead>
</table>

4. Who would be important stakeholders that could help address these issues?

<table>
<thead>
<tr>
<th>Scenario 1</th>
<th>Scenario 2</th>
<th>Scenario 3</th>
</tr>
</thead>
</table>
Performance-based Assessment 4

Essential Question
How does a country fall into economic crisis?

Time Required
7-10 days

Materials
Packet: The Global Economy
The packet includes the following:
• Product 1: Media Analysis (Individual), 1 copy per student
• Product 2: Historic Analysis (Group), 1 copy per student
• Product 3: Product Analysis (Group), 1 copy per student
• Student Reflection Sheet, 1 copy per student
• Performance-based Assessment Holistic Scoring Rubric, 1 copy per student
• Student Reference Sheet for the Holistic Scoring Rubric, 1 copy per student

(Optional: Overhead: Sample Performance-based Assessment)

Ways to Introduce this Assessment
1. Explain to students that they will be completing a performance-based assessment based on the unit The Global Economy from the textbook. This unit includes the chapters on Economics, Poverty, and Globalization. This is an opportunity for them to both show their content knowledge and apply other skills like critical thinking, global awareness, and problem-solving.

2. In think-pair-share format, have students create a concept map demonstrating the interconnections between these 3 chapter topics.

Option: If you haven’t done the following activities from the Teacher’s Guides, then consider beginning with one of the following:

• Economics Teacher’s Guide, Activity 3: Pondering Economic Policies—Students take on roles of different world leaders tasked with reviewing real-world economic policies before deciding whether to move forward with them or not. After drawing their own conclusions, they learn about the real results of these economic policies.

• Globalization Teacher’s Guide, Activity 4: A Cartoon is Worth a Thousand Words—Students analyze different political cartoons created about globalization. They identify the cartoonist’s point of view, noting persuasive techniques he or she uses to convey a specific message.

• Poverty Teacher’s Guide, Activity 1: Take a Step for Equity—Students are randomly assigned an economic class, and then hear poverty and wealth statistics describing their economic class as they step forward in a line. Ultimately, a distance is created between the wealthiest and the poorest, illustrating the economic gap between the rich and poor. Students then brainstorm and discuss ways to alleviate poverty and hunger.
3. Explain to students that by the completion of the assessment, they will have researched a historic example of an economic depression.

4. Hand students the Global Economy Packet.

5. Organize students into groups. Each group should have 4 students.

6. Review the driving question with students.

7. Explain that each group will compare and contrast the Great Depression of 1929 with the Great Recession of 2008 in the United States.

8. Review each product students are expected to create to see what questions they have. Explain to them that they will be assessed on these products based on the Performance-based Holistic Scoring Rubric in the back of their packets.

   **Note:** The skills being assessed are 21st Century Skills and Common Core Standards. You can also assess students on content knowledge through the National Council for the Social Studies Standards.

9. Have them review the Student Reference Sheet for the Holistic Scoring Rubric so they can comprehend the types of skills they will be assessed on.

10. Explain to students that after they hand in their 3 products, they will need to complete a Student Reflection Sheet.

   **Option:** Share the Sample Performance-based Assessment Rubric so students can understand how holistic scoring works.
Driving Question:

What are root causes and impacts of economic recession?

You are part of a government task force that has been asked to analyze the root causes and impacts of economic recession in the United States. You will share this information for the purposes of preparing the government for future recessions. Working in groups of 4 students, you will prepare and present a historical analysis of the causes of and solutions to economic recession.
Product 1: Media Analysis (Individual)

For this product, you will research political cartoons created about the 1929 Great Depression and the 2008 Great Recession.

• Research 1 political cartoon from each time period.

• Create a 1-2 page analysis that compares and contrasts these 2 political cartoons. Consider the following questions:
  a. Who or what is portrayed in each cartoon?
  b. What are the underlying messages of the 2 cartoons?
  c. What are the similarities and differences between the cartoons?

Option: Use a Venn diagram to support your compare/contrast analysis.

• Include a bibliography that provides sources for the information you found.
Each member of your group will share the media analysis of his or her political cartoons. Your group will then do further research on the history behind these recessions. You will:

- **Research the following questions for both the Great Depression and the Great Recession:**
  a. What were the root causes of this recession?
  b. What were the impacts of this recession?
  c. Who were key historic figures that were part of this time period and what were their contributions to ending/alleviating the recession?
  d. What kinds of solutions (e.g., policies, laws, treaties) were created to address this recession?

- **Include a bibliography that provides sources for the information you found.**

### Additional Resources

- **Website:** History.com, *The Great Depression*  
  [https://www.history.com/topics/great-depression](https://www.history.com/topics/great-depression)  
  This website provides speeches, audio recordings, photos, and interactives that present information about the Great Depression.

- **Article:** *Obama vs. Hoover*  
  *This New York Times* article compares the Great Depression with the Great Recession.

- **Website:** PBS: Timeline of the Great Depression  
  This timeline provides information about key events related to the Great Depression.

- **Article:** *U.S. Economy Officially in a Recession*  
  *This PBS Newshour article describes the term recession and discusses the Great Depression and the Recession that began in 2007.*
Product 3: Presentation (Group)

Your group will explain this historic analysis through a visual presentation. The presentation will compare and contrast the Great Depression and the Great Recession. Share what you learned in your historic analysis using photos, significant quotes from leaders of the time, graphs, etc. Culminate your presentation with solutions that worked to address these past recessions and at least 1 recommendation you have for governments today to avoid future economic crises.

You can create one of the following:

- **PowerPoint presentation**: Each member is responsible for at least 2 slides. The presentation may begin with an explanation of why the country you are consulting with has such a large ecological footprint. The slides should have graphics (e.g., tables, charts, photographs) to support the plan.

- **Podcast or vidcast**: Each member will contribute to a 5-minute mini-documentary. Group members may interview each other and provide charts, maps, tables, and other visuals to support their recommendations.

- **Posterboard presentation**: Each member will contribute to creating a poster using tables, charts, maps, and photos. The group will also deliver an oral argument for why their solutions will address the issue and is worth funding.

- **Skit**

Additional Resources

- **Website**: Microsoft Office: Create your first presentation
  This website provides information on how to create a PowerPoint presentation.

- **Website**: eHow.com: How to Make a Podcast
  In this post, Katherine Johnson provides instructions on how to make a podcast.

- **Website**: eHow.com: How to Video Podcast
  This post provides instructions on how to make a video podcast.
Student name: ____________________________________________________________________________

Instructions to Students: Prior to completing this Student Reflection Sheet, review the Performance-based Assessment Holistic Scoring Rubric and the Student Reference Sheet for the Holistic Scoring Rubric (which provides a detailed description of each skill included on the rubric). These documents will help you understand how to reflect on the quality of your work for this performance-based assessment.

Content Knowledge, Critical Thinking, and Problem-solving

1. Identify 2 skills you developed when you created the 3 products for this assessment.
   ____________________________________________________________________________
   ____________________________________________________________________________
   ____________________________________________________________________________

2. Were there any challenges you encountered when creating any of the products?
   ____________________________________________________________________________
   ____________________________________________________________________________
   ____________________________________________________________________________

3. Evaluate the quality of your research findings from the sources you used for your performance-based assessment. Explain how your findings contributed to any conclusions you reached in your performance-based assessment.
   ____________________________________________________________________________
   ____________________________________________________________________________
   ____________________________________________________________________________

Awareness of Broader Sustainability Relationships

4. Explain how your products relate to one of the broader global issues connected to essential human needs.
   ____________________________________________________________________________
   ____________________________________________________________________________
   ____________________________________________________________________________
5. Explain how any of your products could be used to inform or develop broader civic or
government sustainability policies at the local, state, federal, or global levels.

_______________________________________________________________________________________
_______________________________________________________________________________________
_______________________________________________________________________________________
_______________________________________________________________________________________

Self-evaluation and Collaboration

6. Based on the scoring rubric, how do you rate the quality of your products?
_______________________________________________________________________________________
_______________________________________________________________________________________

7. List specific products you created. Explain ways in which you could improve the quality
of each one.
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8. Evaluate your role in your team and describe how you contributed to the completion of the
assessment.
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_______________________________________________________________________________________
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9. Describe how you improved the collaboration between group members to successfully
complete the assessment.
_______________________________________________________________________________________
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Information Technology and Communication

10. What types of technology (such as computers and software packages, the Internet, and digital
video and audio equipment) did you use in the development of your products? How did these
types of technology help you research and present the products effectively?
_______________________________________________________________________________________
_______________________________________________________________________________________
_______________________________________________________________________________________
### Performance-based Assessment Holistic Scoring Rubric

**Student Name:** ____________________________  
**Unit Title:** __________________________________________  
**Project Title:** ________________________________________

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<thead>
<tr>
<th>Skill Section</th>
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<th>Meets Expectations (3)</th>
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<td>(10) Communication and Presentation</td>
<td>Demonstrates clear thoughts and ideas using oral, written, and nonverbal communication skills (e.g., eye contact, facing the audience).</td>
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## Student Reference Sheet for the Holistic Scoring Rubric

<table>
<thead>
<tr>
<th>Skill</th>
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</thead>
<tbody>
<tr>
<td><strong>1. Content Knowledge and Skills</strong></td>
<td>The intent of Content Knowledge and Skills is to determine whether:</td>
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<td>• You have learned the concepts and ideas of the course</td>
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<td>• You demonstrate an understanding of the ideas and concepts of the targeted learning standards of the performance-based assessment</td>
</tr>
<tr>
<td><strong>2. Application of Content Knowledge and Skills</strong></td>
<td>The intent of Application of Content Knowledge and Skills is to determine whether the performance-based assessment products and the Student Reflection Sheet submitted by you demonstrate that:</td>
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<tr>
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<td>• You have properly applied the ideas and concepts of the targeted learning standards of the performance-based assessment to the performance-based assessment products</td>
</tr>
<tr>
<td><strong>3. Critical Thinking and Problem-solving</strong></td>
<td>The intent of Critical Thinking and Problem-solving is to determine whether the performance-based assessment products and the Student Reflection Sheet submitted by you demonstrate:</td>
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<td>• The use of reasoning to analyze and evaluate evidence, arguments, and alternative points of view</td>
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<td>• The understanding of a problem</td>
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<td>The application of strategies or solutions for resolving the problem</td>
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<td>• The application of evidence to support your conclusions</td>
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<td>• The application of your understanding of an issue to a novel situation to resolve a problem</td>
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<tr>
<td><strong>4. Evaluation of Research Findings from Sources</strong></td>
<td>The intent of Evaluation of Research Findings from Sources is to determine whether the performance-based assessment products and the Student Reflection Sheet submitted by you demonstrate:</td>
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<td></td>
<td>• The skill to analyze and to determine the usefulness of findings and sources in answering the research topic</td>
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<td>• The understanding of how to integrate information into a report, without plagiarism, to support arguments about the research topic</td>
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</table>
**5. Global Awareness**
The intent of Global Awareness is to determine whether the performance-based assessment products and the Student Reflection Sheet submitted by you demonstrate:
- The understanding of how your performance-based assessment fits within broader global issues
- The understanding that this issue is related not only to your community or country, but to the world as a whole
- The understanding that there is a diversity of cultures, religions, and lifestyles around the globe
- The understanding that problems can be solved a variety of ways and that solutions must fit the needs of unique cultures and countries around the globe

**6. Civic Literacy**
The intent of Civic Literacy is to determine whether the performance-based assessment products and the Student Reflection Sheet submitted by you demonstrate:
- The understanding of how your performance-based assessment reflects broader civic or government policies regarding sustainability issues at the local, state, federal, and global levels
- The recognition of your role as a citizen toward sustainability issues

**7. Self-evaluation**
The intent of Self-evaluation is to determine whether you take responsibility for your own learning by:
- Articulating the quality of your performance-based assessment in relation to the ideas and concepts in the targeted learning standards of the performance-based assessment
- Using the Student Reflection Sheet to identify the strengths and weaknesses of your work
- Suggesting ways to improve your work in the Student Reflection Sheet
- Suggesting ways to improve your work beyond the Student Reflection Sheet

**8. Collaboration and Contribution**
The intent of Collaboration and Contribution is to determine how much you collaborated with other students in the development and completion of the performance-based assessment, by:
- Working collaboratively with other students
- Designating work assignments among group members
- Sharing responsibility for the completion of the performance-based assessment
- Using listening and leadership skills
- Being flexible and able to compromise to complete the performance-based assessment
| 9. Information, Media, and Technology Skills | The intent of Information, Media, and Technology Skills is to determine whether the performance-based assessment products and the Student Reflection Sheet submitted by you demonstrate:  
- The proficiency to effectively use 21st century media and technology (e.g., computers and software packages, the Internet, digital video and audio equipment)  
- The skill to research and analyze information  
- The skill to develop reports and make presentations |

| 10. Communication and Presentation | The intent of Communication and Presentation is to determine whether the performance-based assessment products and the Student Reflection Sheet submitted by you demonstrate:  
- The skill to clearly and effectively express your ideas and thoughts through oral, written, and nonverbal forms of communication (e.g., eye contact, facing the audience)  
- The use of communication for a variety of purposes (e.g., to inform, instruct, motivate, persuade)  
- The use of a variety of multimedia and technology (e.g., written reports, poster boards, video presentations, PowerPoint presentations) for presentations |

| 11. Overall Score | The overall score for the performance-based assessment is a holistic determination rather than an accumulation of points from the previous sections. The teacher should use the ratings given in the individual skill sections to determine the overall score that the teacher believes is appropriate for your work. |
# Sample Performance-based Assessment

**Student Name:** Jane Doe  
**Unit Title:** Raising the Quality of Life of a Country  
**Project Title:** Improving the Quality of Life in Nicaragua

<table>
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<tr>
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<td>Performance-based Assessment 4</td>
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Comments on Scoring Holistically

A student turned in a research report on gender equality in Nicaragua. The research report was well organized and provided a number of sources. The student also turned in, with the other students in her group, the final draft of a grant application and a PowerPoint presentation about the grant application. The grant application was well written. The students developed a plausible plan to improve the quality of life in Nicaragua, applying the concepts they learned in the unit. The student gave thoughtful responses to the questions on the Student Reflection Sheet, demonstrating an understanding of how the grant application related to the targeted learning standards and broader global sustainability issues. The student was also critical of her work and suggested ways that she could improve it. During her group presentation, the student discussed two slides of the PowerPoint. The student had difficulty using the projector and advancing the slides. The student also was noticeably uncomfortable discussing the slides and did not make much eye contact with the audience.

The teacher awarded the student a 4 for Content Knowledge and Skills, but awarded a 3 for Application of Content Knowledge and Skills. The teacher also awarded a 4 for Critical Thinking and Problem-solving, but only a 3 for Evaluation of Research Findings from Sources. For the skills Civic Literacy, Global Awareness, and Self-evaluation, the teacher awarded 4s. For Collaboration and Contribution, the teacher awarded a 3. During the presentation of the grant, the teacher noticed that the student had difficulty giving the PowerPoint presentation and was not an effective communicator. Nevertheless, based on the ratings for Content Knowledge and Skills, Critical Thinking and Problem-Solving, Global Awareness, Civic Literacy, and Self-evaluation, the teacher awarded a 3 for Overall Score.
Chapter 22
Community Development

CHAPTER BIG IDEAS

- If members work together, communities can have great influence on the decisions that affect them.
- Identifying common problems and opportunities is an important way to develop a community’s capacity for action.
- For a community to be resilient, adaptable, and sustainable, the network of relationships and norms that connects its members must be strong.
Guiding Questions
• Why are communities stronger together?
• What approaches can help build and strengthen communal assets?

Key Concepts
• community
• community development
• social capital
• community organizing
• civic participation
• reciprocity

Supporting Vocabulary
• polis
• revitalize
• cooperative
• time bank
• social media

Service Learning Component
Service Learning Project Idea
• Question: How can youth build social capital in their community?
• Hook Resource: National Youth Leadership Council
  http://www.nylc.org/resources/projects
  This website includes examples of service learning projects that related to specific issues areas such as music, literacy, technology, human rights, and community building.

• Project: Students develop a volunteer opportunity website, advertising “volunteerships” available in their local community. The “volunteerships” may be hosted by municipal governments, local nonprofit organizations, or national organizations. Students may promote this website their school and local newspapers, as well as social media.

• Additional Resources:
  • Video: National Youth Volunteering Scheme
    http://vimeo.com/17001014
    This is an 18-minute video from the government of Kenya on a country-wide program for youth to gain skills and give back to various communities.
  • Website: Youth Volunteer Corps of America
    http://www.yvca.org/
    This website helps youth connect with volunteer opportunities.

Project Based Learning Component
Project Based Learning Idea
• Overview: Students research community resources in a particular neighborhood, such as a health care facilities, public parks, and community centers. Students will then determine how the access and availability of these resources could be improved.
• Driving Question: If you were a community organizer, what issue in your community would you want to change?
• **Hook Resource:** *Google Maps*
  [http://maps.google.com](http://maps.google.com)
  Students can map resources related to the type of community resource they wish to study (for health care, resources might include pharmacies, hospitals, and medical clinics) and explore the implications of where existing resources are located.

• **Individual Project:** Students will create a map of a single neighborhood in your city/town, noting where specific resources of interest can be found. Based on this map, they will determine what improvements need to be made to better meet the needs of people in the neighborhood.

• **Group Project:** Student groups will each create a map of a single neighborhood in your city/town, noting where specific resources of interest can be found. They can use census information to determine the demographic profile of the community in this area. Based on the demographics of the area and the existing community assets, student groups will determine what improvements need to be made to better meet the needs of people in the neighborhood. They will develop a working plan to organize the neighborhood to achieve these changes.

• **Additional Resources:**
  • **Website:** *American Planning Association*
    [www.planning.org](http://planning.org)
    This website has information for students about community planning. Their online newsletter *ResourcesZine* features ideas for involving youth in planning efforts.

  • **Website:** *Walk Score*
    [www.walkscore.com](http://www.walkscore.com)
    This website allows users to identify how walkable their neighborhoods are, according to availability of necessities (e.g., food stores), entertainment venues (e.g., movie theaters), and other community assets (e.g., libraries).

**Summative Assessment**
Chapter Test

**Connections**

**World History connections:**
Democracy and the power of public voice; citizen-led politics; community-based solutions

**Economics connections:**
Social economic feedback loops; the intersection of social and economic capital; local economies

**Geography connections:**
Resource-based communities; rural revitalization

**Civics connections:**
Personal and structural solutions to community development issues
Activities in Teacher’s Guide: Suggested Sequence

Day 1–3

**Reading:** Introduction to Community Development

**Activity 1:** Social Capital Youth Summit—Students are placed into groups based on common interests. Each group then works together to find what about their common interest draws them all to it, before planning and hosting a mini-event sharing their interest with the rest of the class. Through this process, students build social capital both within groups (bonding capital) and between groups (bridging capital), then discuss how these sorts of relationships could help them work together to address common problems.

Day 4–5

**Reading:** Background on Community Development

**Activity 2:** Putting Our Community on the Map—In groups, students create representational maps of their school and the surrounding community to conceptualize and understand interrelations among neighborhood resources, the environment, community, and sustainability. Students then brainstorm specific ways to make the school’s neighborhood more sustainable through improvements to the physical environment and revise their maps to reflect these enhancements. A homework assignment asks students to assess the availability of important resources near their homes. In an extension activity, students present their ideas to community stakeholders.

Day 6

**Reading:** Community Development Today

**Activity 3:** Fixing Up the Neighborhood—In groups, students consider common challenges to community well-being. After identifying underlying problems, considering solutions, and determining available resources, they determine solutions to put their hypothetical community on a course to sustained well-being. Students will consider both positive and negative repercussions for their proposed community development schemes.
Day 7

**Reading:** *Pathways to Progress: Community Development*

**Activity 4: School Community Assessment**— Using the assessment skills they have gained in previous activities, students participate in a town hall style community development activity with faculty, administrators, and staff from their school. In the process, they identify problems they see in their own lives and experience the community development process first hand.
Discussion Questions from the Chapter Reading

Introduction to Community Development
1. How does the idea of feedback loops help us better understand individual behaviors as well as community dynamics?
2. How would you modify and apply the questions from Dr. Krishna's study of social capital in Rajasthan to the community you belong to?
3. How might a community determine the air quality and water quality of where they live?

Background on Community Development
4. What events in the United States during the 1960s and 1970s could have contributed to the drop in civic participation during that time? What new networks have developed to replace those lost during this period in history?
5. How might inequality and social capital relate? If one leads to the other, which do you think is the cause and which one the effect?

Community Development Today
6. Which is better at bringing people together: identifying common problems or participating in common activities? How can the 2 approaches be combined? Can one be done without the other?
7. What kind of community organizations are intended specifically to prevent crime? What could be done to make them more effective?

Pathways to Progress: Community Development
8. Rural revitalization policies can help to strengthen communities. What are other types of policies that could help to strengthen communities?
Recall

Match the following words on the left with their definitions on the right.

1. Community
   building ties between people to create a network that can successfully adapt to challenges or opportunities

2. Community development
   a social unit that typically lives close to each other and some commonality

3. Social capital
   individual or community participation in decision around issues that affect public life

4. Civic participation
   the networks, norms, and mutual trust that allow people to coordinate and cooperate for benefit of a community

Reasoning/Explanation

Complete the following multiple choice questions by choosing 1 correct answer.

5. Which answer best explains how community development contributes to sustainability?
   a. by making people happier about their lives
   b. by promoting foot and bike traffic
   c. by enabling neighborhoods to adapt to changes
   d. by stabilizing stock markets

6. Which following examples best describes a way of building social capital?
   a. driving to work alone
   b. helping a neighbor
   c. getting cash out of an ATM
   d. eating dinner with members of your own household

7. Which rationale below describes why vacancies in a neighborhood are a sign of community problems?
   a. Vacancies represent the community's inability to use all of its resources.
   b. Vacancies provide habitat for pests.
   c. Vacancies mean that fewer people want to be in the community.
   d. Vacancies harm water quality.
8. Which of the following examples best describes the concept of reciprocity?
   a. time bank
   b. sale at a local store
   c. youth football game
   d. free donuts at the bank

9. All of the following demonstrate elements of increasing social capital, except:
   a. building trust by working together on a project
   b. resolving disputes between community members with the help of larger community
   c. protecting natural resources as a collective group
   d. identifying government officials that support specific issues that affect your community

10. Which statement below best replaces X in the flow chart?

   In the United States, civic clubs and neighborhood associations emerged during the 1950s. Membership rates in these sorts of clubs were at their height during the 1960s. X Social capital and civic engagement decreased considerably during the next several decades.

   a. The Vietnam War changed the social climate within the United States and people were less willing to communicate with each other.
   b. Shorter working hours allowed people to spend more time socializing with family and friends and less time at their jobs.
   c. Research came out proving the more time people spent volunteering and participating in clubs, the less happier they were.
   d. Advances in technology allowed people to individualize their time through watching television and using the Internet.

11. Which example below best demonstrates a way to strengthen communities?
   a. shaping government policies to support community development projects
   b. allowing for more government control over community-based decisions
   c. supporting the cultural practices of the dominant ethnicity to create uniformity
   d. opening up restaurants that cater to different cultures in the community
12. A neighborhood association has come together to address the increase in crime that has occurred over the last few years in their community. They have identified the root cause of this crime, unemployment. The association has decided to address this issue through a number of events: a town hall meeting, workshops providing people skills to apply for jobs, and food drives for people living in poverty. Based on the stages of community development, which statement best represents what would be the final stage of this process?
   a. bring in a large police force that intimidates those trying to commit crimes
   b. evaluate the results of these different efforts to see if crime has decreased over a given time
   c. improve the types of classes offered at high schools so that graduation rates increase
   d. create policies that enforce stricter punishments for crimes

13. What kind of legislation would most likely support rural revitalization?
   a. policies that would allow more people from rural areas to move easily to urban areas
   b. policies that would raise the price of produce sold by farmers so they could make more money
   c. policies that would fund restoration of buildings in small towns and provide sustainable housing
   d. polices that would provide scholarships for high school students to attend university for free

14. Which statement best describes the result of Detroit’s reliance on auto manufacturing as a single industry?
   a. Reliance on auto manufacturing led to massive unemployment and migration from the city as the industry shrank.
   b. Reliance on auto manufacturing helped build Detroit into one of the most sustainable cities today.
   c. Reliance on auto manufacturing created a number of highly skilled auto repairmen who were nationally marketable.
   d. Reliance on auto manufacturing made Detroit ‘Motor City,’ a place known for its creation of automobiles.

**Application/Complex Reasoning**
Answer the following short answer questions below.

15. **Part A.** Identify 1 characteristic of a sustainable community.
   **Part B.** Explain what this characteristic looks like.

16. **Part A.** Describe 1 problem modern communities face.
   **Part B.** Use the stages of community development to explain how this problem might be solved.
Recall (4 points total)

1. Community—a social unit that typically lives close to each other and some commonality
2. Community development—building ties between people to create a network that can successfully adapt to challenges or opportunities
3. Social capital—the networks, norms, and mutual trust that allow people to coordinate and cooperate for benefit of a community
4. Civic participation—active citizenship where individuals are able to directly provide input towards policies and address social issues

Reasoning/Explanation (10 points total)

5. c 10. d
6. b 11. a
7. c 12. b
8. a 13. c
9. d 14. a

Application/Complex Reasoning (6 points total)

15. Part A: Answers will vary. (1 point)
   • Respect and diversity
   • Civic participation
   • Equal opportunities
   • Social connections

   Part B: Answers will vary. (1 point)
   • Respect and diversity: cultivating respect for diverse cultures
   • Civic participation: volunteering with an organization that supports the local community
   • Equal opportunities: providing things such as safe housing or public transit
   • Social connections: creating opportunities for building social capital

16. Part A: Answers will vary. (1 point)
   • Limited economic opportunities
   • Health and safety concerns
   • Inequity and social divisions

   Part B: Answers will vary. (2 points)
   Students should address the stages of development when explaining their solution which include the following:
   • Identifying the problem
   • Determining how to address the problem
   • Taking action to address the problem
   • Evaluating the results of an effort
Activity 1: Social Capital Youth Summit

Overview
Students are placed into groups based on common interests. Each group then works together to find what about their common interest draws them all to it, before planning and hosting a mini-event sharing their interest with the rest of the class. Through this process, students build social capital both within groups (bonding capital) and between groups (bridging capital), then discuss how these sorts of relationships could help them work together to address common problems.

Objectives
Students will:
• build connections among themselves to experience social capital firsthand
• understand the difference between “bonding” and “bridging” social capital
• discuss the importance of personal connections for addressing problems together

Inquiry/Critical Thinking Questions
• In what ways does forming connections with people based on common interests strengthen communities?
• How can social capital be built so that individuals within a community do not feel excluded?
• What activities can increase social capital within a neighborhood or a wider community?

Time Required
Day 1: 5 minutes
Day 2: 60 minutes
Day 3: 90 minutes (could be done over multiple days)

• Note: Day 2 does not need to follow Day 1 immediately. Schedule Day 3 to occur about a week after day 2, to give groups time to prepare.

Key Concepts
• social capital
• bonding vs. bridging capital

National Standards Addressed
National Council for the Social Studies
1. Culture
3. People, Places, and Environments
4. Individual Development and Identity
5. Individuals, Groups, and Institutions
10. Civic Ideas and Practices

National Science Education Standards
F. Science in Personal and Social Perspectives

National EfS Standards
2.1 Interconnectedness: Systems thinking
2.3 Economic Systems: Triple bottom line
2.4 Personal and Cultural Systems: Social justice
3.1 Personal Action: Accountability
3.2 Collective Action: Organizational and societal change skills and strategies

Materials/Preparation
Handout: Interest Groups, 1 per student
Handout: Proposal for Summit of Interest Groups, 1 per group of 5 to 6 students
Activity—Day 1

Introduction

1. On a blank sheet of paper, ask students to list their top 5 favorite activities to do in their spare time, with 1 being the highest ranked activity. Ask them what they might want to do if they had a free day all to themselves. These can be very general, such as music, shopping, sports, cooking, hiking, or reading. Inform students that these lists will not be shared with the class and ask them to work in silence, without discussing their choices to those around them. Have students take a little time to consider what genuinely interests them.

2. After about 5 minutes, collect the lists.

3. That night, or before moving on to the next part of the activity, use the students’ responses to group them according to common interests. Each group should have 5 to 6 members. Where interests do not overlap directly (one student writes “choir” and another writes “hip-hop”), place students in a broader category (“music”).

- **Note:** One goal for this activity is to build social capital by forming new groups around common interests. As much as possible, place students in groups that mix various social groups.

Activity—Day 2

Introduction

1. Announce the groups and their members. Explain that today groups will begin by examining what draws each of them to their common interest.

2. Pass out the worksheet *Interest Groups* to all students, and ask them to take 5 minutes to answer the first question on the worksheet by themselves.

Steps

1. After 5 minutes, ask students to get into their new groups and discuss their answers to question #1, then complete the rest of the worksheet by working together.

2. Let them know that the last 2 parts of question #2 (c and d.) will be a springboard for them to actually plan a way to share their interest with other students. As students begin planning ways to share their interest with the rest of the class, circulate to keep an ear out for ideas that may be impossibly difficult given the resources and time they have to work with. Encourage these students to find ways to do something similar or better that will be more feasible.

3. With 20 to 25 minutes left in class, pass out 1 copy of the *Proposal for Summit* worksheet to each group. Inform students of the date of the summit at which each group will share their interest with the rest of the class. Give students the remainder of the period to submit it to you for revisions (if necessary) and then your final approval.

- **Note:** These proposals can be literally anything; it is entirely up to you to determine how much latitude you want to give student groups.

4. In the week before the Summit of Interest Groups, use the information on the proposals to establish a schedule of events for the day of the festival. Allow 15 minutes at the end of class for overrun and discussion. Post this schedule for the students a few days prior to the event.
Activity—Day 3

Steps
1. According to the schedule, have each group share their interest with the others.
2. With about 15 minutes left in class, go into discussion using the questions below.

Discussion Questions
1. What events in your city or community are similar to the summit we just created (i.e., 1 or more groups showing the rest of the community what binds them together)?
2. Connections between people can be described as either as bonding (connections among people in a group) or bridging (connections between people from different groups). Which grew more as a result of this experience: your bonding or bridging connections? How would you work to build the other type of connections?
3. Both bonding and bridging connections are important forms of social capital. Why do these connections help things get done in a community? Can you think of a specific situation where these connections would be essential?
4. Aside from helping people work together, how do bonds within and between groups prevent some problems (like crime, malnourishment, and unemployment) from arising in the first place?
5. Are there any issues in the classroom that you feel are less of a problem in the aftermath of this activity?
6. What can we do as a class or school to build further social capital?
# Interest Groups

**Name:** 

**Interest Group:**

1. Please answer the questions below on your own:
   a. What draws you to your interest?
   
   b. How and when did you first get interested in it?
   
   c. Did someone introduce you to it? If so, who?
   
   d. How have your reasons for being interested in it changed over time?

2. Please answer these questions in your group:
   a. Before today, did you know that the people in your group shared your interest? Take a guess as to why or why not.
   
   b. Working together, come up with a description of what draws all the people in your group to the same thing.
   
   c. What ways can people not previously connected with your interest experience it?
   
   d. Brainstorm ways that you could share your interest with other people in a public setting.
Proposal for Summit of Interest Groups
Deadline for Applications is End of Class Today

Interest Group name: ________________________________________________________________

Members: _________________________________________________________________________

Date of Festival: __________________________________________________________________

Type of activity proposed (circle one):

participatory activity      show/live demonstration      give-away/handout

other (please describe): _______________________________________________________________________

Time required for activity (not to exceed 15 minutes): ________________________________

Resources/materials required for activity (please note source for each resource/material):

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

Explanation of activity (please describe how your group will effectively share your interest with the public):

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

Proposed preparation schedule (please include a date for each step in preparing your activity, as well as information about where and by whom that step will be completed):

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________

________________________________________________________________________________________
Activity 2: Putting Our Community on the Map

Overview
In groups, students create representational maps of their school and the surrounding community to conceptualize and understand interrelations among neighborhood resources, the environment, community, and sustainability. Students then brainstorm specific ways to make the school’s neighborhood more sustainable through improvements to the physical environment and revise their maps to reflect these enhancements. A homework assignment asks students to assess the availability of important resources near their homes. In an extension activity, students present their ideas to community stakeholders.

Objectives
Students will:
• create maps to illustrate key features of their school and surrounding neighborhood environments
• generate ideas for increasing the sustainability of their school community
• evaluate access to critical resources in their home neighborhoods

Inquiry/Critical Thinking Questions
• What are features of a sustainable community?
• How could the sustainability of your community resources be improved?

Time Required
Two 50-minute classes with additional time for homework between Day 1 and 2

Key Concepts
• sustainable communities
• community planning
• community resources
• asset map

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
5. Individuals, Groups, and Institutions
National Science Education Standards
F. Science in Personal and Social Perspectives
National Efs Standards
2.2 Ecological Systems: Urban Design/Land Management
3.2 Collective Action: Community-based and Societal Decision-making

Materials/Preparation
Butcher paper, 1 sheet for each group of 3 to 4 students
Pencils
Marking pens
(Optional) Additional drawing supplies, such as erasers and rulers
Internet access
Activity—Day 1

Introduction
1. Ask students the following question: What is the purpose of a map? (In general, maps show how things are related)
2. Tell the class that they are going to create a "representational map" of their school and its surrounding community.
3. Review the word "community" with students. What is a community? (A community often involves a group of people living in a particular location)

Steps
1. Divide the class into groups of 3 to 4 students. Provide each group with a sheet of butcher paper, pencils, and other drawing supplies (rulers, erasers, etc.).
2. Their task is to draw their school and the neighborhood that surrounds it. Tell students that a representational map like the one they are going to draw does not need to be accurate—in fact, a two-dimensional map of Earth's curved surface will never be accurate. Their maps should show relative spatial relationships rather than exact distances. For example, a post office that is 4 blocks away from the school should be farther away from the school on the map than a park that is 2 blocks away.
3. On the map students should clearly label things that are important to them and/or that they think are important to the community. Note that different groups will draw maps that include (or omit) different attributes of the neighborhood. The maps may be of varying scales and may be drawn from an aerial or other viewpoint.

Optional: If time permits, lead the class on a walk around the school grounds and surrounding neighborhood to identify physical features of the community such as streets, buildings, and green space.

4. Ask each group to briefly present their map to the class. They should explain why they included certain things (or omitted other things) and discuss why they chose to orient the map the way they did.
5. Assign them the following homework assignment, asking them to complete it before the next day's activity.

Discussion Questions
1. Are there places, resources, or streets that every group included in their maps? What are they? Why do you think that every group included them?
2. Are there things that some groups included in their map that others did not? Why do you think this happened? (People relate to space in different ways. For example, if you've never been to any stores on a certain street, you might choose not to include them on a map.)

Homework
Count and list all of the resources within the following categories that are within walking distance of your home (approximately 1 mile):

- Transportation (bicycle shops, gas stations, bus stops, bike lanes)
- Recreation (parks, playgrounds, sports facilities)
- Food (supermarkets, farmer's markets, convenience stores, community gardens)
- Healthcare (emergency rooms, hospitals, doctors' offices, dentists)

If students live in a rural area where none of the aforementioned places are located within walking distance, expand the area for the resource inventory to 5 or 10 miles.
Activity—Day 2

Introduction

1. Review homework results—ask students what they consider to be the best features of their neighborhoods, as well as what could be improved.

2. In a think-pair-share activity, have students create a list with a partner of 5 to 10 components of a sustainable community. Ask student pairs to first develop their own definition of “sustainable community.” With that definition in mind, they can brainstorm 5 to 10 specific features of a sustainable community, including physical features, governance structures, and community services. Allow 5 minutes for this part of the activity.

3. Have each pair share their list with the entire class. Compile all suggested sustainable community components on the board.

4. Ask the class to share their opinions about how sustainable they consider their community or neighborhood. Does their neighborhood have any of the features the class brainstormed?

Steps

1. Reconvene student groups from Day 1 with their pencil-drawn maps.

2. Ask them to discuss specific ways of enhancing the sustainability of their school and surrounding community. Challenge them to think of at least 5 specific ways that the environmental health, social well-being, and economic prosperity of their school neighborhood could be increased through improvements to the physical environment. They will need to identify specific things that would promote environmental, social, and/or economic sustainability within the community.

3. Pass out colored marking pens. Now ask student groups to make their proposed changes to their original maps in order to create maps of how they want their school community to look. Completed maps should be in full color. Allow approximately 30 minutes for this part of the activity.

4. Display the completed color drawings around the room, and allow students to do a short art walk around the room to see each group’s map.

5. Reconvene the class and ask them the following questions.

Discussion Questions

1. What are your greatest sustainability concerns related to the environment surrounding the school?

2. How could those concerns be addressed (e.g., school policies, government policies, neighborhood organizing, changes in physical infrastructure)?

3. How can you, as students, be the driving force for those improvements?

4. What are possible negative consequences of the changes you proposed?

Civics Extension

Invite 1 or more community stakeholders, such as a city planner, an environmental engineer, a member of city council, a developer, an owner of a local business, or a resident, to visit your classroom. Ask what sustainability means to them. Have students present their ideas for making their community more sustainable. Ask the invited guests to give feedback on students’ ideas. Are the proposed changes feasible? Have any of these ideas been suggested before? Are there community groups already working on these issues?
Activity 2: Putting Our Community on the Map  continued

Additional Resources

• **Website:** *American Planning Association*
  
  www.planning.org
  
The American Planning Association (APA) is a nonprofit public interest and research organization committed to urban, suburban, regional, and rural planning. On their site you will find information for professional planners, educators, and students about community planning. They also publish *Resources Zine*, an online newsletter with feature articles and ideas for involving youth in planning efforts.

• **Website:** *Environmental Justice Geographic Assessment Tool*
  
  http://epamap14.epa.gov/ejmap/entry.html
  
The Environmental Justice Geographic Assessment Tool, presented by the U.S. Environmental Protection Agency, allows users to investigate links between environmental hazards and demographic features of a geographic area, such as population density, per capita income, and percent of people below the poverty line.

• **Website:** *Walk Score*
  
  www.walkscore.com
  
  Walk Score provides users with a measure of how many amenities are located within walking distance of a given address. Type in any address and find nearby grocery stores, movie theaters, schools, parks, libraries, fitness facilities, and more.
Activity 3: Fixing Up the Neighborhood

Overview
In groups, students consider common challenges to community well-being. After identifying underlying problems, considering solutions, and evaluating available resources, they determine solutions to put their hypothetical community on a course to sustained well-being. Students will consider both positive and negative repercussions for their proposed community development schemes.

Objectives
Students will:
• understand some problems common to communities in developed nations
• identify root causes of observed community problems
• determine points of intervention to alleviate community issues

Inquiry/Critical Thinking Questions
• What root causes result in community problems?
• What resources within a community can be useful for community development?
• What are unintended consequences of community development measures?

Time Required
One 45-minute class

Key Concepts
• systems intervention
• community assets
• root causes/underlying structures
• unintended consequences

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
5. Individuals, Groups, and Institutions
10. Civic Ideals and Practices

National Science Education Standards
F. Science in Personal and Social Perspectives

National EfS Standards
2.1 Interconnectedness: Systems Thinking
2.2 Ecological Systems: Tragedy of the Commons
2.2 Ecological Systems: Environmental Justice
2.3 Economic Systems: Poverty
2.4 Social and Cultural Systems: Social Justice
3.2 Collective Action: Organizational and Societal Change Skills and Strategies

Materials/Preparation
Cards: Neighborhoods in Need of a Fix, 1 card per group of 5 students
Handout: Fixing up the Neighborhood, 1 copy per group

Activity
Introduction
1. Ask students to consider the things in their community that are going well. What places, resources, or structures do they think contribute to the quality of life in your community?
2. Now ask them to consider what things they think could be improved. Is crime a problem in your community? Racial or ethnic tensions? An aging population without sufficient services for the elderly? Lack of safe places for children to play?
3. Let them know that they will be working to identify underlying structures (or root causes) that drive common problems within communities.
Activity 3: Fixing Up the Neighborhood  continued

Steps
1. Break students up into groups of no more than 5 students each.
2. Give each group a Neighborhoods in Need of a Fix card and a copy of the handout, Fixing Up the Neighborhood.
3. Ask 1 person in each group to read the card aloud to the group.
4. Together, each group should work through the questions on the handout.
5. Leave about 10 minutes for each group to briefly present the community problem their group addressed, 1 or more possible root causes for this problem, and 1 solution that would likely alleviate the problem.

Discussion Questions
1. In what ways does considering the root cause of a problem drive the solution that you chose? How would your solution have differed if you were only trying to address the symptom(s) of the problem?
2. Why is it important to consider unintended consequences of community development decisions?
3. Do any of the problems considered in your groups correspond to problems in our community? Do you think the solutions proposed would work in our community? Why, or why not?
4. What, if any, are challenges to community development efforts in our community? How could these challenges be overcome?

Additional Resource
• Documentary: Edens Lost & Found  http://www.pbs.org/opb/edenslostandfound/
This 4-part video series PBS series from 2007 showcases community development in 4 cities: Seattle, Chicago, Philadelphia, and Los Angeles. Information about these efforts, along with photographs, is available free on the PBS site.
Neighborhood #1
Graffiti has become a common sight in your neighborhood. People have spray painted words and images, some attractive but most unsightly, on all sorts of public and private buildings. Most of the graffiti occurs on structures that are abandoned: an old fence outside a vacant home, the front of a factory that was shuttered several years ago, the side of a crumbling railroad bridge. Community residents are growing weary of this graffiti, which covers more surfaces every day. Because no one is taking care of these empty structures that are getting tagged with graffiti, very little of the graffiti has been removed.

Neighborhood #2
Break-ins are on the rise in your working class neighborhood. Many people who live in the neighborhood work long hours; some even work 2 jobs. Most neighbors do not know each other well; what little free time they have is spent at home, watching television with their families. More and more residents are coming home to find their homes have been broken into. People have reported theft of electronics and jewelry. Residents are beginning to be suspicious of each other, wondering who among them is breaking into their homes when they are away at work.

Neighborhood #3
It is becoming increasingly difficult to find food in your neighborhood. You used to be able to get groceries at several nearby stores, but one by one, they have all closed. Now the only sources of food in the neighborhood are corner stores that sell snacks and drinks. In a pinch you can buy sodas, snack food, and candy at these stores. Unfortunately, they do not carry basic items that you need, like bread, milk, and eggs. To get those items, you have to travel to a supermarket that is 10 miles away. For people with cars, this is not so bad. However, there is no public transportation that goes directly to this supermarket. The city bus stops half a mile away from the grocery store.
Neighborhood #4
There are many young people living in your neighborhood, yet there is no elementary school in the neighborhood. Most of the children from your neighborhood attend school a few miles away. The school bus picks them up in the morning and brings them back home in the afternoon. In the afternoons, many of these children—some as young as 10 years old—let themselves into their empty homes while their parents are away at work. There is no community center or other place for them to stay during the afternoons. Some of the children roam the neighborhood streets and sidewalks, unchaperoned, in the afternoons. Recently, some of them have been caught in illegal activities, including defacing property with graffiti and shoplifting from the corner store.

Neighborhood #5
Your neighborhood has more and more retired people every year. Because there are not many jobs in the immediate area, many young adults have moved their homes and families elsewhere. The aging population in your neighborhood has particular needs. Some elderly people, still living in their homes, are unable to drive to the nearest supermarket, which is more than 10 miles away. These housebound community members are often unable to care for their homes and lawns, which causes the neighborhood to look run-down. The declining property values are a deterrent to would-be homebuyers. There is a pricey apartment building for seniors in your community, but many elderly people either do not want to leave their homes or are unable to afford the steep apartment rent.

Neighborhood #6
Ten years ago, most of the people in your small community were from fairly similar backgrounds. They grew up together, had similar careers and incomes, liked to do similar activities, and generally took pride in their community. Since a meat packing plant opened nearby a few years back, more and more people have been moving into your community. The mostly low-wage jobs at the plant are not attractive to most people who grew up in the community. The people who are willing to do these jobs are often immigrants from other communities, some even from other countries. Now there are people in the community who do not even speak English. These new people mostly stick to themselves, and the long-time community members have not been very welcoming.
Fixing Up the Neighborhood

Group members:

1. What are the symptoms that suggest your community is in need of a “fix”?

2. Who in the community is affected *directly* by this problem?

3. Who in the community is affected *indirectly* by this problem?

4. What are underlying problems or root causes that can be addressed to improve the community’s well-being?

5. What existing community resources might be useful in assisting with community development?

6. What additional community resources would be helpful to implement a community development project?

7. What is one solution that would address the root cause of your community’s troubles?

8. What are the anticipated positive results of this solution? List at least two possible positive results.

9. What are possible unintended consequences of your solution? List at least two possible negative results.
**Activity 4: School Community Assessment**

**Overview**
Using the assessment skills they have gained in previous activities, students participate in a town hall style community development activity with faculty, administrators, and staff from their school. In the process, they identify problems they see in their own lives and experience the community development process first hand.

**Objectives**
Students will:
- assess their own school’s problems and challenges
- take the first step in developing their class as a community
- experience a real-life example of the community development process
- determine ways to communicate ideas to diverse stakeholders

**Inquiry/Critical Thinking Questions**
- How can multiple stakeholders be included in community development efforts?
- How does voicing concerns as a group contribute to community development?

**Time Required**
One 60-minute class

**Key Concepts**
- assessment
- community development
- feedback loops

**Materials/Preparation**
Board/easel with large pad of paper, 1 per group of 6 students
Set of 3 to 4 colored markers, 1 per group
School staff, faculty, or administration member—recruit 1 of these stakeholders for each student group
Handout: School Council, 2 per group
(Optional) Seattle Youth and Families Initiative
http://youthandfamilies.seattle.gov/
This 6 minute video is an example of the Town Hall format that participants will be using in this exercise.
(Official) Data projector with laptop that has access to Internet, to display the video

**National Standards Addressed**

**National Science Education Standards**
F. Science in Personal and Social Perspectives

**National EFS Standards**
2.2 Ecological Systems: Environmental Justice
2.3 Economic Systems: Poverty
2.3 Economic Systems: Triple bottom-line
2.4 Social and Cultural Systems: Social Justice
3.1 Individual Action: Personal Change Skills and Strategies
3.2 Collective Action: Public Discourse and Policy
3.2 Collective Action: Organizational and Societal Change Skills and Strategies

**National Standards Addressed**
National Council for the Social Studies
3. People, Places, and Environments
4. Individual Development and Identity
7. Production, Distribution, and Consumption
10. Civic Ideals and Practices
Activity 4: School Community Assessment  continued

Activity

Introduction

1. Welcome all visitors (the school staff, faculty, and administration members that you invited).

2. Describe the goal of the day: to assess the school in terms of community development opportunities.

   • Note: Recall that assessment involves determining the problems that face the community as a whole. Assessment may mean simply recognizing that many people in the community share a common vision of what needs to be done, or may involve educating them about a problem that they were not previously aware of, such as the health hazard posed by a common construction material like lead plumbing.

3. Remind everyone that the goal/product of community development is a community that can work together effectively. Ask students to brainstorm how identifying common problems can help develop a community’s ability to work together.

4. Tell everyone that today they will be participating in a town hall style meeting and assessing the needs of their community. They will be tasked with crafting a vision of what school community members want the school to look like in 2 years.

   Option: Show the video “Seattle Youth and Families Initiative,” explaining that this is an example of assessment that got a community working together.

Steps

1. Divide the class into groups of approximately 7, including 1 faculty, staff, or administrator in each. Make sure that each group has 1 writing surface (board or easel) and set of markers.

2. Designate 2 students to be the facilitator and note-taker within each group. The facilitator will make sure that everyone understands the activity and that all participants in the group have a chance to share their opinion. The note-taker will summarize and write down ideas shared by group members. (More specific directions are included on the handout, School Council.)

   • Note: Do not use your classroom guests as facilitators or note-takers.

3. Give a copy of the School Council handout to each facilitator and note-taker, and have them go over the ground rules with the group.

4. Call for everyone’s attention. Remind them that this meeting is intended to help craft a vision of what school community members want the school to look like in 2 years, as well as identify what obstacles stand in the way of that vision. Introduce the facilitators, and hand the meeting over to them.

5. Give the groups 20 to 25 minutes to work through the steps on their School Council handout.

6. After that time, call the class back together and have each note-taker read their group’s answers to question #1, while the other note-taker(s) circle items on their lists that match up with those being read.

7. Using the items that appeared on both lists, create a single page that captures the most important issues facing the community. You may put this page together, or you may ask a student to do this.

8. Continue sharing answers to the other questions. On the single page you constructed to capture the most important issues facing the school community, record the obstacles and resources relevant to addressing those issues.
9. Close by trying to come up with a short (2- to 3-sentence) vision statement for the school that everyone can agree on.

10. Thank everybody for their participation. Ask them with whom they might share these lists, to motivate others to help fulfill their vision. (e.g., parent–teacher council)

11. Move into discussion questions, with the teachers, staff, and administrators still present.

Discussion Questions

1. How did sharing your problems with each other change the way you saw those problems?
2. What common issues were affecting several people in each group?
3. What processes drive those recurring patterns in the community?
4. Recall the idea of feedback loops. How did your proposed solutions attempt to break these loops? How might you address other parts of the cycle at the same time?
5. How does identifying common problems make it easier to address those problems as a community?
6. Would a different format for this meeting have been more effective? In what way?

Additional Resources

- **Website: The Free Child Project**
  [http://freechild.org/youth_activism_2.htm](http://freechild.org/youth_activism_2.htm)
  The Free Child Project provides descriptions of and links to youth-led social activism organizations and examples from around the nation.

- **Website: The Global Youth Action Network**
  [http://gyan.tigweb.org](http://gyan.tigweb.org)
  The Global Youth Action Network’s model consists of 5 steps for youth organizing: 1) awareness, 2) action & recognition, 3) networking, 4) collaboration & trust, and 5) participation in decision-making.
**School Council**

**Facilitators:** Your job is to facilitate this process by leading your fellow group members through the following questions, as well as moderating their discussions.

**Ground Rules for Discussion**

1. Only 1 person may speak at a time.

2. The order of speaking is determined by a queue that is kept by the facilitator.
   a. To get in the queue, a resident can raise their hand at any time. The facilitator should acknowledge them so they can put their hand down.
   b. When a resident finishes speaking, the facilitator should immediately invite the next person in the queue to speak.
   c. If there is no one in the queue, anyone may speak. If more than 1 person wants to speak in this situation, the facilitator should place them in a new queue.

3. Discussion about any question can continue as long as at least 3 people want to talk about it.
   a. This could mean that the entire session is spent addressing 1 question.
   b. You should not feel a need to get through every question. Move through the questions at whatever pace is appropriate for the group.

4. After a person speaks at length about something, the facilitator should:
   a. Restate what they said in a few words.
   b. Ask if that is an accurate description of their view, and invite them to revise if need be.
   c. Have the note-taker write down the short description only.

**Guidelines for Note-Takers:** For each of the questions below, create a list of short, concise answers from your group.

**Questions for the Group**

1. What do you see as the school’s most vital need? Is there a personal experience that you can share to support your view?

2. What obstacles are standing in the way of fulfilling these needs?

3. What feedback loops is each obstacle linked into?

4. What resources does the school have that could help create ways around these obstacles?

5. What does the school need from the district to fulfill this need?

6. Are there other outside organizations that could help?

7. What is your vision for the school 2 years from now, in regards to the vital need you identified?
Chapter 23
Sustainable Design

CHAPTER BIG IDEAS

■ An environment built sustainably supports thriving communities.
■ Creating infrastructure to support sustainable communities involves planning, design, construction, operations, and maintenance.
■ Ecological principles can be applied to the built environment to reduce environmental impacts of infrastructure.
Guiding Questions
• How can built environment be sustainably designed?
• How can sustainable design revitalize a community?
• What can individuals do to create more sustainable environments?

Key Concepts
• sustainable design
• green building
• biomimicry
• infrastructure
• passive solar design
• population density
• urban planning

Supporting Vocabulary
• the built environment
• thermal mass
• sustainable development
• Cradle to Cradle®
• compost
• neighborhood
• grey water

Service Learning Component
Service Learning Project Idea:
• Question: How can we help create healthy, sustainable learning environments for today’s youth?
• Hook Resource: We Learn Here and Where We Learn Matters. [Link]
  In both the 2 minute and 1 minute versions of this Center for Green Schools video, elementary students promote the idea that where they learn matters.
• Project: Students will perform a sustainability audit of a local elementary school and encourage young people to develop green behaviors. Divide the class into small groups and have each group create a checklist for different topics such as: energy, water, waste, transportation, indoor air quality. Students can perform the audit of the elementary school and present the results with suggestions to the school’s administration. In an assembly, students can teach the elementary students how to keep their campus green.
• Additional Resources
  • Website: The Center for Green Schools [Link]
    This site provides resources and suggestions for greening your school and explains the benefits.
  • Websites: ECOaudit USA, ECOaudit [Links]
These sites have educational tools that help youth create sustainable communities. The ECOaudit USA program was inspired by the Shanghai Roots & Shoots ECOaudit program. This website provides information about their programs, trainings, and sample audit forms.

- **Interactive Game:** *In MySusthouse: Introduction*
  - [http://www.mysusthouse.org/game.html](http://www.mysusthouse.org/game.html)
  Students can view a short video on topics such as location, energy use, and water consumption. They then are asked to determine the most sustainable behaviors to earn sustainability points.

- **Website:** *Green Ribbon Schools*
  - [http://www.greenribbonschools.org](http://www.greenribbonschools.org)
  This program awards schools for creating healthier and environmentally friendly school environments. To qualify, schools must participate in activities that address 1 of the following topics: Eco-Campus, Health & Fitness, Nature Adventure, or Natural Classrooms.

- **Website:** *Green Homes*
  - [http://www.epa.gov/greenhomes/index.htm](http://www.epa.gov/greenhomes/index.htm)
  This U.S. EPA website provides information on how to green each room of a house.

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**Project Based Learning Component**

**Project Based Learning Idea:**

- **Overview:** The class will identify a need or opportunity in their own communities for greater sustainability. Students will create a proposal for the design of new structure or redesign an existing structure in their community that would foster greater social, environmental, and/or economic sustainability.

- **Driving Question:** How could sustainable design respond to a need or opportunity in our own community?

- **Hook Resource:** *Designing a Great Neighborhood: Behind the Scenes at Holiday*  
  This 54-minute film, directed by David Wann and produced by Greening America Productions, shows a model co-housing project in which residents participated in the design of their own neighborhood and mixed-use and mixed-income buildings are utilized. The 3-minute clip can also give students a general overview of this project.

- **Individual Project:** Individuals will choose an opportunity or need that they feel needs to be addressed in their community. They can research how other communities have addressed similar needs through design or redesign. Using the steps of the design process as a template, students can outline the steps that could be taken to make this project happen and share it with the class.
• **Group Project:** In groups, students can choose 1 need or opportunity to address through sustainable design. They can solicit community input through surveys or at a town meeting. Groups will use the design process to create a proposal and can connect with architects or engineers in the area to review their proposal. Students will redesign and submit or present their final idea to community members.

• **Additional Resources**
  • **Website:** *Popularise: Build Your City*
    [http://www.spontaneousinterventions.org/project/popularise-build-your-city](http://www.spontaneousinterventions.org/project/popularise-build-your-city)
    This online tool allows builders and developers to post information about a project—and community members can provide input and show support.
  
  • **Website:** *Walkscore*
    This site provides the “walkability score” of a community.
  
  • **Website:** *PechaKucha*
    This presentation format, invented by architects, shows 20 images for 20 seconds each while the presenter is talking. Students could share their ideas for design with the class and/or community using this method.

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**Summative Assessment**

Chapter Test

**Connections**

**World History connections:**
Historic trends in design of buildings

**Economics connections:**
Economic benefits of sustainably designed residences; community and city design impacts on local economies

**Geography connections:**
Where building materials come from matters, global examples of green cities

**Civics connections:**
Personal and structural solutions to sustainable design issues
## Activities in Teacher’s Guide: Suggested Sequence

### Day 1

**Reading:** *Introduction to Sustainable Design*

**Activity 1: A Sense of Place**—Students visit 1 of their favorite places and make observations. In small groups, students will share with classmates, and look for patterns in their observations. Together, the group will name the 3 characteristics it feels are most important for a place to possess, and relate these characteristics to sustainable design.

### Day 2

**Reading:** *Background on Sustainable Design*

**Activity 2: Green Products Consultants**—As a class, students generate a list of products used to construct the built environment. In pairs, students assume the role of a Life Cycle Assessment expert and perform a Life Cycle Assessment for 2 different versions of a product. In pairs, students present their results to an “architectural firm” in a written report and to the class with a verbal report.

### Days 3 and 4

**Reading:** *Sustainable Design Today*

**Activity 3: Nature Knows Best**—Students will observe something in nature and identify characteristics that could be used as a model for design. They will then design a sustainable material, product, or place. Students will showcase their designs and be able to explain what makes them sustainable.

### Days 5 and 6

**Reading:** *Pathways to Progress: Sustainable Design*

**Activity 4: (re)Designing a Better World**—In small groups, students will define revitalization, resiliency, and restoration and consider why these concepts are used in the design world. The class views a video documenting 1 architect’s effort to build a community center for a community affected by a tsunami. Students will use the story to learn the steps of the design process. Students will then demonstrate their understanding of the design process by identifying the steps in another real-world example.
Discussion Questions from the Chapter Reading

**Introduction to Sustainable Design**
1. How does the built environment relate to sustainability?
2. How could designing a building to reduce negative impacts on the environment also be financially beneficial?

**Background on Sustainable Design**
3. How have sociocultural, economic, and environmental factors influenced the design of a dwelling?
4. What factors contributed to the Green Building Movement?

**Sustainable Design Today**
5. How can the walkability of a city or neighborhood contribute to the social, environmental, and economic sustainability of a community?
6. How could complete streets promote social equity in a community?
7. What are some sustainable design challenges that are unique to cities, suburbs, or rural areas?

**Pathways to Progress: Sustainable Design**
8. Why might it be important for urban planners to factor population growth into their design of a community?
9. How is Curitiba’s Garbage Purchase program a sustainable solution to waste?
Chapter Assessment: Sustainable Design, page 1

**Recall**
Match the following words on the left with their definition on the right.

1. Biomimicry a branch of architecture focused on the design and organization of urban space and activities
2. Infrastructure a field of science in which nature is used as a model to help create sustainable, human-designed products and solutions
3. Sustainable design creating products and buildings in a way that maximizes benefits to the environment, economy, and society
4. Urban planning the basic facilities and services for the functioning of a community such as transportation and water systems

**Reasoning/Explanation**
Complete the following multiple-choice questions by choosing 1 correct answer.

5. Which of the following statements provides the best evidence for the idea that sustainable design can benefit society, economy, and the environment?
   - a. Buying energy efficient appliances can help residents save money in the long run and reduce carbon dioxide emissions.
   - b. Less public transportation in a community gives residents more freedom to use personal cars.
   - c. Using human-made building materials such as asbestos can prevent human illness and save money on healthcare.
   - d. Using mechanical climate control powered by fossil fuels frees designers from the need to use natural light and air flow.

6. Which of the following characteristics best describes how the grass huts built by the African Bushmen are adapted to their lifestyles?
   - a. The huts are built to last.
   - b. The huts are rectangular.
   - c. The huts can be made quickly.
   - d. The huts are portable.
Chapter Assessment: Sustainable Design, page 2

7. Which of the following historical events **most directly** influenced the beginning of the Green Building Movement?
   a. the development of the atomic bomb
   b. the Industrial Revolution
   c. new building technologies of the 1930s
   d. the Oil Embargo of the 1970s

8. Use the graphic below to answer question 8.

```
Acquire wood material  |  Manufacture hardwood floors  |  Distribute to stores  |  Use and maintain hardwood floors  |  Send to landfill
                      |                              |                      |                                 |                      
                      | Recycle wood floors           |                      |                                 |                      
```

Which of the following phrases **best describes** the life cycle of hardwood flooring that is **not** recycled after its use?
   a. Biomimicry
   b. Closed Loop
   c. Cradle to Cradle®
   d. Cradle to Grave

9. Which of the following statements is **most likely** to occur if residents of a city used only native plants for landscaping?
   a. Planting native vegetation would probably increase strain on water infrastructure.
   b. Planting native vegetation would probably reduce strain on water infrastructure.
   c. Planting native vegetation would probably pollute the local water supply.
   d. Planting native vegetation would probably pollute the nearest ocean.

10. Town A and Town B have similar geography and population. However, Town A was designed with walkable streets while Town B was not. Which of the following would you **most likely expect from Town B** as compared to Town A?
   a. increased savings on gas
   b. less civic participation
   c. more bike lanes on roads
   d. residents that weigh slightly less
Chapter Assessment: Sustainable Design, page 3

11. Which of the following design strategies would most likely reduce the urban heat island effect?
   a. installing rooftop gardens
   b. replacing permeable asphalt with impermeable asphalt
   c. using darker colored pavements for parking lots
   d. using roof materials designed to absorb heat

12. Which of the following is most likely to be a benefit of living in a suburb community?
   a. Basic services are easily accessed by non-drivers.
   b. Participation in public life is high.
   c. Residents have larger housing.
   d. The amount of infrastructure required is low.

13. Evans Wadongo is fighting rural poverty with design. What specific community need does the design of his product address?
   a. lack of access to electricity
   b. lack of access to farmland
   c. lack of access to health care
   d. lack of access to water

14. How does Curitiba’s Garbage Purchase program help alleviate poverty?
   a. lower-income residents can turn in compost for money
   b. lower-income residents can trade in garbage for food or bus tokens
   c. money earned from selling recycled waste pays for lower-income students to go to college
   d. money earned from selling recycled waste pays for student notebooks

Application/Complex Reasoning

Answer the following short answer questions below.

15. Part A. Describe how designing a home to be passive solar can contribute to environmental sustainability.

   Part B. Describe how designing a home to be passive solar can contribute to economic sustainability.
16. The small town of Smithville has seen many changes through the years. As the town lost its mining industry, many of Smithville’s residents lost their jobs. Many people—especially young people—moved away to nearby towns or bigger cities to find better economic opportunities. While these neighboring towns have more jobs and a higher population density, they have fewer outdoor recreation opportunities than Smithville’s beautiful mountain community. Others moved to the edges of the town to find housing that was more affordable which caused businesses and social life on Main Street to decline. Most houses near Main Street are quite large and singles or low-income families are not able to afford the rent for these homes. Also, Smithville’s aging residents are having a hard time maintaining these large homes and properties.

Recently, the town received a grant from the federal government to help revitalize the community and you have been chosen as the main urban planner who will advise the community on sustainable design.

Part A. What is 1 design strategy that you would propose to revitalize this community?

Part B. Explain how this strategy could promote economic sustainability.

Part C. Explain how this strategy could promote environmental sustainability.

Part D. Explain how this strategy could promote sociocultural sustainability.
Recall (4 points total)

1. Biomimicry—field of science in which nature is used as a model to help create sustainable, human-designed products and solutions
2. Infrastructure—the basic facilities and services for the functioning of a community such as transportation and water systems
3. Sustainable design—creating products and buildings in a way that maximizes benefits to the environment, economy, and society
4. Urban planning—a branch of architecture focused on the design and organization of urban space and activities

Reasoning/Explanation (10 points total)

5. A  
6. C  
7. D  
8. D  
9. B
10. B  
11. A  
12. C  
13. A  
14. B

Application/Complex Reasoning (6 points total)

15. Part A. Answers will vary. (1 point)
   • Because fewer fossil fuels might be required to heat the home, less pollution may occur.
   • Sunlight produces no pollution.
   Part B. Answers will vary. (1 point)
   • Since sunlight is free, residents will pay less on energy bills.
   • Since these design strategies are passive and require no machinery, residents will not pay for the maintenance of mechanical systems.

16. Part A. Answers will vary. (1 point)
   • Converting large historic homes into apartments and/or businesses.
   • Move businesses back to Main Street.
   • Encourage an economy of recreation.
   • Create a hotel near Main Street to attract hikers.
   Part B. Answers will vary. (1 point)
   • Could provide people with more affordable housing and/or affordable leases for businesses.
   • Could provide more customers.
   • Invites business and economic activity from beyond the town.
   Part C. Answers will vary. (1 point)
   • Could result in less driving into town, more efficient use of 1 building, less infrastructure.
   • Could encourage appreciation and preservation of nature.
   Part D. Answers will vary. (1 point)
   • Could encourage the preservation of the town's historic buildings.
   • Could centralize community and social life.
Activity 1: A Sense of Place

Overview
Before reading the chapter, students will visit and observe 1 of their favorite places. Students will sketch and describe the place and its function, and identify all the parts of which it is made. In small groups, students will share their observations with classmates, and look for patterns in their observations. Together the group will name the 3 characteristics they feel are most necessary to create a public place that benefits its community and relate these characteristics to sustainable design.

Objectives
Students will:
• visit, observe, and describe their favorite place (or a place on campus)
• identify all the parts that make up this place and describe how these parts contribute to its overall function
• look for similar characteristics in peers’ observations relate these to sustainable design

Inquiry/Critical Thinking Questions
• How do the different elements of the built environment contribute to its overall function?
• Are there design characteristics that are replicable?
• How do these characteristics relate to sustainable design?

Time Required
One 45-minute class, plus time outside of class

Key Concepts
• sustainable design
• the built environment

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
4. Individual Development and Identity

National Science Education Standards
F. Science in Personal and Social Perspectives

National Efs Standards
2.2 Ecological Systems: Urban Design/Land Management

Materials/Preparation
Handout: The Importance of Place, 1 per student

Activity
Introduction (to be done by students before class)
1. In the days before you begin the Sustainable Design chapter, ask students to visit 1 of their favorite places that is open to the public. Make sure students choose a place that has been created by humans (even if outdoors) and where many people visit or interact. If it is not possible for the students to visit this location, then they could visit a communal space on your school’s campus.

2. Hold a brief discussion about possible locations in your region that are open to the public, that many people visit, and are safe (e.g., coffee shops, street intersections, parks, monumental buildings, etc.).

3. Give each student 1 copy of The Importance of Place handout to take with them to this location and have students write down the due date on the handout (preferably before students begin the Sustainable Design chapter).
**Activity 1: A Sense of Place continued**

**Steps**

1. Tell the class that today they will be sharing the details of their observations in small groups.
2. Explain that the groups will have 15 minutes for each member to do the following:
   - Use *The Importance of Place* handout to describe the place you visited, its purpose/function, and all the parts that are critical to its function.
   - Based on your observations, what do you think are the 3 characteristics that are most necessary to create a public place that benefits its community?
3. Arrange students into groups of 3 to 4 and give the class 15 minutes to work.
4. When time is up, ask each group to decide on the 3 characteristics they think are most necessary to create a public place that benefits its community. Have students consider whether some characteristics might have been mentioned by more than 1 person.
5. Once the class is ready, have groups share these characteristics and write them on the board.
6. Explain to the class that many people (architects, engineers, city planners) participate in the field of sustainable design.
7. Ask groups to discuss how they might define the phrase *sustainable design*? (*Creating products and buildings in a way that maximizes benefits to the environment, economy, and society.*)
8. Ask the class how the characteristics listed on the board might relate to sustainable design?
9. Use the following questions to guide a class discussion.

**Discussion Questions**

1. Sustainability can be defined as meeting current needs without limiting the ability of future generations to meet their needs. How might this relate to the design of the built environment?
2. Do you think that the buildings around you were designed with future generations in mind? Why or why not?
3. Could the design of a place encourage the preservation of culture? Could the design of a place encourage social equity? How?
4. What characteristics would you expect to find in a city that was designed with environmental sustainability in mind?
5. How might the built environment relate to local and global economics?
6. Think about your neighborhood or city. How has the design of it influenced you and your identity?

**Additional Resources**

- **Blog: Urban Sketchers**
  This blog comes from a non-profit that features artwork from artists around the world who draw on location. Click on *See the world 1 drawing at a time* to view the world through this artwork.
- **Online Video: Buildings**
  This PBS 8:21-minute video introduces viewers to different methods used to date buildings.
The Importance of Place, page 1

**Directions:** Visit a local public place that has been designed and constructed by humans (even if outside). Answer the questions below in detail and bring this handout to class by ____________________.

1. Sketch the community space you observed or attach a photo of the space below.

2. Describe the sights, sounds, and smells of this place.

   ______________________________________
   ______________________________________
   ______________________________________
   ______________________________________
   ______________________________________

3. What is the function or purpose of this place? You can list more than one, if applicable.

   ______________________________________
   ______________________________________
   ______________________________________
   ______________________________________
   ______________________________________
4. Identify all the parts that make up this place. How do these different parts contribute to the overall function of this place?

_______________________________________________________________________________________

_______________________________________________________________________________________

_______________________________________________________________________________________

5. Does the layout of this favorite place encourage any sort of interaction or activity? How?

_______________________________________________________________________________________

_______________________________________________________________________________________

_______________________________________________________________________________________

6. Based on your observations, what are 3 characteristics that are necessary to create a public place that benefits its community?

_______________________________________________________________________________________

_______________________________________________________________________________________

_______________________________________________________________________________________

7. If you could redesign this space to encourage even more benefits to the community, how would you do it? You may sketch or describe your redesign below.

_______________________________________________________________________________________

_______________________________________________________________________________________

_______________________________________________________________________________________
Activity 2: Green Building Consultants

Overview
As a class, students generate a list of products used to construct the built environment. In pairs, students assume the role of a Life Cycle Assessment expert and perform a Life Cycle Assessment for 2 different versions of a product. In pairs, students present their results to an “architectural firm,” Buildit Better, in a written report and to the class with a verbal report.

Objectives
Students will:
• generate a list of building products and consider how these products relate to sustainability
• formulate questions about the sustainability of building products to be answered through research
• identify the steps in the life cycle of 2 different building products and evaluate each step’s impacts on humans and the environment
• take the perspective of an LCA expert and produce an informative report on the sustainability of each product

Inquiry/Critical Thinking Questions
• What are the hidden impacts of different building products?
• How sustainable are different building products?

Time Required
One 60-minute class, plus time for research

Key Concepts
• life cycle assessment
• green building

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
7. Production, Distribution, and Consumption

National Science Education Standards
E. Science and Technology
F. Science in Personal and Social Perspectives

Materials/Preparation
Handout: Life Cycle Assessment: An Overview, 1 copy per student
Handout: Life Cycle Assessment: Product Comparison, 1 copy per pair of students
Internet access for student research
Optional: Invite a local architect to your class and have students present their results to the architect and receive feedback.

Activity
Introduction
1. Tell students that they will be given 1 minute to think of and write down as many products used to build homes, roads, or buildings as they can.
2. Start a timer and have students begin.
3. After 1 minute, have students place pens down.
4. Invite students to share their answers and list these materials on the board. (Some examples might include carpet, paint, concrete, asphalt, steel, glass, grass, brick, mud, and wood).
5. Ask students the following questions:
   • How could the materials and products used in the built environment relate to sustainability?
   • What would you need to know about a product such as hardwood flooring or concrete sidewalks to determine whether or not it is a sustainable product? (Encourage students to think about where this product came from, how it was produced, cost, and health impacts).
Activity 2: Green Building Consultants  continued

Steps

1. Tell students that architects (professionals that plan, design, and supervise construction of buildings) who want to design green buildings will often consult with a Life Cycle Assessment (LCA) expert to obtain advice on sustainable building materials. A Life Cycle Assessment evaluates the environmental sustainability of a product during its entire life and can be used to compare products used for building. In the next couple of days, students will assume the role of an LCA expert to assess the sustainability of different building products.

2. Provide students with the following scenario:
A local architectural firm, Buildit Better, is designing a green building in your downtown district. It will be a mixed-use building with apartments for rent and office spaces to lease on the ground floor. The firm has hired you, an LCA expert, to advise them on the selection of sustainable building materials. You and your partner will conduct an LCA on 2 different products and complete a report for the architectural firm that describes the results of your LCA.

3. Have the class return to their list of building products and consider which might be used for a mixed-use building. Some of the following could be included:

- Concrete (or the type of cement used to make concrete)
- Wood flooring (bamboo, hardwood, softwood)
- Windows
- Carpeting
- Steel

4. In Think-Pair-Share format, ask students to think about what steps might be part of a product’s (such as hardwood flooring’s) life cycle. Write down these steps on the board. For example:

![Life Cycle Diagram]

5. Choose 1 of these steps to focus on (say, manufacturing the hardwood floors).

6. In Think-Pair-Share format, ask students to consider what resources, or inputs, might be necessary this step to occur. (These inputs include things such as raw materials, energy, chemicals, and water.) Write these inputs down to the left of the Manufacture step.

7. In Think-Pair-Share format, ask students to consider what impacts, or outputs, might occur during manufacturing. (The outputs could include any emissions released to the air, water, and soil.) Write these ideas on the board to the right of the Manufacture step.
Activity 2: Green Building Consultants  continued

For example:

**Inputs:**
- Raw Material Acquisition
- Transport to Manufacturer
- Energy for Machinery and Building, Water, Coatings, and Sealants

**Life Cycle:**
- Manufacturer
- Distribution
- Use & Maintenance
- Disposal in Landfill? Combustion?
- Reuse or Recycling?

**Outputs:**
- Carbon Dioxide Emissions, Waste Water
- Energy for Machinery and Building, Water, Coatings, and Sealants

8. Hand out the *Life Cycle Assessment: An Overview* to each student and review it together.

9. Have students pair up and decide upon the products that they plan to research and assess (or assign different products to student pairs). For a fair comparison, students should compare 2 different types of the same product. Products to research and corresponding websites could include:

**Bamboo Flooring vs. Cork Flooring**
- **Website:** Sustainable Floors  
  [http://www.sustainablefloors.co.uk/](http://www.sustainablefloors.co.uk/)
  This site provides information about why one should choose sustainable flooring and comparisons of different ecofriendly flooring.

**Portland cement vs. Coal fly ash**
- **Website:** Cement and Concrete Basics  
  This website by the Portland Cement Association includes an animation of the process, which could be helpful for students who are identifying the steps in the life cycle of concrete or cement. Consider reminding students that this website is designed to promote Portland Cement.

**Nylon carpet vs. PET carpet**
- **Website:** Environmentally Preferable Purchasing: Carpets  
  [https://www.epa.gov/greenerproducts/identifying-greener-carpet](https://www.epa.gov/greenerproducts/identifying-greener-carpet)
  This section of the EPA's site provides information on the environmental attributes one should look for in a carpet and other information on “green” carpeting.

10. Once partners have decided on 2 products, give each pair a copy of the *Life Cycle Assessment: Product Comparison*.

11. Give students about 1 hour to conduct research and complete the report.

**Option:** Students could also create a poster or power point to present their results.

12. Once all partners have finished their reports, have the partners present their results to the class.

13. Follow up with a class discussion using the following questions.
Activity 2: Green Building Consultants  continued

Discussion Questions

1. Would you consider the products you researched to be designed from a cradle-to-grave perspective or cradle-to-cradle? Why?

2. What might be some of the trade-offs of choosing a more sustainable product?

3. Currently, in the U.S., most data about the environmental impact of products is collected by the manufacturers of these products (first party data collection), rather than data collection by a separate group (third-party data collection). How might this affect the conclusions made from the data collection? How might this affect comparisons between products made by different manufacturers?

4. What did you learn by conducting the Life Cycle Assessments? What are some limitations of LCAs?

5. How much influence do you think architects have in the design of green buildings? Who are some of the other stakeholders that can encourage green building?

6. Where did the materials used to make your product come from? What are the advantages and disadvantages of choosing materials and products that are local?

7. How did the costs of the products compare? Do you think the cost of the product takes into account its environmental and social impacts?

Math Extension

Lesson 12—Surface Area and Volume: Sustainable Design

This lesson can be found in Facing the Future’s Real World Math book and downloaded online (www.facingthefuture.org). Students analyze the characteristics of sustainably designed items. In a real-world application exercise, students calculate the surface area and volume of a prism and a cylinder to connect geometric properties to sustainable design principles. A closing discussion raises questions about the applicability of sustainable design to different situations, as well as its social and economic impacts.

Additional Resource

• Website: Sustainable Source
  http://sustainablesources.com/
  The Sustainable Sources website provides information about green building materials, recycle and reuse of building materials, etc.

Life Cycle Assessment (LCA)
An Overview

Step 1: Defining Goals & Scope
The first step of an LCA involves clearly defining the goals and scope of the assessment. Information that is included in this first step includes answers to the following questions:
Why are you conducting this assessment? What product(s) are you evaluating and for whom is the LCA being conducted? What questions about these 2 products are you trying to answer? What impacts are you assessing (e.g. how much energy is used in the life cycle of each product, the amount of water used in the life cycle of a product, or how much carbon dioxide is emitted in the life cycle of a product)? What scale are you measuring (e.g., the use of the product in 1 room of a home, or the use of the product in each office of a high rise)?

Step 2: Inventory Analysis
The next step of the LCA involves data collection or research. First, all the steps in the life cycle of the product(s) are identified. Then, a list of inputs and outputs is created for each step. These inputs include any raw materials, energy, chemicals, and water necessary to perform this step. The outputs include any emissions released to the air, water, and soil as a result of each step as well as any products or co-products generated. Ideally, these inputs and outputs are quantified.

Step 3: Impact Assessment
The Impact Assessment describes how the inputs and outputs from all stages of the life cycle of a product affect humans and ecosystems. The affects can be grouped into the impact categories chosen to assess in Step 1 (e.g. energy, water, CO2).

Step 4: Interpretation and Results
During this phase of the LCA, the results of the inventory analysis and impact assessment will be clearly reported and the questions stated in Step 1 of the LCA will be answered. Recommendations can also be made on how to improve the sustainability of a product’s life cycle and a new life cycle analysis can be conducted, if desired.
Life Cycle Assessment (LCA)  
Product Comparison, page 1

Step 1: Defining Goals & Scope
What 2 products are you evaluating?

For whom is the LCA being conducted?

What questions are you trying to answer with this LCA?

What impacts are you assessing?

What is the scope of this assessment?

Step 2: Inventory Analysis
On a separate sheet of paper, draw the life cycle of your product(s). Then list all of the inputs necessary for each step of the life cycle and the outputs that are released by each step of the life cycle. Attach the drawing to this report.

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Life Cycle Assessment (LCA)
Product Comparison, page 2

Step 3: Impact Assessment
How could the inputs and outputs listed in Step 2 affect humans and ecosystems?

Step 4: Interpretation and Results
Please clearly answer the questions stated in Step 1 and describe any conclusions you can draw from this LCA. What are the pros and cons of both products? Is there anything that the architects designing the building could do to make these products more sustainable? How do the costs of these products compare?

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Activity 3: Nature Knows Best

Overview
Students will observe something in nature and identify characteristics that could be used as a model for design. They will then design a sustainable material, product, or place. Students will showcase their designs and be able to explain what makes them sustainable.

Objectives
Students will:
• identify characteristics in nature that could be useful for a process, material, product, or place
• use these characteristics to design a sustainable material, product, or place
• showcase their final product and be able to articulate why it is sustainable

Inquiry/Critical Thinking Questions
• How can nature serve as a model for design?
• Where do design opportunities exist to increase sustainability?

Time Required
Two 45-minute classes

Key Concepts
• biomimicry
• sustainable design

National Standards Addressed
National Council for the Social Studies
3. People, Places, and Environments
8. Science, Technology, and Society

National Science Education Standards
E. Science and Technology
F. Science in Personal and Social Perspectives

National EfS Standards
2.1 Interconnectedness: Cradle-to-Cradle Design
2.2 Ecological Systems: Biomimicry

Materials/Preparation
Optional: pieces of Velcro, 1 per pair of students

Activity—Day 1

Introduction
1. Write the word biomimicry on the board and ask students if they know what it means. Encourage students to separate the word into bio- and mimicry.
   • bios (life)¹
   • mimesis (imitate)
   • biomimicry (a field of science in which nature is used as model to help create sustainable, human-designed products and solutions)
2. Display a picture of Velcro on the board and ask students to observe the design.
   Option: Hand out a piece of for every 2 students and have students examine and sketch the 2 different sides of Velcro.
3. Ask the class if anyone knows what object in nature inspired this material? (The burdock burr is a seed with hundreds of hooks that catch onto fur or clothing. Georges de Mestral was a Swiss engineer that used this burr as inspiration to create the material known as Velcro²).

Steps
1. Explain to students that they will use an object from nature to inspire the design of a sustainable material, product, place, or process. Examples of each could be:
   - Process: the disposal, pickup, and transport of waste to a landfill
   - Material: plastic used to cover binders
   - Product: rock climbing shoe
   - Space: home, or city
2. Hand out *Nature Knows Best* to each student and review the instructions.
3. Allow students at least 1 class period to research and design their product.

Activity—Day 2

Steps
1. Have students post their work around the classroom.
2. Divide the class into groups of 3–4.
3. Have these groups travel around the room together to view projects. When the group reaches a project by 1 of their members, they should allow the member to explain their project and accept questions from the group.

Discussion Questions
1. Where did you find inspiration in nature?
2. How can nature serve as a model for design?
3. What impact do most of the products we buy have on nature?
4. Imagine a forest ecosystem. How does this natural system deal with “waste” such as dead leaves or animals? How could you use this as a model to redesign the packaging for many of the products we buy?

5. Where do design opportunities exist in your community and in our world to increase sustainability?

Technology Extension
Students can create their design with software such as Microsoft Paint (less advanced technological skills required) or SketchUp (more advanced technological skills required).

Additional Resources
- **Interview:** *A Conversation with Janine Benyus*
  This written interview is with the co-founder and board president of Biomimicry 3.8. In this interview, Benyus defines biomimicry and describes how it can be used in design today.
Nature Knows Best

Directions: Choose an object from nature to study and follow the steps below to design a sustainable product.

1. Attach a sketch or photo of an object from nature that will inform your design.

2. Identify the characteristics that make this object sustainable and explain how it could be used as a model for design.

3. Attach a sketch or create a model of your sustainable material, produce, place, or process.

4. What need or opportunity does your design address?

5. How is your product an example of biomimicry?

6. How is your product an example of sustainable design?

7. Sketch the life cycle of your product from Cradle to Cradle.®
Activity 4: (re)Designing a Better World

Overview
In small groups, students will define revitalization, resiliency, and restoration and consider why these concepts are used in the design world. The class views a video documenting 1 architect’s effort to build a community center for a community affected by a tsunami. Students will use the story to learn the steps of the design process. Students will then demonstrate their understanding of the design process by identifying the steps in another real-world example.

Objectives
Students will:
• propose how revitalization, resiliency, and restoration relate to thriving communities
• analyze real-world examples of design and identify different steps in the design process

Inquiry/Critical Thinking Questions
• What opportunities exist to incorporate greater sustainability?
• How can sustainable design revitalize a community?

Time Required
Two 60-minute classes

Key Concepts
• urban planning
• sustainability
• design process

National Standards Addressed
National Council for the Social Studies
1. Culture
3. People, Places, and Environments
7. Production, Distribution, and Consumption
8. Science, Technology, and Society
9. Global Connections

National Science Education Standards
E. Science and Technology
F. Science in Personal and Social Perspectives

National EFS Standards
2.2 Ecological Systems: Urban Design/Land Management
2.3 Economic Systems: Ecosystem Services
2.4 Social and Cultural Systems: Appropriate Technology
3.2 Collective Action: Community-Based and Societal Decision-Making Responsibility

Materials/Preparation
Handouts: (re)Word of the Day, 1 copy/word per group

Internet Access
Online Video: India: Design Like You Give a Damn
http://www.pbs.org/frontlineworld/stories/india705/
This 11-minute PBS video shows how 1 architect responded to the 2004 Indian Ocean Tsunami by helping a community in Tamil Nadu, India rebuild itself for a sustainable future. There is an accompanying transcript that can be read in place of watching the video or as support for viewing the video.

Alternative Online Video: Learn More about Project Haiti
http://www.usgbc.org/haiti/haiti.html
This 5-minute video describes how the U.S. Green Building Council and HOK are helping to rebuild the Haïti Orphanage and Children's Center after the 2010 earthquake.
Activity 4: (re)Designing a Better World  continued

Activity—Day 1

Introduction

1. Ask the class if they have any experience rearranging a room at home or school. How did the experience affect them? What if you did this on a larger scale (like redesigning a building or neighborhood)?

2. Tell students that they are about to consider how redesigning some aspects of a community can encourage greater sustainability.

3. Divide the class into 3 groups and have each group gather. Depending on class size, you could have multiple groups working with the same word.

4. Provide each group with 1 of the (re)Word of the Day handouts (each group should have a separate word) and explain to students that they will have 5 minutes to come up with a definition of the word on their handout and how that word relates to sustainable design. Let them know that these are topics used in the design world. When time is up, 2 members from each group will be chosen at random to report. Therefore, students should be sure that all group members are participating and will be able to speak on the group’s behalf.

5. Allow groups to begin work and circulate the room to listen to group discussions. If needed, help students come up with accurate definitions. According to Merriam-Webster:
   - resilient (capable of withstanding shock without permanent deformation or rupture; tending to recover from or adjust easily to misfortune or change)
   - restorative (having the power to restore (to bring back into existence or use, or put back into a former or original state))
   - revitalize (to give new life or vigor to something)

6. After a few minutes, reveal the definitions to the class. (You could have students rate their definition for accuracy on a scale of 1 (right on) to 5 (not even close).

7. When time is up, randomly select 2 members from each group. Have these students come to the front of the room and give each person 2 minutes to report on their group’s ideas.

8. Compile class answers to the following questions and be sure students address the following ideas:
   - Why might it be important for a community to be resilient? What are some situations in which resiliency, restoration, or revitalization might be necessary for a community to continue to thrive?
   - How could sustainable design be used to create a resilient community, restore a community, or revitalize a community? Provide several examples and please consider all 3 components of sustainability.

Steps

1. Let students know that in the next couple of days they will learn about some real life examples of design that were meant to revitalize, restore, or foster resiliency in a community.

2. Prepare students to view the video India: Design Like You Give a Damn by letting them know they will watch the video 2 times. For this first viewing, they can simply watch without guiding questions. Show the video.

3. Invite a class discussion with the following questions:
   - How does building a community center relate to sustainability?
   - Why do you think spaces for community celebration are important?
   - Why was it important to the Purnima McCutcheon (the architect) that the community approves the design?
Activity 4: (re)Designing a Better World  continued

• How could this project have been different if Purnima McCutcheon (the architect) had not lived in the community while designing the project?
• How does geography affect the sustainability of a design?
• What steps are involved with designing something like a building, or even a product?

4. Give each student a copy of The (re)Design Process handout and review it together.
5. Now show the video India: Design Like You Give a Damn a second to answer questions about Purnima McCutcheon’s design process.
6. Give students a few minutes to fill out The (re) Design Process.
7. Discuss answers to these questions as a class.

Activity—Day 2
Steps
1. Review the steps of the design process with the class.
2. Explain to the class that each student will now have the opportunity to learn about another example of design that responds to a community need. Each student may select and research an example of interest and complete The (re)Design Process handout.

Option: You could have students research or look for examples outside of class and in the community.

Additional Resources
• Website: Engineers Without Borders/Puget Sound Professional Chapter
  http://ewbseattle.org/ewbprojects
  Click on a country for project information.
• Video: Retrofitting suburbia
  http://www.ted.com/talks/ellen_dunham_jones_retrofitting_suburbia.html
  This 20-minute TED Talk by architect Ellen Dunham-Jones discusses the next 50 years’ major sustainable design challenge: retrofitting suburbia. One of the ideas presented is transforming parking lots into thriving wetlands.

3. Collect papers and hold a class discussion using the following questions.

Discussion Questions
1. The Living Building Challenge poses the question for developers: “What if every single act of design and construction made the world a better place?” What does this statement mean to you?
2. How did the project you researched tend to the social, economic, and/or environmental sustainability of the region? How did it not tend to all aspects of sustainability?
3. How is community input on a project important?
4. How does the choice of building materials relate to the sustainability of the project?
5. How might sustainable design relate to climate change? How can sustainable design help prepare communities for the effects of climate change?
6. Think about your own talents, interests, and skills. How could you use these gifts to help a community become more sustainable?
7. What are the potential long-term effects of this project?
(re)Word of the Day: resilient

Group members: 

NOTE: Two group members will be chosen at random to share your group's ideas in about 5 minutes. Therefore, all group members should be prepared to speak on behalf of your group.

1. As a group, come up with a definition of resilient.

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__________________________________________________________________________

2. What are some situations in which resiliency would be important for a community to thrive?

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__________________________________________________________________________
__________________________________________________________________________

3. How could the built environment be used to create a resilient community? Provide several examples and please consider all 3 components of sustainability.

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__________________________________________________________________________
__________________________________________________________________________
(re)Word of the Day: restorative

Group members: __________________________________________________________

NOTE: Two group members will be chosen at random to share your group’s ideas in about 5 minutes. Therefore, all group members should be prepared to speak on behalf of your group.

1. As a group, come up with a definition of restorative.
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________

2. What are some situations in which restoration might be necessary if a community is going to continue to thrive?
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
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3. How could the built environment be used to restore a community? Provide several examples and please consider all 3 components of sustainability.
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
   __________________________________________________________
(re)Word of the Day: revitalize

Group members: ____________________________________________

NOTE: Two group members will be chosen at random to share your group’s ideas in about 5 minutes. Therefore, all group members should be prepared to speak on behalf of your group.

1. As a group, come up with a definition of revitalize.

_______________________________________________________________________________________
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2. What are some situations in which revitalization would be necessary if a community is going to continue to thrive?

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3. How could the built environment be used to revitalize a community? Provide several examples and please consider all 3 components of sustainability.

_______________________________________________________________________________________
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The Design Process

**Directions:** Identify the steps of the design process for the project in Tamil Nadu, India and for the project that your small group researches.

<table>
<thead>
<tr>
<th>The Design Process</th>
<th>Tamil Nadu, India</th>
<th>Your Example:</th>
</tr>
</thead>
<tbody>
<tr>
<td>What problem, need, or opportunity was identified?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What are the criteria and constraints for this project?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How did the designer brainstorm possible solutions?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How did the designer generate and explore ideas?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>How did the designer select an approach to the problem, need, or opportunity?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>What was the design like?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Was the design refined? How so?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Chapter 24

Taking Action

CHAPTER BIG IDEAS

- A variety of actions from personal to structural can have a great impact on global issues.
- Understanding what individuals and groups have done to address global issues in the past can guide us to take action today.
Guiding Questions

- What motivates individuals and groups to work for change?
- What steps can you personally take to start addressing an issue you care about?

Key Concepts

- Maslow’s hierarchy of needs
- sustainable actions
- social movements
- universe of obligation
- bystanders

Supporting Vocabulary

- germ theory of disease
- Millennials
- bystander effect
- systems thinking

Summative Assessment

Chapter Test

Connections

World History connections:
Social movements; modern environmental movement; scientific revolutions

Geography connections:
Social media impacts

Economic connections:
Economic solutions to water scarcity

Civics connections:
Personal and structural solutions that address taking action
# Activities in Teacher’s Guide: Suggested Sequence

## Day 1

**Reading:** *Introduction to Taking Action*

**Activity 1:** *Bio-poem*—Students create a concept map that illustrates their strengths, interests, and the factors that have encouraged these strengths and gifts. Students then create a bio-poem that describes who they are and the future they desire.

## Day 2

**Reading:** *Background on Taking Action*

**Activity 2:** *The Fight to Help Haiti*—Students discover what makes for effective action by investigating the work of 4 disaster relief organizations in Haiti after the country experienced a devastating earthquake in 2010. In small groups, students examine the accomplishments and limitations of 1 of these organizations. As a class, students will present their findings as well as brainstorm how they would choose to run a disaster relief organization based upon lessons learned in Haiti.

## Day 3

**Reading:** *Taking Action Today*

**Activity 3:** *Thirty Days for Change*—Students identify a personal action or habit they can create to lead a more sustainable lifestyle. The class will then participate in a 30-day Sustainability Challenge in which they will try to make this personal action a habit. Each week of the challenge, students will meet with group members for encouragement and accountability.

## Day 4

**Reading:** *Pathways to Progress: Taking Action*

**Activity 4:** *Creating Our Future*—How do we create a just and humane world for ourselves and for future generations? Students identify and plan what they want their future to look like. Using an action planning model, students visualize their desired future, identify objectives, develop a plan to address local and global issues, and implement their vision through action and service learning.
Discussion Questions from the Chapter Reading

**Introduction to Taking Action**
1. How does Maslow’s hierarchy of needs explain what motivates us to take action?
2. Jane Goodall was a typical child with her share of challenges. What kinds of characteristics did she have that helped her to fulfill her dreams?

**Background on Taking Action**
3. How can small actions be as powerful as larger, systemic actions?
4. Why was Rachel Carson’s book Silent Spring crucial to the environmental movement?

**Taking Action Today**
5. Youth your age are described as the Millennials. What characteristics do you believe are true for your generation? Are there any characteristics that you believe are not true for your generation? Why?
6. How has social media been used to support social movements?

**Pathways to Progress: Taking Action**
7. Choose one of the leverage points in working to address HIV. Explain how it can help in addressing the issue.
8. Why is a systems thinking approach important when considering solutions to global issues?
Chapter Assessment: Taking Action, page 1

Recall
Match the following words on the left with their definitions on the right.

1. Maslow's hierarchy of needs
   the circle of people and groups toward whom one feels a sense of responsibility
2. Sustainable actions
   group action that focuses on systemic change
3. Social movements
   actions that consider the needs of future generations while meeting the needs of current ones
4. Universe of obligation
   a theory of motivation based on the organization of human needs from most basic to more complex

Reasoning/Explanation
Complete the following multiple choice questions by choosing 1 correct answer.

5. Use the flow chart to help answer the multiple choice question below.

Before the germ theory of disease was developed, people believed disease was caused by miasma. Childhood death during pregnancy was common. The germ theory of disease, developed by scientists Louis Pasteur and Robert Koch, suggested germs did not appear spontaneously, and were the cause of diseases.

Which statement best replaces the X in the flow chart?

a. Both scientists lost credibility because their theory was too revolutionary.
b. Their theory changed the way the medical profession treated diseases.
c. Their theory didn't have enough scientific evidence so other scientists helped to develop it.
d. The scientific community was very slow to accept their theory and it was finally accepted in the late 20th century.
6. Which statement best explains why the momentum for the modern environmental movement slowed down during the 1980s?
   a. Air pollution levels had started to decrease so there wasn’t as large of a need.
   b. Environmental regulations were a barrier to business expansion so they were loosened.
   c. President Reagan wanted to focus more on international peacekeeping efforts.
   d. Rachel Carson's book The Silent World emphasized the need to reframe the focus of the environmental movement.

7. Which statement best explains why not all advances in science are readily accepted?
   a. Advances first need to be published and the publishing process can take some time.
   b. Scientific theories are too complex for nonscientists to understand.
   c. Changes made due to scientific advancements are often expensive.
   d. Scientific findings that contradict people’s deeply held beliefs can be difficult to accept.

8. Your friend wants to research sustainable ways to address food scarcity and shares the following questions with you. All of these questions address food scarcity and sustainability, except:
   a. What subsidies can help large food companies make a profit?
   b. What type of irrigation would protect local aquatic ecosystems and increase food crops?
   c. What farming techniques protect soil quality and allow farmers to make a living wage?
   d. Who does not currently have adequate access to food and why?

9. Which statement best describes why people started to take action at a systemic level in the civil rights movement?
   a. The governance under which they lived gave them ample opportunities to take action.
   b. The National Association for the Advancement of Colored People (NAACP) was an influential and prestigious organization that influenced the President to create new policies.
   c. A large segment of the American population didn't have the same rights as others under law.
   d. World War II had ended and citizens finally had an opportunity to focus on domestic issues versus international ones.
10. Which of the following theories best describes why you might be more likely to help a friend or relative that you feel responsibility toward?
   a. the bystander effect
   b. sustainable action
   c. universe of obligation
   d. witness protection

11. You and your friend have discussed how practicing yoga might be a healthy way to manage your stress. The two of you have bought yoga mats and found the yoga studio that you will attend, but you have not yet attended a class. Which of the following best describes the specific behavior changing stage that you are currently demonstrating?
   a. contemplation
   b. preparation
   c. action
   d. maintenance

12. A low-income, rural community struggles with water scarcity. Some residents pay a high fee to get water from water trucks that come through the town daily while others that cannot afford the fee use water from the river. Both of these water sources have inconsistent water quality and, therefore, many residents often fall ill. Which of the following is the best example of a sustainable action that addresses these issues?
   a. an international nonprofit provides free low-flow shower heads and faucets to each family in the community
   b. a local nonprofit hires a few people from the community to educate the community about how they can protect the water quality of the river
   c. a nearby city offers to install piping to each house for a large fee
   d. the drivers of the water trucks go on strike for higher pay

13. Promoting biofuels made from corn without considering the negative impacts this might have on food is not using which of the following systems thinking strategies?
   a. knowing how the system behaves
   b. looking for the good
   c. presenting clear and direct information
   d. understanding what’s working well
Chapter Assessment: Taking Action, page 4

14. Which of the following statements demonstrates the power of social media to support civic engagement?
   a. Social media heavily influences young people’s choices around sustainability.
   b. Citizens can mobilize quickly around an action because of access to social media.
   c. Governments can easily gather data from citizens to make decisions relevant to them.
   d. The ability to review news from a number of different news sources can give us unbiased information.

Application/Complex Reasoning
Answer the following short answer questions below.

15. Part A. Identify 1 leader of the modern environmental movement and his or her contribution.
   Part B. Identify 1 success of the modern environmental movement.
   Part C. Identify 1 challenge of the modern environmental movement.

16. Identify a global issue you have learned about.
   Part A. Choose 1 sustainable way to address this issue economically.
   Part B. Choose 1 sustainable way to address this issue socially.
   Part C. Choose 1 sustainable way to address this issue environmentally.
Recall (4 points)
1. Maslow’s hierarchy of needs—a theory of motivation based on the organization of human needs from most basic to more complex
2. Sustainable actions—actions that consider the needs of future generations while meeting the needs of current ones
3. Social movements—group action that focuses on systemic change
4. Universe of obligation—the circle of people and groups toward whom one feels a sense of responsibility

Reasoning/Explanation (10 points)
5. b 10. c
6. b 11. b
7. d 12. b
8. a 13. a
9. c 14. b

Application/Complex Reasoning (6 points)
15. Part A. Answers will vary. (1 point)
   - Rachel Carson exposed the dangers of synthetic chemicals.
   - Paul Ehrlich found that the disappearance of butterflies in New Jersey was attributed to DDT.
   - Jacques Cousteau generated a growing public interest in oceans and sea life.
   Part B. Answers will vary. (1 point)
   - Rachel Carson’s book *Silent Spring* helped to ban DDT in 1972.
   - The Environmental Protection Agency was created in 1970.
   - 191 countries signed the Montreal Protocol, an international treaty that called for the phasing out of human-made ozone-depleting substances.
   Part C. Answers will vary. (1 point)
   - The EPA lost funding under President Reagan’s administration.
   - Economic struggles can make it challenging to support environmental efforts.
   - The movement has been fractured.
   - The movement has sometimes been seen as a special interest cause.

16. Part A. Answers will vary. (1 point)
   Part B. Answers will vary. (1 point)
   Part C. Answers will vary. (1 point)
Activity 1: Bio-poem

Overview
Students create a concept map that illustrates their strengths, interests, and the factors that have encouraged these strengths and gifts. Students then create a bio-poem that describes who they are and the future they desire.

Objectives
Students will:
• identify 3–6 words that describe their strengths, talents, and interests
• create a concept map that connects these descriptors with things that have influenced them and ways they can take action in the world
• write a bio-poem that describes who they are and the kind of future for which they hope

Inquiry/Critical Thinking Questions
• What words best describe who you are?
• How can you use your strengths, talents, and interests to make a positive difference in the world?
• How has your identity been influenced by people, culture, institutions, and the environment?

Time Required
One 60-minute class

Key Concepts
• identity
• individual strengths, talents, gifts

National Standards Addressed
National Council for the Social Studies
1. Culture
3. People, Places, and Environments
4. Individual Development and Identity
5. Individuals, Groups, and Institutions
10. Civic Ideals and Practices

National EfS Standards
3.1 Personal Action: Personal Responsibility
3.1 Personal Action: Lifelong Learning and Action
3.1 Personal Action: Change Skills and Strategies

Materials/Preparation
Overhead: Bio-poem Basics
Handout: Bio-poem Organizer, 1 per student

Activity
Introduction
1. Begin by asking the class: how does one’s identity (our distinguishing characteristics and personality) factor into taking action?
2. Ask students: what types of things influence or encourage the development of our identity? (students could consider the influence of things such as family, culture, type of government, experiences, technology, social media, physical environment and nature). List these on the board.
3. Share with students that today they will examine all the gifts that they bring to their communities—local and global.
4. Have students write down 3–4 words that describe who they are in the middle of a piece of paper. If they need support in brainstorming these words, they can consider the following categories:
• Talent
• Personality trait
• Preferred mode of learning
• A character strength that one of my friends would say about me
• A character strength that my peers might not know about
• An interest
• A role that I play in life (e.g., friend, daughter, student, runner, brother)
Activity 1: Bio-poem continued

5. For each word students wrote, have them consider all of the things that positively encouraged this part of their identity. They can write these influences next to each word they included. For example, if a student mentions he or she is creative, the influences that supported this trait could be family and art class.

6. Now have students write down 2-3 issues that they are passionate about or interested in (e.g., animal rights, human rights, hunger).

7. Before students begin making their own connections between personal identity and issues they care about, give one or two examples to help students see how different traits can be used to take action on the same issue, just in different ways. For example, perhaps one student is good at math and passionate about animal rights. Perhaps this student could volunteer as treasurer for an animal rights organization. Perhaps another person is a great runner and into animal rights. This person might be able to get people to donate for her to run for an animal rights cause.

8. Have students work with a partner and choose one issue. Together, they can consider how they could use their talents, strengths, etc. to make positive change toward this issue. They can connect these ideas on their concept maps.

9. Have students focus on a couple of the words they included in the middle of their page and continue to speak with their partner about what they can do to cultivate or further develop these traits, talents, or interests.

Steps

1. Share with students that they will now have an opportunity to create a bio-poem (a poem about themselves) that describes themselves and the future they want. Let students know how these poems will be shared or published in your classroom or community.

2. Project the Bio-poem Basics overhead so that the class can see it and discuss the structure.

3. Give each student a copy of the Bio-poem Organizer and explain how each person will use this organizer to write a rough draft of his or her poem.

4. After about 25 minutes, have students exchange their poems with a partner to proofread for structure and spelling.

5. Have students write their final draft for homework. Explain they will share their poems the following day in class.

6. In the last 10 minutes of class, reflect on this activity with the following questions.

Discussion Questions

1. How is the way that you describe yourself different than how others describe you?

2. How do you think the physical environment/nature that you have grown up in has influenced who you are?

3. What are the benefits of a community made up of different people with different gifts?

4. How could it benefit you to be aware of your gifts and strengths?

5. Do you think there is a responsibility that comes along with having strengths and talents?

6. Have your talents, gifts, and strengths changed over time? How so?

7. What motivates you to take action? What sorts of issues move you to take action?

Graphic Design/Art Extension

Have students use art or graphic design to illustrate their poems. Compile class poems into a book, poster, or newspaper and share them with your community.
Bio-poem Basics

Structure:

Name
Three words that describe you
Who loves…
Who thinks my family…
Who feels the environment should…
Who wants society to…
Who wishes school could…
Who believes money should…
Who dreams the future will be…

Name

Sample:

Miguel Jordan
Hilarious, athletic, wise
Who loves any music that makes me dance
Who thinks my family deserves to live in a peaceful neighborhood where playgrounds replace broken glass
Who feels the environment should be full of lush forests and blue oceans, not polluted air
Who wants society to accept all different types of people
Who wishes school could teach me to speak three languages and fly airplanes
Who believes money should create jobs for all people so no one struggles
Who dreams the future will be full of poets, athletes, doctors, and lawyers

Miguel Jordan
## Bio-poem Organizer

**Directions:** Use the following organizer to write a first draft of your bio-poem.

| Your name                  |  
|----------------------------|---
| Three words that describe you | 
| Who loves...                | 
| Who thinks my family...    | 
| Who feels the environment should... | 
| Who wants society to...    | 
| Who wishes school could... | 
| Who believes money should... | 
| Who dreams the future will be... | 
| Your name                  | 

---

Taking Action
Activity 2: The Fight to Help Haiti

Overview
Students discover what makes for effective action by investigating the work of 4 disaster relief organizations in Haiti after the country experienced a devastating earthquake in 2010. In small groups, students examine the accomplishments and limitations of 1 of these organizations. As a class, students will present their findings as well as brainstorm how they would choose to run a disaster relief organization based upon lessons learned in Haiti.

Objectives
Students will:
• investigate the work of disaster relief organizations in Haiti
• consider the inputs, outputs, and outcomes for the organizations
• explore what elements have made the organizations’ work effective or ineffective
• devise their own strategy for running a disaster relief organization based on these observations

Inquiry/Critical Thinking Questions
• How does an organization serve its mission?
• What are resources and actions that allow an organization to be effective?
• What would cause an organization to be ineffective?

Time Required
One 60-minute class

Key Concepts
• program evaluation
• mission
• inputs
• outputs
• outcomes
• overhead costs

National Standards Addressed
National Council for the Social Studies
5. Individuals, Groups, and Institutions
6. Power, Authority, and Institutions
7. Production, Distribution, and Consumption
10. Civic Ideals and Practices

National Efs Standards
2.4 Social and Cultural Systems: Governance
3.2 Collective Action: Organizational and Societal Change Skills and Strategies

Materials/Preparation
Handout: Organization Cards, different card distributed to each student group
Handout: Program Evaluation, 1 per student
Internet access

Activity
Introduction
1. Talk to your class about the devastating earthquake (7.0 on the Richter scale) that hit Haiti in January of 2010, killing an estimated 230,000 people and leaving millions homeless. Explain this can be the type of event that motivates people to organize and take action.

2. Share with students that Haiti was the poorest country in the Western hemisphere even before the earthquake struck. Many Haitians earned less than $2 a day, less than 70% had stable jobs, and more than 50% of Haitian children did not go to school. A majority of the population

Activity 2: The Fight to Help Haiti  continued

lacked access to electricity and only 5% of the roads were in decent condition. The Haitian government has also struggled with corruption.  

3. Ask your students how these circumstances could worsen the impact of a natural disaster in that area (e.g., leaving the country more vulnerable to a natural disaster)—without roads to deliver aid, without an effective government to help organize a recovery effort, without the financial resources to rebuild).

Option: Show students a 3-minute video clip of the devastation in Haiti (http://vimeo.com/9608637).

4. Share with students that after the earthquake, $2.1 billion was raised in support disaster for Haiti. The country soon found itself home to dozens of aid organizations. Some of these organizations had been working in Haiti before the earthquake hit, some arrived in Haiti immediately after. Some of these organizations were Haitian-run, while some were international efforts. Some of these organizations proved more effective at providing for the well-being of Haitians after the earthquake than others.

5. Have the students imagine they were running a disaster relief organization in Haiti after the earthquake. Ask the students:
   - How would you get medical supplies and food out of warehouses and what transportation networks would you use to distribute aid?
   - Where would you work from (offices, tents, etc.)?
   - How would you work with the United Nations?

6. Highlight to students that these questions are more difficult to answer in Haiti than in the United States because of Haiti’s circumstances even before the earthquake.

6. Let students know that, in groups, they will evaluate the effectiveness of one disaster relief organization operating in Haiti after the earthquake using a program evaluation that assesses the inputs (what is invested in the organization), the outputs (what does the organization do and who is the organization trying to reach), and outcomes (what are the organization’s goals).

Steps

1. Break students into 4 groups and distribute one of the Organization Cards to each group.

2. Allow students 30 minutes to read through the Organization Card, conduct additional online research, and complete the Program Evaluation (pages 1-2).

3. Bring the class back together and have a volunteer from each group come up and present on their organization, focusing on the elements listed in the diagram on Program Evaluation, page 2.

4. While each group presents, have the groups take notes on the Program Evaluation, pages 3 and 4.

5. Wrap up the presentation with discussions on some of the overall lessons learned from these organizations.

6. Write 3 headings on the board for “Inputs,” “Outputs,” and “Outcomes.”

7. Ask the students to brainstorm, as a class, the inputs, outputs, and outcomes they found most effective for the organizations and why. Take notes on the board under the relevant headings as they discuss.

8. Conclude the discussion using one or more of the following questions.

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4 Ibid.


Activity 2: The Fight to Help Haiti  continued

Discussion Questions
1. What aid organization proved the least effective, and why?
2. What aid organization proved the most effective, and why?
3. Based on these lessons learned, how would you have run a disaster relief organization in Haiti after the 2010 earthquake?
4. If you were to start an organization, how would you determine your mission?

Additional Resources
- Video: Michelle Obama in Haiti
  http://vimeo.com/11048835
  This 3-minute video clip documents First Lady Michelle Obama’s visit to Haiti in April of 2010, a few months after the earthquake. The clip includes video footage of the destruction, temporary housing, and rebuilding efforts.

- Article: Years After Haiti Quake, Safe Housing Is a Dream for Many
  http://www.nytimes.com/2012/08/16/world/americas/years-after-haiti-quake-safe-housing-is-dream-for-multitudes.html?pagewanted=all&_r=0
  In this New York Times article from August 2012, journalist Deborah Sontag writes about the aftermath of the 2010 earthquake in Haiti and what kind of progress has been made since.
Organization 1: Yéle

Yéle is an organization founded by Haitian hip-hop artist Wyclef Jean in 2004. The word Yéle is a term coined by Wyclef Jean to mean “cry for freedom.”

When the earthquake hit Haiti in 2010, Yéle helped clean the streets and provide tents, tarps, food, and water to the newly homeless population. Yéle hoped to spend more on temporary homes, medical centers, and revitalization of slums, but many of these projects never came to be. Much of its work was broad but not deep. One of the organization’s biggest programs was a job corps, which hired thousands of Haitians for a month of street cleanup. This program cost about $5 million but only half of that money was used to pay the Haitian laborers.

Half of the $16 million Yéle received in donations for earthquake victims went to its own offices, travel expenses, salaries, consultants’ fees, and other overhead costs. The charity spent $600,000 for its official headquarters, operated from a walled country estate.

Mismanaged finances had been a problem for Yéle in the past as well. A forensic audit was undertaken to examine the $3 million worth of expenses the organization incurred between 2005 and 2009. $256,580 was found to have illegitimately benefited Yéle’s board and staff.

At the end of August 2012, Yéle’s chief executive announced his resignation and Yéle effectively went out of business. New York’s attorney general is investigating Yéle for allegations of impropriety.

Organization 2: J/P Haitian Relief Organization

J/P Haitian Relief Organization (J/P HRO) is an effort initiated by actor Sean Penn a few months after the earthquake in Haiti. By March of 2011, J/P HRO was running a tent city of 50,000 for those left homeless after the quake—with a school, market, hospitals, salons, and movie theater. Aside from the tent city, the organization’s other priorities include two primary care facilities, women’s health center, cholera isolation unit, and rubble removal program. Debris and rubble left in the wake of the earthquake was a debilitating factor for reconstruction. Because much of the area lacked decent roads, getting machinery to the locations where the rubble needed to be removed proved difficult, forcing removal to be undertaken by hand.

J/P HRO has also developed one of the most effective emergency response systems in the country—using state of the art surveillance techniques and helicopters to reach cholera-stricken communities in remote areas. J/P HRO has received praise for the organization’s effectiveness from the United States Army 82nd Airborne Division, which shares use of an old country club where J/P HRO operates out of.

As of 2011, the organization had a permanent team of 15 international workers (who often work 18-hour days), 235 Haitian staff, and hundreds more volunteers. For every dollar J/P HRO receive from donors, 3.2 cents is devoted to overhead costs.

However, the organization has been hesitant to work with the large NGO network that has developed in Haiti since the quake due to impatience with bureaucratic procedures involved in network meetings and decisions.


Organization 3: Doctors Without Borders USA (Médecins Sans Frontières USA)

Since its founding in 1971, Doctors Without Borders (MSF) has provided medical care in over 70 countries. On principle, the organization operates independently of political, military, or religious organizations. MSF had teams present in Haiti on and off since 1998, providing aid when hurricanes struck or violent political demonstrations broke out.

After the 2010 earthquake MSF provided emergency medical assistance, treated Haitian people on the ground, and operated an inflatable hospital. MSF had three hospitals operating in Haiti just before the earthquake, but all were severely damaged by the quake. Immediately after the earthquake occurred, MSF reported mobile phone networks down and road access to be limited, making it difficult to find and treat all the victims of the devastating earthquake.¹

By the end of 2010, MSF had raised more than $138 million from donors worldwide in support of their efforts in Haiti.² For every dollar MSF raises, 86 cents goes directly to the organization's programs, 12.7 cents goes to fundraising, and 1.3 cents goes to organizational management.

To mount tragedy upon tragedy, a cholera epidemic swept through Haiti a few months after the earthquake hit. Since the epidemic broke, approximately 600,000 people have been reported as infected—that is 6% of Haiti’s population. Between 2010 and 2011, MSF operated 75 cholera treatment centers in Haiti, with a Haitian staff of 4,000 and an international staff of 400. Just between January and October of 2012, MSF treated over 12,000 cholera patients.³


Organization 4: American Red Cross

American Red Cross has been in existence since 1881, founded as an emergency response organization. The organization has 4% overhead costs, with 3.7% devoted to fundraising and the remaining 92.2% going directly to their programs.

American Red Cross has raised over $486 million in aid for Haiti. These funds provide for food, water, shelter and basic sanitation. American Red Cross has also provided aid for disaster preparedness and cholera treatment. The organization plans to put $187 million of the money raised toward housing, mostly by way of providing aid to other non-profits in Haiti working on housing. In the meantime, American Red Cross has provided 36,270 people with temporary housing.

There have been delays in the development of permanent housing for earthquake victims. This has been blamed on confusion over land ownership.¹ For example, another NGO tried to build permanent homes in a town called Cabaret, but there were claims that the mayor of Cabaret gave the land to the NGO illegally so the NGO moved the project to the town of Léogâne. As word of the project got out, 300 homeless families moved onto the land set for development in an attempt to claim one of the new homes. But all the homes had already been assigned to other families. Smaller projects for schools or orphanages have proven easier projects to tackle.

Name of organization: __________________________________________

Team members: ________________________________________________

Read through the background information on your organization and conduct additional online research as needed. Use this information to complete the following questions.

1. What is the mission of the organization?

2. How long has the organization been in existence? How many years has the organization been working in Haiti?

3. How is the organization run (i.e., structure, number of permanent staff members, number of volunteers, number of Haitian employees)?

4. What are the organization’s overhead costs (i.e., the costs of operating the organization, such as rent, wages, business expenses)?

5. Has the organization received any praise or criticism, and if so why?

6. Was this organization effective at helping Haitians in the aftermath of the 2010 earthquake?

7. How has the organization accomplished its mission?

As a group, work together to complete the visualization on the following page. Using the Logic Model often used for program evaluations of organizations, determine what the inputs of the organization are, what the outputs are, and what outcomes those efforts produced.
Program Evaluation, page 2

Name of your organization: ____________________________________________________________

Team members: ____________________________________________________________________

**Inputs**
What is invested into the organization?
*ex. time, money, partners, equipment, facilities*

**Outputs**
What does the organization do?
*ex. provide basic necessities, rebuild infrastructure, generate employment*

Who is the organization trying to reach?
*ex. Haitians, women, orphans, the homeless*

**Outcomes**
What are the organization’s goals, short-term and long-term?
*ex. immediate relief, long-term sustainable development, support the community, improve conditions*
Name of organization: _______________________________________

Inputs

Outputs

Outcomes

Name of organization: _______________________________________

Inputs

Outputs

Outcomes
Name of organization: ________________________________
Activity 3: Thirty Days for Change

Overview
Students identify a personal action or habit that they can create to lead a more sustainable lifestyle. The class will then participate in a 30-day Sustainability Challenge in which they try to make this personal action a habit. Each week of the challenge, students will meet with group members for encouragement and accountability.

Objectives
Students will:
• identify one action they could take to live more sustainably
• create a personal action plan
• encourage and hold peers accountable for their actions

Inquiry/Critical Thinking Questions
• What motivates me to change?
• How do my habits relate to sustainability?
• How can I encourage positive change in my peers?

Time Required
Two 60-minute classes, plus check-in time each week

Key Concepts
• habit
• goal-setting
• motivation
• accountability

National Standards Addressed
National Council for the Social Studies
1. Culture
3. People, Places, and Environments
4. Individual Development and Identity
5. Individuals, Groups, and Institutions
10. Civic Ideals and Practices

National Science Education Standards
F. Science in Personal and Social Perspectives

National EfS Standards
3.1 Personal Action: Personal Responsibility
3.1 Personal Action: Accountability

Materials/Preparation
Signs: Use 5 pieces of paper to write the numbers 1-5 (for a rating scale) and post them in order around your classroom or in the hallway
Handout: Sustainability Challenge Action Plan, 1 per student
Handout: Charting My Progress, 1 double-sided copy per student
Handout: Sustainability Challenge Group Guidelines, 1 per small group

Small group assignments

Activity—Day 1
Introduction
1. Write the word motivation on the board and ask students what it means.
2. Explain that there are many things that motivate people. You are going to read a few of these “motivators” out loud and students will rate how much each particular factor typically motivates them using the rating scale you have posted. (You might remind them that peer pressure can be a motivator for some, but in this activity, try not to let it determine where they move.)
3. Write the rating scale on the board:
   1 = very motivating, 5 = not motivating at all
4. Read one word at a time from the following list, and give students a chance to think and then move to the number that most accurately describes how motivating the factor is to them.
   Option: You can have some students explain their thoughts on what does and does not motivate them.
   • money
   • mastery of a skill or idea
Activity 3: Thirty Days for Change  continued

• fame
• competition/winning
• interest or enjoyment
• grades
• support from friends or family
• basic needs
• peer pressure
• completion of a task
• recognition
• rules or laws
• cultural norms

5. Have the class sit down.
6. In think-pair-share format, ask students to consider the following questions:
• Does the same thing motivate you in all situations?
• How could knowing what personally motivates you help you make positive personal change?

Steps

1. Share with students that over the next 30 days your class will partake in a Sustainability Challenge. Each student (and yourself) will identify a current habit that does not promote sustainability and try to create a new habit that would encourage a more sustainable lifestyle. Each week students will check in with their small groups to talk about their progress.

2. Have students name some common habits (positive and negative) that people do automatically that relate to sustainability. For guidance, you could write these categories on the board:
• food
• waste
• water
• energy
• consumption

3. Define habit (a behavior that is so routine that we may not consciously think about it) and share with students that according to some researchers habits include a cue, routine, and reward.¹

   • cues (environmental, emotional, and situational factors that trigger your behavior)
   • routines (the actions or behavior you take after the cue)
   • rewards (the benefits of your action)

4. Divide the class into groups of 3-4 students and have small groups discuss the following and be prepared to share (it may help if students think about some of the specific habits named above):

   • Choose 1 common habit that does not promote sustainability and identify possible cues, routines, and rewards for continuing this habit. For example, let’s say you have a habit of throwing aluminum soda cans in the trash instead of recycling before you walk into class. Perhaps the cue is the conveniently located trash can (but no recycling bin) just outside the classroom door. The routine is to toss it in the can before you enter class. The reward is that you have free hands to set up your desk or you don’t get nagged by the teacher to not drink soda in class.
   • Choose 1 common habit that does promote sustainability and identify possible cues, routines, and rewards for continuing this habit.

5. Have small groups share with the class.
6. Hand each student a copy of the Sustainability Challenge Action Plan and a copy of the Charting My Progress handout and discuss how to fill it out.

7. Give students the rest of the time in class (and homework time, if needed) to complete the Sustainability Challenge Action Plan.

Activity—Day 2

Introduction

1. Ask students to think of a time when they supported a friend, family member, or teammate and a time when they received support from someone else. How did it feel to give and receive support from another person?

Activity 3: Thirty Days for Change  continued

2. As a class, discuss the following question:
   • What are some specific ways that people can help others achieve a goal?

Steps
1. Share with the class that today students will be assigned to a small group with whom they will check in each week on their progress toward their goal. The purpose of these small groups is to be able to report their progress to the same people each week and to support one another in creating these new habits. Today, each group will come up with guidelines to use for their weekly check-ins as well as a group name (and graphic, if desired).
2. Assign students to their small groups and have each small group gather.
3. Hand out a copy of Sustainability Challenge Group Guidelines to each group.
4. Give groups 20 minutes to complete this activity.
5. Circulate around the room and check in with each group and the creation of their guidelines.
6. Collect group guidelines and provide group feedback if needed.

Weekly Group Check-ins

Steps
1. Have students take out their Sustainability Challenge Action Plan and Charting My Progress handouts.
2. Hand back each group’s guidelines.
3. Have students get into their small groups and give the class 15 minutes for check-ins.
4. Have small groups report back to the class on their overall progress by giving a grade, rating, or summary on how the challenge is impacting the way they view sustainability and habits.
5. At the end of the 30 days, reflect on the challenge with the following questions.

Discussion Questions
1. How has the Sustainability Challenge affected you?
2. What were the easiest and most challenging parts of this challenge?
3. What did you learn from the weekly group check-ins?
4. Often “peer pressure” has negative connotations. How can peer pressure be a positive influence?
5. What skills were necessary to be a supportive group member?
6. If you were to encourage others to take part in the Sustainability Challenge, what advice would you give them?
7. Why do you think people suggest taking small, personal actions rather than large ones to promote lasting habits?

Civics Extension
Have your class plan and implement a schoolwide sustainability challenge. What resources will they need to provide in order for students and staff to participate? How will they advertise and encourage students and staff to participate?

Additional Resources
• Website: TeensHealth: 5 Facts About Goal Setting
  This site provides strategies for setting goals and features a 1-minute video in which Michael Phelps talks about writing down his goals.
• Book: The 7 Habits of Highly Effective Teens
  This book provides teenagers tips on how to succeed and lead effective, fulfilling lives. (New York, Franklin Covey Co., 1998).
Sustainability Challenge Action Plan,

Group members: ____________________________

Creating new habits or breaking old ones takes time and can be challenging. Having a plan in place and anticipating potential obstacles can help you be more successful with this habit change. Complete the worksheet below and return to this each week as you evaluate your progress and when you need some motivation!

Challenge start date: ____________________________ Challenge end date: ____________________________

Habit I would like to change: ___________________________________________________________________

Cues (environmental and emotional factors and situations that trigger this behavior): ___________________

Habitual routine: _____________________________________________________________________________

Reward (what you gain from this habit): _______________________________________________________________________

How does this habit relate to sustainability? _______________________________________________________________________

Habit I would like to create: ___________________________________________________________________

Be sure to choose a small, realistic goal for the next 30 days.

Cues (environmental and emotional factors and situations that you can use to remind you of your new routine):

New routine: _____________________________________________________________________________

Reward (what you will gain from this new habit): _______________________________________________________________________

How does this new habit relate to sustainability? _______________________________________________________________________

Taking Action
Part of successful goal-setting is successful preparation. Complete the following handout and refer back to this weekly.

<table>
<thead>
<tr>
<th>Resources I need before beginning:</th>
<th>People who will support me:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Information I need to know before I begin:</th>
<th>Motivational reminders:</th>
</tr>
</thead>
<tbody>
<tr>
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<table>
<thead>
<tr>
<th>Potential obstacles:</th>
<th>Specific ways to overcome these obstacles:</th>
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**Charting My Progress**

**Directions:** For each day of the challenge, rate yourself on how consistently you have followed through with your action. Then justify or explain your rating and why you were or were not as consistent as you could be.

<table>
<thead>
<tr>
<th>Day &amp; Date</th>
<th>Rating(^1)</th>
<th>Justification</th>
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\(^1\) Rating Scale: 1–5 (where 1 is the most consistent and 5 is the least consistent)
Group members:

1. Create a group name that relates both to sustainability and to your group members.

   ____________________________________________
   ____________________________________________
   ____________________________________________
   ____________________________________________

2. Create guidelines for your weekly check-ins for each of the following categories. For this activity, all members must reach agreement about these guidelines.

   Listening
   ____________________________________________
   ____________________________________________
   ____________________________________________
   ____________________________________________

   Participating
   ____________________________________________
   ____________________________________________
   ____________________________________________
   ____________________________________________

   Supporting
   ____________________________________________
   ____________________________________________
   ____________________________________________
   ____________________________________________

   Leading
   ____________________________________________
   ____________________________________________
   ____________________________________________
   ____________________________________________

   Decision-making
   ____________________________________________
   ____________________________________________
   ____________________________________________
   ____________________________________________
Activity 4: Creating Our Future

Overview
How do we create a just and humane world for ourselves and for future generations? Students identify and plan what they want their future to look like. Using an action planning model, students visualize their desired future, identify objectives, develop a plan to address local and global issues, and implement their vision through action and service learning.

Objectives
Students will:
• visualize the future they desire
• collaborate with their peers
• identify issues they want to address, and identify and prioritize objectives
• present their findings

Inquiry/Critical Thinking Questions
• How do we envision and create a world we want for ourselves and for future generations?
• What unmet needs exist in our local and global communities?
• How do we identify structural solutions to global issues?
• How can we work together to plan a course of action?

Time Required
One 60-minute class, plus class time for implementing the action plan

Key Concepts
• creating a vision
• action/project planning
• personal solutions
• structural solutions
• service learning

National Standards Addressed
National Science Education Standards
F. Science in Personal and Social Perspectives

National Council for the Social Studies
2. Time, Continuity, Change
4. Individual Development and Identity
5. Individuals, Groups, and Institutions
6. Power, Authority, and Governance
10. Civic Ideals and Practices

National Efs Standards
3.1 Personal Action: Personal Responsibility
3.1 Personal Action: Accountability
3.2 Collective Action: Local to Global Responsibility
3.2 Collective Action: Community-Based and Societal Decision-Making

Materials/Preparation
Handout/Overhead: Action Planning Worksheet, 1 per group of 3–4 students, and make an overhead
Tools: Butcher paper, 1 sheet per group
Tools: Marking pens, colored, 1 set per group

Activity
Introduction
1. Ask students what they think the world will look like 20 years from now. Have 2 or 3 students briefly describe the future as if it were a picture (Now ask them what they want the world to look like in 20 years for themselves and for future generations. (Note: you may need to define the difference between think and want for this part of the activity.) Ask, “If this is the future we want, how do we make it happen?” Ask students to describe what they will see, hear, smell, taste, and touch. Explain that in order to create a world we want for ourselves and for future generations, we need to first envision what we want and then create a plan of action. This activity provides a model for doing just that.
Steps

1. Explain that, in order to help focus their vision of the future, it is helpful to think about specific quality-of-life issues that are important to them. Brainstorm and list quality-of-life issues (these may include all or some of the following):

<table>
<thead>
<tr>
<th>Food</th>
<th>Transportation</th>
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<tbody>
<tr>
<td>Elder care</td>
<td>Water</td>
</tr>
<tr>
<td>Education</td>
<td>Child care</td>
</tr>
<tr>
<td>Housing</td>
<td>Environment</td>
</tr>
<tr>
<td>Recreation</td>
<td>Entertainment/Art</td>
</tr>
<tr>
<td>Security</td>
<td>Spirituality/Religion</td>
</tr>
<tr>
<td>Employment</td>
<td>Community Development</td>
</tr>
<tr>
<td>Energy</td>
<td>Reproductive Health Care</td>
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</tbody>
</table>

Option: Have students do a 5-minute free write describing their vision of the world in 20 years, addressing some or all of the quality-of-life issues identified in the brainstorming exercise. Give them the prompt: “In my vision of the future…” Encourage students to focus on what they want the future to be like, not what they do not want it to be like. For example, rather than saying, “In the future, people will not use polluting fossil fuels,” they would say, “In the future we will use clean, renewable energy sources.” Tell them to provide as much detail as possible in describing their vision. Have students read aloud 1 or 2 sentences from their free writes or have them share in pairs.

2. Explain that they will develop an action plan to address 1 of the quality-of-life issues in the list (such as food, water, health care, the environment, etc.) using a model called an “Action Planning Sequence.” Through this process, they will assess how the issue affects both local and global communities, and develop a plan to address the structural causes of the issue.

3. Give each student a copy of the handout Action Planning Worksheet and show the overhead of the same worksheet. Explain each step of the action planning process to the students, using the overhead as a guide.

4. Divide the class into groups of 3–4. Assign, or have each group choose, a topic from the list of issues. Give each group a piece of butcher paper and pens.

5. Give them about 20–30 minutes to follow the steps outlined in the handout. They should begin by discussing and agreeing on a shared vision. Circulate around the room and assist students as they are working.

6. After they complete the handout, have each group transfer the information to a piece of butcher paper. Encourage them to include pictures, graphs, quotes, etc.

7. Have each group present their displays to the class.

8. Bring the class back together for reflection questions.

Discussion Questions

1. Does describing what you want your future to look like help you realize it? How and why is this an important step in creating a world we want?

2. Did the action planning sequence process work? How could the process be improved?

3. How well did you work together in your groups? Did everyone participate? How did you make decisions?

4. What will you do next to implement your plan?

5. In what other circumstances could you use this action planning process?

6. Once you have taken action on an issue, it changes the dynamics of the issue by producing unintended consequences or by revealing new solutions. What can you do next to address this issue and work toward your vision?
Activity 4: Creating Our Future  continued

Writing Extension
Have students write a letter to an influential entity (government agency, newspaper, etc.) and/or a family member or friend explaining their vision and outlining the steps to realizing it.

Art Extension
Have students create a mural at the school (or as part of a local community development project) depicting their collective vision of the future.

Additional Resources

• **Film:** *Pay it Forward*
  This feature film from 2000 by Mimi Leder is about a young boy who attempts to make the world a better place.

• **Book:** *The Lemming Dilemma: Living with Purpose, Leading with Vision*
  A charming story by David Hutchens about a lemming’s quest for meaning, aspiration, and value. (Pegasus Communications, 2000)

• **Book:** *The Complete Guide to Service Learning*  
  [www.freespirit.com](http://www.freespirit.com)  
  This resource by Cathryn Berger Kaye, M.A. has a wealth of activities, ideas, and resources to encourage service learning in K-12 and higher education. (Free Spirit Publishing, 2010)

• **Book:** *The Kid’s Guide to Social Action*  
  [www.freespirit.com](http://www.freespirit.com)  
  This empowering book by Barbara A. Lewis includes everything young people need to make a difference in the world: step-by-step directions for writing letters, doing interviews, raising funds, getting media coverage, and more (Free Spirit Publishing, 1998).

• **Website:** *Facing the Future*  
  [www.facingthefuture.org](http://www.facingthefuture.org)  
  Access information, research, and website resources on service learning, and a framework for developing service learning projects in your classroom.
Creating Our Future
Action Planning Worksheet, page 1

Group members: ____________________________________________________________

Issue we are focusing on: ____________________________________________________

Scope of the Issue
Who or what is currently being affected by this issue?
________________________________________________________________________

How does this issue affect our local community?
________________________________________________________________________

How does this issue affect our global community?
________________________________________________________________________

Visualize Desired Outcome
What is the desired outcome for our specific issue?
________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Gather Companions
What people and organizations share a similar vision and can help us meet our vision?
________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
Identify and Prioritize Objectives
What are the steps or parts that will lead to our vision? What does the vision look like? For example, if our vision is “full access to health care for all people,” then the objectives might be more doctors per person, more clinics in poor neighborhoods, or more reproductive health care. What are the top 2 or 3 objectives that will lead to our vision?

What are some specific things that will need to occur in order to realize our vision and to be sure that we are addressing structural solutions to the issue?

Identify Obstacles
Who or what might get in the way of realizing our vision? Here is a list of a few obstacles and ways we might address them:

Identify Resources
Here is a list of information, resources, and other help we will need to realize our vision:

Implement Action Plan and Follow Up
What steps will we take to start working on our vision? Who will be responsible for implementing each step? Here are steps we will take to start implementing our vision:

Keep the vision in mind and keep telling the story of the future you desire!
Glossary

A

acidification—A decrease in the pH level of a body of water; an increase in acidity.

AIDS (Acquired Immunodeficiency Syndrome)—A disease caused by the Human Immunodeficiency Virus (HIV) in which the immune system is weakened and therefore less able to fight infections and diseases; AIDS is transmitted through contaminated body fluids, especially via sexual contact or contaminated needles.

air pollution—The concentration of gases, dust, fumes, or odors in amounts that can harm human, animal, and plant health.

aquaculture—The farming of plants and animals that live in water, such as fish, shellfish, and algae.

aquaponics—A method for growing food sustainably in which hydroponics is combined with fish farming; the waste from fish provides nutrients for plants and plants filter water for fish.

aquifer—A permeable underground layer of rock, sand, or soil that stores a significant amount of freshwater.

asylum-seeker—A person who applies for protection and the right of residence in a foreign country.

atmosphere—The blanket of air that surrounds Earth, composed of a combination of gases such as nitrogen, oxygen, and carbon dioxide.

B

base population—The starting population from which a statistic such as birth rate or fertility rate is determined.

bioaccumulation—The process in which chemicals are taken up by an organism directly from their environment or by eating from a food supply that contains the chemicals.

biodiversity—The variety of life in all its forms, levels, and combinations, including ecosystem diversity, species diversity, and genetic diversity.

biodiversity hotspot—A region that has at least 1,500 species of vascular plants that are endemic (the species is limited to a certain geographic area) and has lost 70 percent of its original habitat.

biomimicry—A field of science in which nature is used as model to help create sustainable, human-designed products and systems.

bystander—A person that witnesses but does not participate in an event.

carbon footprint—A measure of human impacts on Earth’s climate through activities that release carbon dioxide (a greenhouse gas) into the atmosphere; usually reported as weight of carbon dioxide released.

carbon sink—A natural or human-made system that absorbs and stores more carbon dioxide from the atmosphere than it releases.

carbon source—A natural or human-made system that releases more carbon dioxide into the atmosphere than it absorbs and stores.

carrying capacity—The number of people Earth can support without using natural resources faster than the planet can replenish them.

chronic disease—A disease that lasts a long time such as heart disease or diabetes.

civic participation—Individual or community participation in decisions around issues that affect public life.

civil society—The set of voluntary, non-governmental associations formed by people around a common interest, including groups such as labor unions, churches, and charities.

climate change—A significant shift in Earth’s overall climate over an extended period of time.

colonization—The act of establishing a population in new territory that maintains allegiance to the parent country.

common resource—Those resources that are collectively owned or shared among many communities; a resource rival in consumption (one person’s use of the resource limits use by another) but not excludable (one person’s use of the resource does not prevent another’s use).

community—A group of people that share some commonality, often based on where they live (the Minneapolis community), what they do (the student community), a shared social characteristic (the Cuban-American community), or shared interests (the small business community).

community development—The process of building ties between community members to create a network that can successfully adapt to challenges or opportunities.

community organizing—A way for people to work together to influence decisions that affect them and their neighbors.
**comparative advantage**—The ability of a country or business to produce a good at a lower opportunity cost than another country or business.

**conflict**—A state of opposition between people, ideas, or interests.

**consumerism**—The cultural orientation that leads people to find meaning, satisfaction, and acceptance through what they consume.

**consumption**—The process of using natural resources, materials, or finished products to satisfy human wants or needs.

**dead zone**—An area in a body of water that has such a low concentration of oxygen that it is unable to support life.

**developed country**—A country with a high level of economic development, high life expectancy, and low rate of poverty.

**developing country**—A country that has a low level of economic development, low life expectancy, and high rate of poverty.

**discrimination**—The unjust treatment of different groups of people.

**ecological footprint**—The area of the Earth's productive surface that it takes to produce the goods and services necessary to support a particular lifestyle.

**ecological overshoot**—When a population uses more natural resources each year than Earth can support or supply, measured as the gap between the human demand for natural resources (our collective ecological footprint) and Earth's available supply (biocapacity).

**economic development**—The process of raising the level of prosperity in a society by increasing per capita income, reducing poverty, and enhancing individual economic opportunities.

**economic water scarcity**—A type of water scarcity that exists because of a lack of investment in water resources, typically characterized by a lack of infrastructure and an unequal distribution of water.

**economy**—The system of production, distribution, and consumption of goods and services.

**ecosystem services**—The benefits, services and goods provided by ecosystems such as food, fuel, and medicines.

**electricity**—A form of energy generated by the movement of charged particles; generally produced as a secondary form of energy by converting other forms of energy (such as coal or wind) into electricity.

**endangered species**—Animals or plants that are in danger of extinction.

**energy**—The capacity to do work or cause change; energy can also refer to sources of energy (such as fossil fuels, water, wind, solar, etc.) that power various aspects of human life (such as transportation, industry, heating, lights and electrical devices, etc.).

**energy conservation**—Behaviors and actions that save or use less energy, such as turning off the lights when you leave a room.

**energy efficiency**—Completing a specific task with less energy input than usual, such as using an energy-efficient LED light bulb which uses less energy than other light bulbs to produce the same amount of light.

**environmental justice**—The equitable treatment of all people, regardless of race, income, culture, or social class, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

**evolution**—Genetic changes in a population of organisms that are inherited and passed on over many generations.

**externality**—The positive or negative effect on an uninvolved third party when two individuals or groups of people conduct a transaction.

**fair trade**—A trading partnership that supports greater equity in international trade by improving conditions for those who produce goods in developing countries.

**family planning services**—Services such as education or medical care that provide families with support to make choices about reproduction.

**feminization of poverty**—The widening gap between the number of men and the number of women in poverty.

**fertility rate**—The average number of children born to each woman.

**food security**—The state in which all people have sufficient physical and economic access to nutritious food to maintain a healthy and active life.

**fossil fuel**—A non-renewable energy source such as coal, oil, or natural gas created over a long period of time by the decomposition and compression of plants and animals.
free trade—The policy of unrestricted international trade in which goods, capital, and labor can flow freely between countries without the imposition of tariffs, subsidies, or quotas.

gender—The range of characteristics such as attitudes, behaviors, roles, and attributes that a society associates with men and women.

gender equity—When men and women are treated fairly in accordance with their differing needs.

genetically modified organisms (GMOs)—Animals, plants, or bacteria whose genetic makeup is altered by combining their genes with genes from other organisms.

genocide—The systematic and deliberate extermination of an entire national, racial, political, or ethnic group.

germ theory of disease—The theory that some diseases are caused by microorganisms (germs) within the body.

global awareness—An understanding of different nations, people, and cultures around the world and an appreciation of the impact of interconnected global issues. A globally aware person can learn from and work collaboratively with individuals from diverse cultures, religions, and lifestyles.

global health—The collaboration among several different countries in research and practice in order to promote the health of all people.

global issue—An issue that is transnational and transboundary, persists over time, affects large numbers of people, has underlying causes, and is connected to other global issues.

globalization—An increased interconnectedness and interdependence of peoples and countries; generally understood to include the opening of borders to increasingly fast flows of goods, services, finance, people and ideas, as well as changes in national and international institutions and policies to facilitate or promote such flows.

governance—The traditions, institutions, and processes that determine how power is exercised, how citizens are given a voice, and how decisions are made on issues of public concern; governance includes not only government, but also the business sector and civil society.

government—The official governing organization or system that has the power to make and enforce laws for a certain territory.

green building—The practice of making structures that are environmentally responsible and resource efficient for the entire life cycle of the building, from choosing a building site to deconstruction of the structure.

green jobs—Typically career-track jobs that improve the environment and pay a livable wage; sometimes also called green-collar jobs.

Green Revolution—Agricultural practices and technologies developed in the 1950s to increase food production through the use of machines, fertilizer, pesticides, irrigation, and the growth of hybrid varieties of rice, wheat, and corn.

greenhouse effect—The process by which gases in Earth’s atmosphere retain infrared radiation (heat) from the sun, warming Earth’s surface.

greenhouse gas—A gas found in Earth’s atmosphere that both absorbs and re-emits infrared radiation.

gross domestic product (GDP)—The total value of goods and services produced by and within a country.

gross national happiness (GNH)—A holistic measure of quality of life in a country that considers factors beyond economic progress.

groundwater—Water beneath the Earth’s surface that has seeped down into the soil and porous rock that sits above non-permeable bedrock.

gyres—Large-scale circular systems of ocean currents.

human development—The process of creating an environment that enables people to live long, healthy, and creative lives.

human migration—The permanent or semi-permanent relocation of a person or group of people from one location to another.

human rights—The basic rights and freedoms to which all humans are entitled, often held to include the right to life and liberty, freedom of thought and expression, and equality before the law.

human security—The state in which people are free from danger, poverty, or apprehension. The concept of human security extends beyond the absence of conflict to include economic development, social justice, environmental protection, good governance, access to education and health care, and respect for human rights.

human trafficking—The illegal recruitment or trading of human beings through force, fraud, or coercion, in order to compel them to perform labor or services; often called modern-day slavery.
**hydroponics**—A technique used to grow plants using nutrient-rich water instead of soil.

**infrastructure**—The basic facilities, services, and installations needed for the functioning of a community or society, such as transportation and communications systems, water and power lines, and public institutions such as schools, post offices, and prisons.

**interconnectedness**—A fundamental principle of sustainability which states that natural and human-constructed systems interact with and impact each other and therefore cannot be separated.

**intergenerational responsibility**—A fundamental principle of sustainability which states that the current generation has a responsibility to leave ample resources for future generations on Earth.

**internally displaced persons**—People who are forced to leave their homes because of conflict, food scarcity, or other crisis but who remain within their country.

**interstate war**—A state of open, armed, and often prolonged combat between the regular military forces of two or more different countries, or between a country or countries and a group of people.

**intrastate or civil war**—A state of sustained armed combat between factions or regions within the same country.

**invasive species or alien species**—An organism not naturally found in a given ecosystem whose introduction to the ecosystem could be harmful to the environment, human health, or the economy.

**J K L**

**keystone species**—A species that has a disproportionately larger effect on their ecosystem than its abundance might suggest.

**life expectancy**—The expected number of years a person will live.

**M**

**macroeconomics**—A branch of economics that studies an entire economy and the issues that affect that economy, such as inflation, economic growth, and unemployment.

**malnutrition**—A state of poor nutrition; it can result from an insufficient, excessive, or unbalanced diet or an inability to absorb foods.

**market**—A system or structure through which buyers and sellers exchange goods, services, or information.

**Maslow’s hierarchy of needs**—A theory of motivation put forth by Abraham Maslow that is based on the organization of human needs from most basic to more complex.

**materials economy**—the system of extracting raw materials, turning them into manufactured products, and selling them to consumers who use and dispose of them.

**maternal health care**—The health care women receive during pregnancy, childbirth, and after childbirth.

**media literacy**—An ability to access and evaluate media messages of all kinds in order to understand how these messages create meaning and what impact they have on society.

**microeconomics**—A branch of economics that studies the behavior of individuals and firms with the market, especially how people decide to purchase certain goods and services.

**Millennium Development Goals (MDGs)**—Eight goals set by the United Nations Development Program in 2000 to be achieved by 2015 in order to improve the quality of life of the world’s poorest people. They are: end poverty and hunger, ensure all children complete primary school, eliminate gender inequality in education, improve child and maternal health, combat HIV/AIDS, promote environmental sustainability, and develop global partnerships for economic development.

**mortality rate**—The number of deaths per unit of population in a given place and time, often measured per 1,000 live births.

**multiculturalism**—The idea that people from many different cultural and ethnic backgrounds can coexist peacefully and equitably in one country.

**multinational corporation**—A corporation that has operations or provides goods or services in more than one country.

**N O**

**nation-state**—A political unit that exercises control and sovereignty over a defined geographic area and provides a socio-cultural identity for its people.

**non-renewable**—Refers to a limited resource, such as coal or oil, that cannot be replaced as quickly as it is used.

**ozone layer**—A layer in the upper atmosphere (approximately 20 miles above the Earth’s surface) that contains a concentration of ozone sufficient to block most ultraviolet radiation from the sun.
P

pandemic—An outbreak of disease that reaches across the globe or a large geographic region.

passive solar design—Design techniques and building materials that naturally collect, store, and distribute heat rather than using energy to run mechanical and electrical systems.

pathogen—A disease-causing organism such as a bacterium or virus.

patriarchal society—A society in which the male is the dominant authority figure.

peace—A state in which conflict is absent and differences among people are respected and embraced.

personal solution—A way in which an individual can act to alleviate a problem.

physical water scarcity—A type of water scarcity that exists when the demand for water is greater than local water resources can provide.

phytoplankton—Tiny marine organisms that perform photosynthesis and reside near the surface of the ocean.

population density—The number of people in a given geographic area.

population growth rate—The rate of increase in population over a period of time, often expressed as a percentage.

potable—Safe to drink.

poverty—A state when people lack the means to meet their basic needs. Poverty is defined and measured in a number of different ways based on factors such as income, human development, and relative deprivation.

private sector—The part of the economy consisting of non-governmental businesses and individuals who trade products and services for profit.

public health—The science and art of protecting and improving the health of communities.

Q

quality of life—A holistic measure of the well-being of individuals and societies that takes into account a variety of economic, social, and environmental factors.

R

reciprocity—A relationship characterized by a mutual dependence, action, or influence in which two or more parties benefit by doing things for one another.

refugees—People who have fled their country because they have a well-founded fear of persecution for reasons of race, religion, nationality, membership in a particular social group, or political opinion.

renewable—Refers to a resource, such as sunlight, wind, water, or fish, that can be replaced quickly and naturally.

replacement rate—The fertility rate required to maintain a stable population.

reproductive rights—Legal rights and freedoms regarding reproduction and reproductive health.

reserves—Stores of energy resources that can be extracted economically using current technology.

resource curse—The situation describing a country that has an abundance of natural resources but does not experience economic growth or development.

resource scarcity—A condition of limited resources such as a lack of sufficient food, water, or fertile soil.

S

self-determination—The right of all nations to govern themselves without foreign rule or interference.

social capital—The networks, norms, and mutual trust that allow people to coordinate and cooperate for the benefit of a community.

social determinants of health—The social, environmental, and economic conditions of the community in which we live that impact our health.

social movement—A type of group action that focuses on change at a systemic level.

standard of living—The level of comfort and material wealth of an individual or society.

stereotypes—Widely held and oversimplified beliefs about people and things.

stormwater runoff—The snow or rainfall that flows over impervious surfaces, such as roads, as it travels into stormwater drainage systems or directly into bodies of water like lakes, streams, wetlands, or coastal waters.

structural solution—A solution that makes changes within a system in order to alleviate a problem.

subsidy—Direct or indirect payment from a government to businesses, citizens, or institutions in order to encourage people to do something the government believes is desirable.

sustainability—The principle of meeting current needs without limiting the ability of future generations to meet their needs.

sustainable actions—Actions that help meet the needs of future generations while meeting the needs of current ones; at their best, they address the three facets of sustainability—environment, society, and economy to create long-lasting change.
sustainable design—Creating products and buildings in a way that maximizes benefits to the environment, economy, and society.
sustainable development—A process of economic, social, and political transformation using practices that meet the needs and desires of the current generation without decreasing the ability of future generations to meet their needs.
systems thinking—A field of study that looks carefully at all important components of a system and how they connect to each other.

T
tariff—A fee (like a tax) that a government imposes on imports or exports.
terrorism—The calculated use of violence or the threat of violence against civilians in order to attain goals that are political, religious, or ideological in nature; this is done through intimidation or instilling fear.

U V W
Universal Declaration of Human Rights—A global declaration of the universal rights that all people are born with, adopted by the General Assembly of the United Nations in response to the conflict that occurred during World War II.
universe of obligation—According to the historical sociologist Helen Fein, the circle of individuals and groups toward whom one feels a sense of responsibility.
urban planning or city planning—A branch of architecture focused on the design and organization of urban space and activities.
virtual water—The amount of water consumed or polluted to produce a product.
water scarcity—A lack of access to enough water to meet human and environmental needs.
water table—The depth that a well must reach in order to find water; the top surface of a groundwater supply.
worldview—A set of assumptions, perspectives, and beliefs held by individuals, cultures, and societies through which we make sense of our lives and the world.
Exploring Global Issues: Student Engagement and Achievement

Exploring Global Issues offers educators and students hands-on activities, real-world case studies, youth profiles, and facilitates active, engaged student learning. It also promotes student achievement with lessons and assessments aligning to NCSS, NCES, EfS, and Common Core standards and 21st century skills.

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Global Knowledge and Competency: Exploring Global Issues provides students with a global perspective on the major challenges facing our time. The student text provides the opportunity to learn about these issues, while the activities in the teacher’s guide establish the skills necessary to become an informed and responsible global citizen.

Interdisciplinary Connections: Exploring Global Issues features 24 in-depth chapters covering topics such as Sustainability, Economics, Water, Community Development, and Gender and makes interdisciplinary connections between each.

Application and Assessment: By providing readers with a systems thinking perspective on global issues, the ability to develop 21st century skills such as critical thinking and problem solving, and projects that allow for students to create positive solutions and take action, Exploring Global Issues can benefit a range of topics and courses. The Exploring Global Issues teacher’s guide contains activities and assessments that provide both formative and summative assessments for each chapter.

What Educators Say:

“Exploring Global Issues textbook is the ultimate one-stop shop for all things global. Whether you're looking to teach an entire course on sustainability or the environment, or you want to add engaging curriculum to core classes like social studies or science, this book is the one to get the job done. Students in my Global Issues classes agree: they’ve called the book ‘informative, topical, engaging, thought-provoking, and user-friendly.’”
—Jason Sinclair Long, Social Studies Department, Placer High School, CA

“Exploring Global Issues is unique in that it thoughtfully examines global issues that might otherwise fall ‘between the cracks’ of the average high school curriculum. It also objectively guides students to a genuine understanding of these issues, encouraging them to form their own well-supported opinions along the way.”
—Rick Malmstrom, Social Studies Teacher, The Ellis School, PA

“Exploring Global Issues is an excellent way to teach about complex, modern issues with great supporting resources that save a lot of time when trying to imagine how to delve into the many facets of modern global and ecological issues. The curriculum is flexible, adaptive, and user friendly, but does not compromise on the depth and detail of the issue even though it is extremely accessible to students.”
—Bridgette McGoldrick, History Teacher, The Annie Wright School, WA