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Integrated Food Systems Education: A Network Assessment of Bellingham, WA

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INTEGRATED FOOD SYSTEMS EDUCATION: A NETWORK ASSESSMENT OF BELLINGHAM, WA

By

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CHAPTER 1 INTRODUCTION

Bellingham, Washington, located in Whatcom County, is a uniquely situated urban center with a location and population that is suitable for developing a healthy community food system. While other cities in the United States have reached stages in their development where food production is far removed, a leisurely fifteen-minute drive out of downtown Bellingham will likely reveal dairy cows, acres of berries, salmon-bearing streams, mushroom-growing operations, vineyards, permaculture homesteads, and family-owned organic farms. Whatcom County is recognized for its diverse terrain, a patchwork of wetlands and floodplains, rivers and coastal beaches, gently rolling farmland and drastic mountain peaks. It offers idyllic views of mountain ranges and close proximity to the Salish Sea. This combination has long produced fertile lands for food production, and more recently, has enticed a rapidly growing population. This growth is accompanied by urban sprawl that is eroding away at the edges of those fertile lands. Residents of Bellingham and the surrounding county may consider themselves at a pivotal point. A thriving Farmer's Market and new policies and taskforces demonstrate a vested interest in our county's food system, meanwhile, food access is becoming increasingly disjointed within in and outside of Bellingham city limits as new developments crop up and farmlands disappear.

Food in Bellingham, Washington

The United States Department of Agriculture's (USDA) 2012 Census of Agriculture revealed 115,831 of Whatcom County's 518,135 acres, or approximately 22%, were used for agriculture, producing diverse yields including fruit and nuts, honey, meat livestock, vegetable, grains and beans, berries, dairy, poultry, and aquaculture. All these products amount to over $350 million in market value (USDA, 2012) however the distribution of that food does not

largely favor the residents of Whatcom County. Over a third of that $350 million comes from the dairy that is sold to Darigold and converted to powdered milk for the international market (Berardi & Lunde, 2008). Meanwhile, a majority of the berries grown in Whatcom County, mostly raspberries, and blueberries, are sold to processors for juices and preserves (Berardi & Lunde, 2008). Furthermore, despite the impressive market value numbers, a majority of Whatcom County farms are less than 50 acres in size and considered to be mid- to small-sized (USDA 2012). This is significant in that the financial gains that may look impressive on the county scale are distributed across over a thousand farms owned by single families who face increasing costs from a growing number of regulations in addition to rising minimum wage costs, and typical farm maintenance costs.

The combination of low food distribution within Whatcom County with the increasing financial and regulatory pressure on farmers makes an alarming case for the resiliency of Whatcom County's food system. This especially the case when considered alongside the urban growth rates and increasing populations. Census data from 2015 shows Whatcom County's population has grown 13.4% in ten years, higher than the 12.1% for the whole state (Washington State Employment Security Department, 2015). Meanwhile, agricultural land parcels are getting smaller, and being sold off piecemeal for county Urban Growth Area designation. It's a combination that supports a positive feedback of farmers selling land to development that accommodates the growing populations and increases reliance on other systems to produce our food.

As urban spaces expand and change, social, economic, and spatial divisions form leaving neighborhoods without access to affordable quality food. This is already being observed in the Birchwood neighborhood of Bellingham where a non-compete clause has left what was formerly

an Albertson grocery store, an abandoned storefront (Conahan, Easlon, & Kayser, 2016). Much of the rural county is also considered a food desert, where at least 500 people and/or at least 33 percent of the census tract's population resides more than one mile from a supermarket or large grocery store, or for rural census tracts, more than 10 miles (USDA, 2015). Not every rural household is agriculturally productive. Those that are, may not grow or harvest crops that directly feed their own household. Other indicators also capture a concerning image of food accessibility in Whatcom County. Forty-three percent of our grade school students participate in the National Program for Free and Reduced Lunch, (Child Nutrition Services, 2016). I suggest these are the warning signs of an increasingly detached food system here in Whatcom County. Detached food system meaning food knowledge, access and availability are not equitable across community members, a lack a relational connectivity between food producers and consumers, and an increasingly threatened ecological resilience of agricultural land. As food is shipped in from farther away and our neighborhoods grow and multiply, we may no longer concern ourselves with the needs and lives of those just a few blocks away. My project was conceived in an attempt to address these issues similar to many other food system education programs and curriculum around the country. First, however, I must acknowledge the positive efforts that are taking place in food system education at the local level.

Community education and new opportunities

Local non-profit groups, volunteer task forces, and government institutions have taken on projects, outreach, and policy changes that address concerns of food access, food quality, sustaining local agricultural economies, and natural resource protection. Whatcom County Food Banks redistribute two million pounds of food a year through a deft and complex volunteer production at Bellingham Food Bank (2017). Non-profit organizations such as Community to

Community, Sustainable Connections, Common Threads Farm, and the Chuckanut Center support community food system resiliency by providing resources for food sovereignty, supporting sustainable business practices, harnessing public school sites for healthy food education in the garden and kitchen, and offering a space and network to share knowledge and skills around food resilient community. These four organizations are among several others in the county that contribute meaningful work to shape a community interest and stake in our food system.

As a community member, student, and educator within Bellingham's food system I had hoped to contribute to this educational network by developing and teaching a comprehensive curriculum alongside the existing Bellingham food education programming. My original intentions were ill-considered and ill-planned, subsequently falling flat. Moving forward from repeated failure, I was asked by a long-time community member to consider an alternative approach. Rather than trying to teach something novel as a relative newcomer and novice to an established community, why not learn from the existing network of food system educators and ask the simple questions of "what is being done well" and "what more is there to do?" Under this new direction, I pressed forward by interviewing five local food educators from separate institutions that serve varied audiences and teach different but overlapping content.

CHAPTER 2 MY EDUCATIONAL PHILOSOPHY

Steering my project aspirations is my educational philosophy—that education is an inherently and imperatively ethical action. As such, I recognize this project contains assumptions and biases about the significance and value of food system education. These are apparent in my curricular decision-making and interview process and analysis. I am not alone in thinking of environmental education, and especially food system education, as inherently ethical. It is a subject that has long been discussed and debated among academics, more recently and particularly in the op-ed pages of the *Environmental Communicators* from the 1980's through the early 2000's (Jickling, 2003). Educational theorist Elliot Eisner found the value-laden nature to be so compelling and distinct as to design a framework for three value-laden curricula found in every classroom; the explicit curricula, the implicit curricula and the null curricula (1985). While some scholars have contested the degree and appropriateness of ethics and advocacy in education, particularly environmental education that has often been centered around sustainable development, environmental educator and advocate for experiential education Clifford E. Knapp points out the work of the instructor has always been one of practicing and imparting moral issues, "including seeking peaceful solutions rather than violence, accepting cultural diversity rather than prejudice, and insisting on honesty rather than cheating" (Knapp, 1999; Jickling, 2003) Knapp finishes his statement with a lingering question, "What do students learn about their teachers, if educators never take public stands on what they perceive to be critical issues and threats to our survival" (1999, p. 19). I agree with Clifford Knapp and Elliot Eisner's approach to lean into the complexity that is the ethical dilemma of teaching value-engrained curricula, particularly when it comes to food systems education.

Galt, Clark and Parr extend the sentiment specifically to sustainable and agricultural food systems education or SAFS. They argue that SAFS are inherently value-laden and rife with environmental, economic, and societal contexts that necessitate value-oriented "reform [across] educational programming, from curriculum design and courses to teaching approaches and evaluation" (2012). Furthermore, they point out schools and universities often proclaim a set of virtues or values describing expectations for behaviors, treatment and tolerance of individuals and that to disconnect from the well-being of others, an assumption linked to epistemological objectivism, can lead to unethical actions (2012). At the heart of this critique is a recommendation for more integrative education that holds multicultural and interdisciplinary perspectives alongside systems-thinking and experiential learning.

Communities across the United States are grappling with this educational praxis as food systems curriculum and projects are experiencing an unprecedented growth (Galt, Clark & Parr, 2012; Campbell, Carlisle-Cummins & Feenstra, 2013; Jordan et al., 2014; Yamashita and Robinson, 2015; Meek & Tarlau, 2016). These programs arise out of concern for protecting open spaces for agriculture, building social capital, transforming systems to become more sustainable and resilient, addressing the juxtaposition of industrial-aided abundance with inequitable access, and cultivating critical food literacy among many other motivations (Warner et al. 1999; Jordan et al., 2014; Yamashita and Robinson, 2015). My own intentions fall into the same medley of value-based assumptions and ideals and are in response to the earlier cited trends in Bellingham and Whatcom county's food system. In particular, I resonate with Patricia Allen who during her time as Director of the Center for Agroecology and Sustainable Food Systems at the University of California, Santa Cruz put out a call for academics to engage with food system research and education because "[n]o other public issue is as accessible to people in their daily lives as that of

food justice. Everyone—regardless of age, gender, ethnicity, or social class—eats. We are all involved and we are all implicated" (2007). Through my original curriculum and subsequent project, I hoped to heed this call. By offering a snapshot of the existing opportunities within the Bellingham Food System and recommending potential areas for increased growth and collaboration, I hope to impart knowledge and imperative within the community as the health of our environments, relationships, and future generations may depend on it. Furthermore, such an overview and set of recommendations might serve as a point of reference for other communities hoping to expand their educational programming.

CHAPTER 3 STARTING WITH A CURRICULUM

The decision to design a curriculum centered on food arose in my second quarter of my M.Ed. candidacy at Western Washington University. From a confluence of distractions—facing impending deadlines for a project to create a curricular shell, attempting to reconcile my own seemingly contradictory passions in environmental education and culinary arts, and my increasing awareness of a disordered food culture in the United States—emerged an obvious recipe for inquiry. What would it look like to develop and teach a curriculum that communicates the significance of individual decision-making as participants in global and regional food systems? A curriculum that would challenge a narrative predominantly owned by big brands and businesses through the ads and research they fund, and instead, looks at the resiliency and capacity of a whole system while engaging and celebrating the human element of culinary artistry and tradition

Designing the Curriculum

While these concepts may be large and could be unpacked in as many ways as there are classrooms, I would focus on these ethical and inherent qualities in the context of problematizing and healing food systems through education, attempting to address those ethical considerations, the connectedness of elements and lifeforms in food systems, and to question conventions that suggest food cannot be affordable, high quality and delicious all at once.

To further strengthen the ethical backbone of the curriculum, permaculture ethics and principles would be included in the undertones of each lesson. Permaculture takes on an ethical viewpoint in its three tenets: care for the earth, care of people, and care of the process, meaning that excess is distributed to those in need. Permaculture also celebrates and operates in systems

thinking and praxis-based learning through its principles which include multiple functionality, resiliency, obtaining yield, small-scale, intensive solutions, mimicking nature, diversity, creativity, and recycling of energies (Bloom & Boehnlein, 2015). While these principles are most often applied to permaculture homesteads and communities, they have obvious applications and benefits to all individuals who live in the largest community, the Earth. In other words, these principles facilitate a local scale approach to a global mindset.

Using a blend of systems thinking, permaculture philosophy, and praxic learning, the curriculum was intended to cater to multiple learning styles and to increase longevity beyond the boundaries of the lesson series. The curriculum was not designed to prescribe a diet, or even make infallible claims about how food systems ought to operate, but instead, share knowledge, facilitate discussion, and provide skills that make encourage wading into the weeds, to think critically about daily food decisions.

The curriculum began as a curricular shell, completed in winter quarter of 2017. The curricular shell included the following conceptual elements: audience, schedule and material logistics, mission, aims, objectives, risk, and evaluation. See Appendix A for the original curricular shell. These elements underwent several drafts and revisions and were supported by existing educational resources on food systems and consumer empowerment. Despite containing a theorized setting, audience, and application, the curricular shell lacked a complete sequence of lesson plans and a concrete purpose. As it currently exists, it serves as a template for interested educators hoping to teach a more comprehensive and holistic food system curriculum.

Teaching the Curriculum - The Bellingham Food Co-op

In search of an audience for the curriculum, I partnered with the Bellingham Food Co-Op. Arrangements were made in coordination with the Co-op's Education Outreach Facilitator,

Kevin Murphy to teach a version of the curriculum adapted for teaching a population of adult students from Bellingham with the context of the Whatcom County food system.

Initial planning scheduled six classes over six consecutive weeks to cover the six-different human-food intersections identified in the original curricular shell. Classes would have taken place in a combination of settings including the Bellingham Community Food Co-op Healthy Connections classroom, the Outback Farm on WWU's campus, the Bellingham Farmer's Market and the Bellingham Food Bank. These three sites were chosen based on their accessibility, the educational opportunities to engage in the space, and my own familiarity. With this population in mind, the curricular shell was supplemented and adapted to match the six-week schedule.

The six-week series was offered as a complete package, beginning on October 7th, 2017 and ending on November 12th, 2017, with a maximum class size of 15 individuals. Classes were promoted through the Co-op via there course catalog, in-store flyers, and website. See Appendix B for the Co-op listing. The complete class series was offered for $60.

After one month of open registration, only one participant signed up for the course, and it was subsequently canceled. The curriculum was once again restructured for a new audience.

Teaching the Curriculum - WWU Campus

Following failure at the Co-op, my focus shifted to Western Washington students as a potential audience and the student-led Outback Farm as the venue. Consultation with Kevin Murphy led to conclusions that low participant interest in the Co-op curriculum was likely due to the several-week and several hours commitment of the series and possibly the cost given its distinction from their typical offerings of one-off cooking and nutrition classes. As a result, the

curriculum was adapted to allow a free, drop-in style seminar with no commitment to attend each week's session.

In coordination with the Outback Farm's student coordinator, the seminars were scheduled for Sunday afternoons following student work parties on the farm during the fall quarter. The series was promoted on flyers distributed across campus departments, dining halls and dorms, and was shared on social media sites including The Outback Farm, WWU Student Housing, and an Associated Students' club centered on outdoor restoration projects. Given this new model, the curriculum was restructured to cover four weeks of topics and was titled "From Field to Table: A Weekly Dialogue/Workshop Series on Interacting with our Local Food System." See Appendix C for a copy of the series flyer.

Despite the distribution of flyers and the social media presence, the first session titled "Complexifying the Local/Sustainable Food Movement" was attended by two students. One freshman who saw the flyer in her dorm hallway and a graduate student peer. During the hour-long session, we discussed key numbers describing food distributions and access in Whatcom County, read and unpacked a short excerpt from the World Watch Institute problematizing local foods' environmental impact, and shared and reflected on our own values, decisions and communities we identified as relating to food. Both students stated an interest in returning for another session, with the freshman sharing that she would be out of town for week two but had friends who were interested in joining her for week three to talk about growing food at home.

Despite the affirmative feedback, the following three weeks yielded zero attendance with week three being snowed out completely and cold, rainy weather during the other two weekends. The Outback work groups I had hoped would carry over into attending the series was canceled

twice and ill-attended the remaining weekends. Given the confluence of challenging factors, many out of my control, I returned to the drawing board.

CHAPTER 4 RE-ENVISIONING THE QUESTION

During this time of reflection, I consulted with two community leaders who serve the liminal space between the ivory towers of the campus and the needs and offerings of the larger Bellingham community. After sharing my repeated failures to introduce a new teaching tool, they kindly pointed out that nobody asked for this curriculum. As a student of a two-year program, my ties to the community are new and few whereas my potential audience may have had decades of familiarity with the food landscape of Bellingham. These two individuals framed my objectives in an alternative way. Instead of trying to supply all the solutions, my project should aim to learn from and complement the existing work involving food systems education already existing in Bellingham. Thus, applying the value-based and critical eye sustainable agriculture and food systems education discussed earlier.

Using interviews as my qualitative methodology allowed me to parse out expert perspectives on the strengths and gaps of Bellingham's food system education. Themes pulled from these interviews would identify collective strengths and provide direction for future recommendations. These interviews were conducted in compliance with Human Subject Research Exemption and approval by WWU's Human Subjects Review Committee. Interviewees provided informed consent prior to each interview.

Selecting programs

As described previously, there are several widely varied types of programs within the city of Bellingham that offer education related to food. Six different organizations were contacted to schedule a semi-structured interview following guidelines for human subject research. These six organizations were selected to capture a diverse representation of institutional size, audience served, funding sources, and content offered. The educators from these organization serve as key

informants within the community of Bellingham based on their expertise and experience working directly with a large population of Bellingham's consumer. In this way, they are able to offer specific perspectives unavailable to me as a relative outsider and to collect this information in a short period of time. Invitations for interviews were sent by email and requested a thirty to a ninety-minute block of time with an individual who had served in an educational capacity and preferentially had been teaching and/or living in Bellingham for a period greater than five years. Five of the six organizations agreed to an interview. A description of the five interviewees and their represented organization follows:

Interviewee 1. A collegiate professor who teaches courses related to agriculture, sustainability, and gastronomy. They have long-standing research relationships with the farmers in Whatcom County.

Interviewee 2. A public high school instructor for Family and Consumer Science with professional experience in gardening and culinary arts. They have lived in Bellingham for over ten years.

Interviewee 3. A director of a non-profit organization that facilitates gardening and nutritional education for grade-school aged children. Programming occurs on school campuses and at camps.

Interviewee 4. A director of a non-profit organization that operates a market-producing farm and offers educational opportunities for new farmers, dialogue spaces for existing farmers, and skill- workshops for hobby gardeners. Additionally, this organization hosts large scale, open-to-the-public events celebrating farm produce and harvest.

Interviewee 5. A manager at a non-profit who educates and facilitates relationships between consumers, farmers and local businesses. This non-profit is spear-heading projects to streamline the interface of different stakeholders in the Bellingham food system.

The organization that declined an interview is a non-profit focused on social justice and farm workers' rights

Interviews

The interview questions were presented as a guided interview. Topics were outlined in advance, but the sequence and timing of working the questions into the interview were at my discretion. This allowed me to maintain a conversational and situational interaction while opening opportunities for richer responses (Cohen, Manien, & Morrison, 2000). Alternative methods including fully-guided interviews and surveys were not used due to constraints in time and resources for this project and the restrictive nature of these response types.

Other studies have used the guided interview approach in curriculum development and educational assessment. These include Kathleen Hillmire (2016) who used guided interviews with food system practitioners to inform the direction of her curriculum development for a course on interdisciplinary food systems at Fort Lewis College in Durango, Colorado. Additionally, science curriculum for environmental education programming Forests of the Future in British Columbia interviewed local Tribal elders. Curriculum writers invited them to discuss local ecological knowledge. This knowledge then informed pathways of information in the curriculum tied to economic development, environmental responsibility, and cultural resilience (Ignas, 2004). These studies support using guided interviews to open the flexible discussion with experts in the community to inform a curriculum as an educational tool.

For this project, the interviews were scheduled within a one-month span during March. Time for the interviews was capped at ninety minutes but aimed to include at least thirty minutes of question and answer for five questions. The five questions included:

1. Describe the program you run. How does your institution's programming fit into the network of food education in Bellingham?
2. What is missing from food education landscape in Bellingham? For instance, are we meeting the needs of all ages? Are content areas missing? Are groups of people overlooked?
3. Based on your experiences, what do you identify as the greatest challenge(s) to teaching food-system related educational programming in Bellingham?
4. What are your aspirational goals for the future of food education in Bellingham?
5. Is there anything else you would like to share with me?

From the interview notes, I was able to move forward with an analysis of key themes falling under strengths or gaps/challenges within the food education network of Bellingham. Strengths and challenges can be perceived as the nexus points and connections of resources, audiences, and content, or the lack thereof.

CHAPTER 5 INTERVIEW ANALYSIS

Interviewing these five educators and interpreting the differences and similarities of their responses provided a broad snapshot of food system education. Interview responses were organized using a combination of precoding and postcoding categories to identify thematic elements across the organizations. Precoding is a method of qualitative analysis where predetermined categories have been identified for response sorting and counting of interview responses despite having open-ended questions (Cohen and Manion, 1994). Postcoding occurs after the interviews based on grounded theory to identify emergent themes across interview responses (Cohen and Manion, 1994). Precoding for these interviews broke down responses into the broad categories of "positive" or "negative" (e.g. challenges, limitations, gaps and barriers). To further fine-tune these categories into different organizational structures that could be advised on, I postcoded responses into the categories "audience," "content," and "resources." Table 1 shows these coded responses from the interviews.

Table 1. Thematic elements across Bellingham's network of food system education.

	AUDIENCE	CONTENT	RESOURCES
STRENGTHS	Participating grade school students, "local foodies," gardeners, "small" farmers, new farmers, culinary artists, self-selecting college students	Farm incubation, DIY gardening, skill-based workshops, nutrition, cooking, farm/garden to plate (CSA and farmer's market)	Growth over time (precedence), Whatcom Food Network and Assessment, collaboration through strategic support, momentum (voluntary educators)
LACKING/ CHALLENGES	Seniors, "large" farmers, parents, "swing-shoppers," high school, marginalized community members	"Empathy with the food chain," misplaced concerns (individual sustainability over political infrastructure), avoiding food shaming, financial literacy, social-ecological paradigm, social justice	Collaboration between consumers and industrial farmers, collaboration between programs (labor and funds), school infrastructure, market infrastructure, programmatic redundancy (toe-stepping)

Because the nature of my assessment is meant to be summative from the perspective of educators in the community at large, the responses are not attributed to specified individuals. Instead, I explain here some of the key themes as a composite of the responses. This also allows me to preserve the anonymity of the interviewees among the small subset of the food education community.

Strengths

Grade school students. Grade school students are directly supported through a local non-profit organization that emphasizes nutrition and growing food in on-campus gardens. In the summer months, camps bring students to the university experiential farm to learn more about food production. This non-profit is well-known and well-supported. It was mentioned by every

interviewee. Despite being a non-profit, its model of shared space and resources with public school campuses embeds it in the everyday experiences of young students. A drawback to this model is the distribution for children across Bellingham to access this education is not equal.

"Local foodies." Discussed directly and indirectly across interviewees was the trendiness and "lifestyle" aspect of valuing local and/or sustainable food choices. This is observed in consumers who seek out local products, regularly shop at farmers' markets and own CSAs. These consumers might opt for education opportunities in the community related to the food system or might frequently volunteer their time and knowledge to the various organizations in the community. One interviewee described these "local foodies" as a small percentage of the complete population they hope to support. Because of their consumer values, these individuals need less direct marketing to include them in the system. A few interviewees acknowledged this subset of the population often arrives from a place of privilege. Because of this privilege, these individuals shouldn't set the bar for what an ideal consumer/producer ought to look like. Their knowledge and enthusiasm, however, should be obtainable for all community members.

Gardeners. Like "local foodies," gardeners, specifically those who grow produce, are well-served in Bellingham. Food production is a skill supported by all the interviewed educators in addition to other community organizations. Skill-based workshops and community gardens are available all year-round. Master Gardener certification is available downtown through Washington State University Agricultural Extension.

"Small" farmers. Within Bellingham's system of education, "small" farmers are glorified. Within the network "small farmers" can be an audience or a resource. Educators used "small farmers" interchangeably with "local farmers," "market farmers," and "sustainable farmers." None of these titles, however, are mutually exclusive and in some cases are

misnomers. As a resource, "small farms" were praised for their devotion to serving the community and "staying local." Besides being a food source for local restaurants and individuals, interviewees recognized farms as educational sites. Organizations exist in Bellingham to connect these "small farms" with businesses. Furthermore, a few groups promote training and dialogues amongst farmers to build resiliency.

New farmers. For reasons similar to “small farmers," new farmers are well-supported through farm incubator programs, internships and apprenticeships. These internships take place through non-profits and on privately owned small farms. Washington State offers resources support private farms that offer such opportunities.

Culinary artists. Culinary artists, both professional and amateur, are supported through various avenues. Local restaurants, the Food Co-op, and individual chefs offer culinary lessons. These lessons range in topics from specific cuisines to applied kitchen skills. Programming exists to support new artisans in their marketing and outreach. Furthermore, resources exist to connect them with food producers (e.g. “new and small farmers”) and space or equipment.

Self-selecting college students. Lastly, concerning well-supported audiences, college students who self-select into learning about food systems have ample opportunity to do so. Courses exist on Western Washington University's campus related to agriculture, permaculture, "eco-gastronomy", and foraging native plants. Furthermore, there exist multiple Associated Students groups on the campus related to food. Lastly, Bellingham Technical College offers degrees in culinary arts.

Growth over time (precedence). Considering resource strengths, the longest residing food educator interviewed strongly asserted that Bellingham has come a tremendous distance in its culture of a local and sustainable food system. Improvements have been in availability,

accessibility, and education within the food system. This is not to say the work is complete by any means. Instead, they suggest there is momentum and positivity within the existing network. In turn, this momentum and positivity perpetuate growth. Similarly, all but one interviewee reported positive trends in the community from their own organizational perspectives. Evidence for growth was suggested in numbers (e.g. new projects, consumers, farmers, volunteers, and/or interns).

Whatcom Food Network and Assessment. Perhaps the greatest strength identified is the connectivity and dissemination of information through the Whatcom Food Network. The Whatcom Food Network exists specifically to facilitate communication and collect information within the larger Whatcom County food system. The Network coordinates forums, bringing various food system organizations together around key topics. From the forums, they facilitate collaborative efforts to address these topics. Currently, the Whatcom Food Network is focusing on building a food system plan that prioritizes resiliency in food access, agricultural resources and profitability and community health.

Collaboration through strategic support. Each of the five interviewees was profuse in their acknowledgment and admiration of other partners or organizations. Interviewees referenced each other and organizations outside of my subset. In some cases, interviewees praised other organizations for the resources they shared. These resources typically included labor, coordination, publicity or marketing tools and digital support.

Challenges

Seniors. When asked about gaps in the community, one interviewee identified seniors. Seniors who live in retirement communities might be ignored in the larger community programming, food-related or otherwise. This interviewee expressed concern over the cultural

trend of abandonment of the elderly. Some retirement complexes or senior-living homes have small on-site gardens, but more could be done to bring fresh, local food to these communities. Trips could be coordinated to invite this population into consumer agricultural settings.

"Large" farmers. After being told by one interviewee that the largest gap in the community's educational food system was the villainizing of "large" farmers, I offered this consideration in later interviews. All individuals subsequently did not think this was a priority. They cited variations of the excuses "choosing your battles," or "large farms" are disinterested. Nonetheless, these farmers are equally a part of the local community and economy and face their own unique struggles relative to the food system. These farms might benefit from support and compassion from the local community. This is especially true if the aim is for our community is local food resiliency, harmony, and environmental health.

Parents. As a complementary challenge to the earlier mentioned grade school audience, two interviewees identified parents as potential challenges when teaching young children. These children may bring home new ideas learned in the garden or about nutrition and encourage their family to consider new consumer behaviors. Parents may undermine these lessons by supplying food at home that counters the "healthy behaviors" taught in school. This is thought to be a product of lack of programming for parents. It is important to address these students may come families that don't have the access or means to the food expectations set in a classroom. Interviewees expressed variations of concern regarding their educational work around supporting local, fresh and/or healthy food without creating a culture of food shaming. Out of this concern arose questions of content on financial literacy for individual consumers and families

"Swing-shoppers." When considering the "local foodie" consumer, they outlie the larger majority, the "swing-shopper." This group is the average consumer who shops at corporate

grocery stores, may buy predominantly processed foods, and view farmers' markets as a novelty excursion. While this group represents a significant portion of the population, demographically this group is tremendously diverse. It is the aim of several food-related organizations to capture the attention of this audience. Yet do so with broad reach and to keep their attention proves challenging due to lack of resources mentioned below.

High school. Among Bellingham's youth, students of high school age appear to have the least opportunity for food system education. Two interviewees mentioned the difficulty of navigating institutional barriers within public schools. Resistance to food-related field trips and on-campus gardening has been persistent from the school administration for at least the past decade. External sources for food system education target younger students or are aimed towards the general adult population.

Marginalized community members. When asked explicitly about groups of people that might be missing from the audience of food education in Bellingham, not a single individual mentioned a group that was not already a part of the mainstream economic, political and social group. The Whatcom Food Network cites social justice as one of its four main missions and considers food access, food deserts, and farmworker's rights among its priorities. Despite this, these issues were absent from the interviews, even with some probing on my part. While not an entirely exhaustive list, missing audiences include Indigenous peoples (notable Lummi and Nooksack tribes), farmworkers, Latinx and Hispanic communities, rural communities and the homeless population.

Collaboration between consumers and industrial farmers. Beyond involving "large farmers" in the food system education network, there is a lack of effort in facilitating relationships or "empathy" between local consumers and the larger farms who don't sell to the

local market. Organizations with missions focused on fostering such relationships between local small farms and consumers seem to ignore the potential connection. Instead, these connections appear to be deemed irrelevant to their larger goals in envisioning a thriving local food community, despite the economic, cultural and societal contribution these farms add to the community.

Collaboration between programs (labor and funds). Despite collaboration as a strength of the current education network, interviewees also unanimously agreed that more could be done to create more efficiency and clarity in the relationships between programming. Lack of funds and/or labor was often cited as the rationale for failing to “stay on top of” these relationships.

Programmatic redundancy (toe-stepping). Alongside gaps in collaborative opportunities, there was a sense of some curiosity and unawareness of other projects and audiences across organizations. Most of the interviewees acknowledged there was likely some redundancy in the populations served and messaging. One interviewee, however, saw this as a potential strength to "create normalcy." Another individual suggested that the gaps in information between groups may be intentional to avoid stepping on other groups' toes.

Market infrastructure. Finally, an often-overlooked resource and one that proves challenging to navigate are the conventional grocery stores. The stores where most consumers are purchasing their groceries. The organizations I interviewed and others they cite share common venues for marketing and outreach. These venues include Food Co-op, Farmer's Market, community events and festivals, and local farms. It was suggested that corporate nature of the larger grocery stores made it near impossible to collaborate on the regular basis. Nonetheless, these stores are a reality of the United States food chain and how most consumers in Bellingham access food.

Community Players

In addition to the interview analysis, I created a list of stakeholders based solely on the groups mentioned and represented during the interviews. Figure 1 represents the key groups in play within Bellingham's food system as it currently exists and was expressed to me by the five interviewees. The aim of this modeling is descriptive and is useful for me in identifying overlooked audiences.

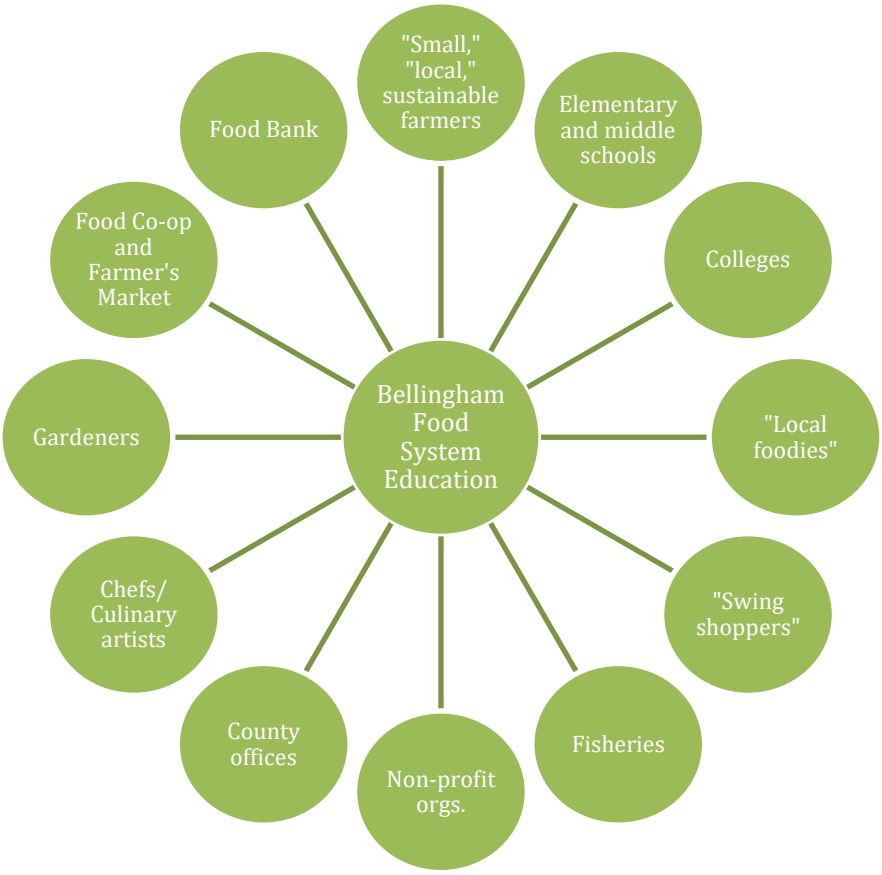

Figure 1. Key players acknowledged within food system education in Bellingham.

Limitations

Despite the detail and candor volunteered by all five interviewees, they reflect only a subset of perspectives existing in Bellingham's community at large. They were selected based on

their expertise and time spent as educators and/or residents in Bellingham, and my questions were framed to draw out community-scale concepts. While I believe their voices have authority as key informants, it is important to recognize these voices are at best interpretive when discussing audiences that are not inclusive. For example, the Latinx and low-income communities, populations that are largely represented in the Birchwood food desert neighborhood (Conahan, Easlon, & Kayser, 2016), as well as the farmworkers and Indigenous tribes located within Whatcom County, were not addressed and in some cases seemed to be avoided in interview conversations. The Latinx and Hispanic population make up the second largest demographic after the "White alone" category in Bellingham's 2016 Census. The scope of this project did not include interviewing every educational group in Bellingham, nor do I interview individuals who fall into the identified consumer/audience category. Furthermore, it's worth mentioning that myself, and reasonably the other educators, are informed by values based on personal experiences and privileges that may not hold true for other residents in Bellingham. Similarly and lastly, my interpretations of interview responses are subject to my own biases and expectations. These interpretations should be read as such and not as direct input from the interviewees.

CHAPTER 6 RECOMMENDATIONS

Bellingham is a community making great strides to increase consumer and producer education and facilitate connections between the two. Despite the challenges addressed, Bellingham is a community taking action. Regular forums and planning from the Whatcom Food Network point to progress in the reach and comprehension of education every year including the Whatcom Food Assessment project and the Whatcom Food Atlas. Projects initiated and piloted by Bellingham non-profits and the Whatcom Conservation District are serving as models for urban and agricultural communities across the nation. As Bellingham moves forward in its collaborative efforts, I offer a few general recommendations. These recommendations are derived from four emerging challenges in the interview responses and my own perception that our current network of food system education is not an inclusive and accessible resource across Bellingham and the surrounding county. One caveat, I do not address securing funding in my recommendations. I do recognize however that new ideas often require more resources. Because my background is in education and food systems, I will leave financial strategy to financial experts. Furthermore, new funding is better secured with a forward-thinking plan in place.

The following recommendations are broken down into the emerging challenges, a brief and general description of resources for solutions and how it might take shape in Bellingham, and finally community implications. Descriptions of organizational involvement are purely examples of how these recommendations could be incorporated into the existing food system. They are based on my interpretations of the cited models and the current local food system based on my research and analysis. They do not capture the nuances or precedents in relationships between programs nor any organizational restrictions that may exist. The community implications identifies the intended goals achieved by completing each recommendation. These

goals come from a blend of my examination of the ethics and values in environmental education, the call for more inclusive food systems discourse, my interpretations of the aspirations of the interviewed key informants and my own assumptions about my community's values.

Recommendation 1. Teach the teacher to build community.

The Challenge: Interviewees identified challenges to community-education among the available labor and the capacity to cater to the growing population across several dispersed neighborhoods. Furthermore, the diversity of the "swing-shopper" audience is vast given the broad category of consumer and neighborhoods with marginalized community members may be overlooked entirely.

Resources and Models: One model for combatting these challenges is to empower community members with knowledge and resources to share the information. Similar models exist in slightly different contexts across the United States. In Bethel, Vermont, a community eager to create meaningful relationships in their community following a devastating tropical storm secured a small grant to develop a "pop-up university" (The Vermont Community Foundation, 2015). While the local college, Bethel University, took the lead on organizing the initiative, the model wholly relied on "neighbors coming together to teach and learn from each other" (The Vermont Community Foundation, 2015). The success of their project and the enthusiasm met by community members from various walks of life I believe can be recreated in the neighborhoods of Bellingham. Another curricular project in Madison Wisconsin invited community members without teaching backgrounds into elementary schools to volunteer their knowledge on topics that matter to them (Filapek, 2015). To empower these "volunteer teachers" they were given thirty minutes to forty-five minutes with a certified instructor to discuss how to

best design and teach their lesson to a small group (Filapek, 2015). Similar tactics are already in use at the Food Co-op or non-profits like Sustainable Connections. Both groups recruit community members with skilled experience to teach these classes or lessons. While in some situations these individuals are compensated or allowed to make a profit, this is not always the case. The teachers are not required to secure their own space or resources. These are typically supplied by the sponsoring group.

These models could be amplified to disseminate information further while also building community. Existing food curriculums or my curricular shell could be adapted as a template to enable individuals to create their own micro-learning communities. Imagine a curriculum built around talking points, readings, and/or activities that could occur alongside a potluck dinner. There could a sequence of "lessons" that would occur with whatever degree of regularity, analogous to book club meetings. Ideally, this curriculum would serve as the glue for groups of friends, neighbors, or families to regularly gather and learn collaboratively. While consistency in messaging or interpretation might vary more greatly than when taught by an expert, accessibility would increase since individuals need to go no further than their own dining room table or neighborhood block. The more adaptable the better, as prior successes seem to rely heavily on the experiential contribution and interest of the volunteer teachers.

Concurrently, organizations within the Whatcom Food Network could incorporate themes and topics from the “lessons” into events and farmer’s markets that occur throughout the year. These larger community gatherings could be opportunities to facilitate further elaborate, skill workshops or larger dialogue. These gatherings could also vary in scale depending on the corresponding. Ideally, organizations would consider venues or partnerships in communities outside of downtown Bellingham to create more opportunities to attract new interest.

Within Bellingham's community, Sustainable Connections, ReSources, and Community to Community Development (C2C) are well-positioned to facilitate such an opportunity. Sustainable Connections and ReSources both work in similar spaces of broad community sustainability. Broad in that they aim to serve many audiences across different sectors (eg. food, energy use, schools, clean waters, waste management, transportation, and more). Sustainable Connections works most closely with local businesses while ReSources places emphasis on science, education and advocacy. C2C organizes activism and education around food sovereignty and farmworker and immigrant rights.

Based on previous projects that have engaged the public in activism and their ties to community members, a co-facilitated and co-promoted workshop by C2C and ReSources could be a useful starting point for engaging interested individuals who have skills or knowledge tied to the food system. This workshop could take after the earlier mentioned models in Vermont and Wisconsin by training on teaching styles and offering supplemental resources such as talking points, readings, and other materials. Sustainable Connections could bring in perspectives of skilled business owners who may also want to contribute their knowledge on a volunteer basis.

This sort of programming could occur on a rolling schedule throughout the year for individuals interested in hosting their own pop-up workshop within their own circles or neighborhoods. Alternatively, it could be a multi-week event, an "open-house" style "pop-up" university across Bellingham or even Whatcom County around food systems. While it would require much more coordination and collaboration across different programs to attract, promote and support volunteer instructors, each "class" or workshop be led by individuals.

Community Implications: By using cross-organizational collaboration to organize, train, and provide informational resources to Bellingham community members, *teaching the*

teacher to build community could empower individual agency for engaging with the local food system. This model encourages communication between community members and sharing of knowledge and skills. Ideally done in an inclusive and far-reaching format to build compassion and inform reflection on ethical attitudes around food-related decision making.

Recommendation 2. Plan for a lifetime.

The Challenge: Interviews with educators from the different organizations suggest there is not complete programming across age groups or even generations within a family. Specifically, interviewees cited concerns about the elderly and high school-aged students being overlooked in the suite of offerings available through public and non-profit institutions. Furthermore, when young children are involved in food system programming, there may be a disconnect with the experiences they have in their household due to lack of familiarity, access, availability, or value on food from their parents. This is further supported by the identified audiences of the educational food system in Bellingham. Taking time to map the broad strokes of a Bellingham resident's educational journey through the food system from childhood to old age could be useful for identifying opportunities for new programming.

Resources and Models: Communities with physical and social features that can address needs and interests across the ages of its residents are termed "livable communities" (Warner, Homsy, & Greenhouse, 2010). The American Planning Associations identifies three important considerations in policy and development planning to create these livable communities. These considerations can be used to bullet point the existing programming and room for growth across generations. These considerations are: building intergenerational coalitions, encouraging and facilitating civic engagement, and comprehensive services to address needs and challenges

across generations (Warner, Homsy, & Greenhouse, 2010). Despite these considerations being framed for the more general "livable community," the general ideas of an intergenerational coalition, engagement and comprehensive opportunities could be applied to the food system education network.

This could tie into Recommendation 1, encouraging families to explore and learn together. There is also an opportunity to bridge generational communities. For example, programming that could bring together high school students and the elderly around growing, cooking and/or eating food would support two groups who appear to be overlooked while also adding to the collaborative richness of our community. This is not to suggest that every Bellingham resident must make it to the age of 80 knowing how to grow food and have finessed the intricacies of their dietary needs. Instead, this educational timeline would be a visual tool to more evenly distribute the educational opportunities across generations. A visual tool might also help with tailoring programming to diverse content at age-appropriate levels and could enable collaborative learning in inter-generational households.

Within Bellingham, there are several non-profit and private farm and garden organizations. To name a few, there are City Sprouts, Cloud Mountain Farm Center, the Chuckanut Center, Joe's Garden, Common Threads, and a gleaning program run by the Bellingham Food Bank. Each of these organizations has hosted or conducted work parties which are opportunities to build intergenerational coalitions of able seniors, adults and children across ages. For cohesiveness, a third-party group such as ReSources, the Community Food Co-op or the Food Bank, could take the lead organizing a monthly rotating schedule where individuals can regularly come together at a new location, thus removing the burden from any one organization to host repeatedly.

When considering the needs of elderly community members, physical accessibility if often barrier, though of course isn't exclusive to older generations. With more carefully concerted planning, an organization might take the lead on supporting a volunteer coalition of individuals who build accessible raised beds and aid in maintaining gardens at senior living facilities or at private homes per request or application. Informational resources for such a program are abundant. EPA produces materials on designing "elderly-accessible gardens" (2011) and several resources exist online and in text for building and designing raised beds for produce production.

Community Implications: By *planning for a lifetime* through incorporating intergenerational coalitions and accessible services to all ages of Bellingham residents, the city and aforementioned organizations can encourage more inclusivity in the local food system. This recommendation supports opportunities for whole-family engagement as well as a shared value of respect and compassion for the elderly community. Furthermore, this recommendation promotes healthy communities and more autonomy in food choices by incrementally increasing access to fresh foods and activity.

Recommendation 3. Facilitate collaboration.

The Challenge: One interviewee identified the lack of empathy towards "large farmers" in the county from the more urban, local-centric community members as the greatest oversight Bellingham's food system programming. This was supported by the reactions of interviewees when pressed about their communication or consideration of these farmers. Their reactions were either hesitant or dismissive. Additionally, despite positivity regarding similar organizational work between interviewees and resources through the Whatcom Food Network, there was a

shared sense of uncertainty about where overlap or opportunities for collaboration might exist. Given these challenges, perhaps organizations and farmers might benefit from more frequent occasions for collaboration and communication.

Resources and Models: To create and maintain dialogue between food system educators and large production farmers in the county, I recommend more structured cross-organizational education. Researchers from UC Berkley, have studied how stakeholders in California policymaking have transitioned from a history of statement to collaborative momentum. Their findings suggest regular forums for communications and revisiting expectations, plotting milestones on a shared timeline, and simply spending more time with the opposing view holder creates more compassion, understanding and ultimately more progressive compromise (Innes et al., 2006). In their research, they heard from top high-level staff people describing improvements in the broad base support for protecting a shared resource regardless of any unanimous consensus (Innes et al., 2006). This kind of a broad-based support proved productive. It allowed stakeholders to hold true to their perspectives while still contributing to the communal concerns and demands.

If educators from non-profit organizations hope to support a thriving Bellingham food system, they should consider the significant roles and perspectives of the farms using local resources to contribute to the global system. This collaboration might also offer time for dialogue regarding community interests and farming practices. This dialogue should emphasize building empathy and shared perspectives rather than attacking opposing viewpoints. Curriculum for this dialogue series could rely heavily on roleplay or hypothetical scenarios. Dr Gigi Berardi from Western Washington University, as part of a research team, conducted a similar premised workshop exclusively for farmers in the Puget Sound Region on farm resiliency (Hammond,

Berardi, & Green, 2013). While this workshop series had specific research goals, some of the outcomes could be transferrable if a similar series was developed to across a broader audience of key players in the food system. These transferable outcomes might include relational awareness, collaborative strategy-making, group prioritization, and standardization of assumed shared concepts (e.g. food system, sustainability, etc). Consistently meeting throughout the year could yield more meaningful relationships as per Innes et al.'s research. The usual business demands of the participating parties might not allow for meetings as frequently as monthly. Meeting four to six times a year, however, could allow several opportunities for individuals to participate depending on their schedules and could re-enforce new relationships.

Specifically when including the larger community, modelling the Food Dialogues taking place in recent years across Midwest communities could be an accessible place to start (Schlageck, 2017; Minnesota Soybean Research & Promotion Council, 2015; Hart, 2014; Otto et al., 2002). Reasonable key players could include a partnership between county governance with Whatcom County farmers and local food non-profits already established through the Whatcom Food Network in order to host a bi-annual panel of Whatcom County farmers. Hosting such a dialogue biannually gives enough frequency to include representation of multiple farmers in a year without being taxing on the business demands of a farm schedule. Such a dialogue should be widely promoted, open to the public and mediated. Rotating facilities could open up access to different groups of people such as campuses, churches, parks, town squares, farms, and government buildings. Topics from other nationwide Food Dialogues include defining local, sustainability, food safety, traditions and values (Minnesota Soybean Research & Promotion Council, 2015; Hart, 2014; University of Wisconsin Center for Cooperatives, 2001). Further expanding the perspectives and creating a more inclusive sense of collaboration, panels to also

include other participants in the food chain, such as farmworkers, fishers, factory laborers, chefs, and food buyers.

Community Implications: Using organized dialogue to *facilitate collaboration* might create more understanding on a relational and intellectual scale within the local food system. Relationally it can build compassion. Intellectually it can share information from first-hand experiences and personal stories as well as facilitate consensus around shared concepts and aspirations. Both emotional and intellectual understanding are necessary for inclusive and collaborative communities and for any delineation of community values, policies, or goals regarding the common food system.

Recommendation 4. Assess inclusively.

The Challenge: My final recommendation addresses the limitations of my project and the obvious lack of social justice elements in interview responses. Interviewees, for the most part, skirted or did not address topics related to social justice. While not every interviewee was questioned on their organization's approach to social justice, each was asked " What is missing from food education landscape in Bellingham? For instance, are we meeting the needs of all ages? Are content areas missing? Are groups of people overlooked?" While this question did elicit some reflection on overlooked groups (e.g. seniors, parents, "swing shoppers," and high school students) there seemed to be an underlying restraint in discussing marginalized groups, perhaps out resistance to discomfort or my own positionality as a relative stranger and student researcher. Nonetheless, this perception is supported by organizational outreach materials, media presence, and implicit context to interview responses.

Resources and Models: As such, I recommend further community assessment take place to engage currently under-represented and non-represented populations in food systems values. To further specify, this assessment should not only consider how existing organizations could better connect with and serve these population but also directly ask and consider what these populations value and hold as aspirations for the shared community food system. How are they currently accessing and consuming food? Does it meet their nutritional needs and cultural values? Expectations for accessible and quality food may differ for different groups of peoples and families, but inclusivity necessitates that accessibility and quality not be compromised by the demands and privileges of others.

Third-party evaluators can be useful for more deeply examining the existing relationship between these organizations and communities, similar to the work I have started here, however, regular internal assessment and strategic planning create useful redundancies in keeping the spirit of inclusivity active.

There are several existing resources that are easily accessible for educators and leaders within Bellingham's food system to model their own assessment and strategic planning after. Below is a brief list of resources freely available online:

- *Community Toolbox* by the University of Kansas offers several in-depth chapters on skill-building in community problem-solving, leadership, assessment, and cultural competence. The chapter on cultural competence includes several detailed sections on inclusivity, allyship, healing internalized oppression, recognizing assets in differences and similarities, and collaborative decision making (2018). Furthermore, the KU Center for Community Health and Development offers

capacity training both in-person and online through webinars, digital conferences and online workshops.

- *Inclusive Community Assessment Tool* developed by Maggie Potapchuck and emphasizes racial inclusivity over four stages and across community sectors (2003).
- *The Equity Action Plan*, a food justice tool for Co-ops adapted by CoFED, provides structure for setting equitable goals and outcomes. While framed with a business outlook, these questions are useful for any structured and service-oriented organization (2018).

Many more resources exist beyond this short list, and I would encourage multiplicity, persistence, and multi-faceted efforts when using these resources.

Community Implication: By *assessing inclusively* and internally across organizations, food systems educators can better serve as role models in prioritizing topics and issues related to Whatcom County's food system. Regular internal assessment can improve the accuracy and impact in serving community interests and needs.

CHAPTER 7 CONCLUSION

Despite not achieving my initial attempts to contribute a novel educational experience, I offer a different perspective on the existing food system. The identified themes depict a simplified overview of the key players included and where new stakeholders and content could be considered. The larger and more inclusive the network becomes, the greater the potential for the resiliency of the local system. Not to say bigger is better, but that more representation of the existing community in the teaching, learning, and action of the food system may help alleviate tensions in community relationships while increasing the accessibility, availability and vitality of Whatcom County food production and consumption. Before that can occur, I believe this project shapes the beginnings of a more detailed and greater scope of assessment. Much of my own motivations, curriculum and project design, analysis, and recommendations were value-driven. This is likely true of the responses from the interviewees. To my knowledge, however, there has never been a comprehensive and inclusive assessment of baseline values and aspirations for community members within this shared system. While delineating the barriers of a food system and pooling an inclusive and representative participant base in such an assessment quickly becomes complex, how can we otherwise hope to serve our community without discrimination and inequity?

Next Steps

Beyond this project, currently, I am interning at SkyRoot Farm on Whidbey Island and resolved on pursuing a future in agriculture with a dose of education. SkyRoot Farm practices "an ecosystem approach to land management and agriculture," striving to incorporate systems thinking into productivity on its small-scale, diversified acreage (Wheat, 2018). In the summer my internship will continue as a full-time position with opportunities to participate in teaching

school and youth groups who come to the farm. This educational component will be a very small piece however alongside the regular work of crop production, harvesting produce and livestock, construction, small engine maintenance and market. This opportunity is significant for me as I learn the praxic field work and business practices necessary to farm for profit. Beyond SkyRoot Farm, I anticipate working closely with farms and communities to foster connections and support sustainable practices in production and consumption. In the long-term, my goal is to own a farm that provides space and resources for community education in agriculture and cooking.

Somewhere in the link between education, community, food and agriculture, I intend to carry forth the lessons learned in the past two years. Practically, my curricular shell provides a useful template for future professional projects and captures the scope of topics I'd like to incorporate into my own teaching practice, whether during time in the non-profit sector or further developing my farmhand experience. Interpersonally, through conducting interviews and multiple efforts to coordinate a class series, I have strengthened my personal abilities around building community relationships. Furthermore, from the knowledge gained in the interviews, and my research on other systems of community education and curriculum development, I have developed a tool-kit for supporting food system education transferable to other interested communities. Lastly, the four recommendations I offer are just as useful personally as I look forward to the challenges of working in community education within the non-profit sector or envision my own future teaching practice on a production farm.

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APPENDIX A. POSITIONALITY

In pursuing this project and writing for a public audience, I recognize I hold several privileges and biases that are inherently bound in all I do. Additionally, there are life experiences and wisdom I simply do not or could not possess due to my privileges, or lack thereof, age, and personal choices. These elements shape who I am as an individual, and subsequently, who I am as an educator. That stated I stand by my educational philosophy and intentions to listen and teach as an educator who values and respects both the individual and the community.

My passion for this project comes from my own culinary and gardening adventures, and my mission to learn about the complexities of my local and global food system. I have over five years of experience working in food-related industries, including as a dairy science lab assistant, restaurant server, confectionary crafter, grocery clerk at both a small, independent storefront in Seattle as well as the city's busiest Whole Foods Market, and most recently as the sole weekend baker for a Bellingham coffeehouse. I was trained in permagardening and family nutrition through the United States Peace Corps in Ethiopia and maintain my own experimental garden here in Bellingham. I am currently an intern for SkyRoot Farm on Whidbey Island and will continue my internship beyond graduation with aspirations to farm and contribute to education in the agricultural sector.

For most of my life, food was an abundant and controlled factor. To my knowledge, my family has never struggled to put food on the table. Nonetheless, I have not always had a positive relationship with food. As growing teenagers and student athletes, my parents ensured my brother and I were fed what seemed like an endless supply of high-quality food. As a rower for the University of Wisconsin, I was given the financial means and nutritional guidance to consume well over 3,000 calories a day. When I quit the team and transferred schools, I endured

several years of disordered eating, waffling between periods of bulimia and anorexia. Finding myself living alone in a new city, I lacked the confidence and skills to make my own dietary decisions and struggled to find balance in my new caloric requirements. Finally, a few years ago, overcome with frustration at being trapped by my diet and recognizing that far too many women I cared about, from friends to supervisors to young relatives, suffered from similar disorders, I decided to embrace food as the muse and not the enemy.

I threw myself into books such as *The Contrary Farmer* by Gene Logsdon, *The Omnivore's Dilemma* by Michael Pollan, *The 100-Mile Diet* by Alisa Smith and J.B. McKinnon, and *Slow Food Nation* by Carlo Petrini to name a few, that enticed me into the backyard and kitchen, and showed me how simple and balanced food could be. I began to experiment regularly with new produce and cooking techniques and regularly hosted dinner parties for my friends. Over those few years, I had the amazing fortune of connecting with several individuals, many of them women, from around the country, who have committed their heart, soul, and sweat to agriculture and supporting community food projects. Their knowledge, passion, and generosity radiate through their words and actions, and I carry each of them with me as inspirations and anchors as I move through this discipline.

I'm not perfect. As most people who experience or have experienced disordered eating will tell you recovery does not happen overnight. While I'm slowly and surely making my own progress, it's not as easy for everyone to make on their own. The appendixed curriculum and this aims of this project are a piece of my own journey. While eating disorders are not outright addressed in my project, my intention comes from my heart and I hope to challenge them alongside other trends and injustices that have made food a volatile and manipulative commodity.

APPENDIX B. CURRICULAR SHELL

Integrated Food Systems

A Curriculum for Communities

INTRODUCTION

Dear Educator,

Food is necessary. It nourishes the body, providing energy for the activities we enjoy. It binds us to the web of life, the health of the land and water, and patterns of climate. It is embedded in cultures and often brings people together. It is one of the most basic biological needs and has the potential to not only transform our bodies, but also our minds and emotions. Yet nearly 1 in 9 people on this planet of shared resources do not receive enough food to live a healthy active life[i]. Many of those who do have ample access to food have complicated interactions with it.

It is no secret that for innumerable and sometimes complex reasons, humanity's numbers keep climbing. Consequentially, we are impacting our ecosystems at unprecedented rates with unimaginable consequences. The ways in which we grow, manufacture, package, distribute, choose, cook, and consume food products play an important role in the health of our planet, communities, and bodies. Rarely, however, are these layers presented together. What are the knowledge AND tools to best prepare people in our communities to mindfully engage an unjust and destructive food system? This curriculum seeks to offer those knowledge and tools through understanding and practice that can empower adults in communities across the United States.

This curriculum will not solve the world's problems, nor is it about creating the perfect consumer. Rather, the lessons in this curriculum engage your students in critical discussions on food theory and systems thinking, tips that challenge excuses of time and money, and experiences outside of your typical classroom with students visiting local farms/gardens/nurseries and whipping up nourishing dishes in the kitchen. Most importantly, I encourage you to use this curriculum to build bonds in your community and spark excitement and confidence as human beings that need to eat.

Thank you for your interest and work as a food changemaker.

Warmly,

Ciera Mead

M.Ed. Candidate of Environmental Education at Western Washington University

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THE CURRICULUM IN PRACTICE

This curriculum is presented as a ten-day workshop, to be taught weekly at a day and time appropriate for working adults to devote 4 to 6 hours per session. Day-time hours during the weekend are recommended. Some of the lessons take place solely in a classroom and may be easily adapted to complement existing curriculums or programs. The bulk of the experiential lessons cannot take place in your standard classroom. You are encouraged to partner with local farms or gardens, and food co-ops, restaurants or commercial kitchens.

The lessons cover the following topics as related to food systems:

- **terminology and concepts of locality and resiliency;**
- **government policies;**
- **social justice;**
- **gardening and composting practices;**
- **labels and packaging;**
- **budgeting and meal planning;**
- **efficient and low-waste cooking;**
- **and embedded emotions and traditions in the kitchen.**

The curriculum culminates in a session that allows your students to host and prepare their own feast to share food and knowledge with their family friends and neighbors.

In partnering with local farms or gardens, food co-ops or grocery stores, and kitchen venues contact them early in the planning stage if possible. There is room for flexibility and accommodation. Work with your partners to make this curriculum meaningful for not only your students and yourself, but for their interests as well. Opportunities for service learning with garden spaces and food banks could be easily incorporated.

MATERIALS

Each lesson plan includes the necessary materials to complete the lesson and may also include suggestions on where to find the materials in your community or online. To find a general list of the materials suggested to plan and teach the curriculum in its entirety refer to Appendix A.

RISK MANAGEMENT

Given the nature of the experiential lessons in this curriculum, certain risks must be acknowledged and prepared for.

Risks in garden and agricultural spaces could include, but are not limited to:

- plant and insect allergies;
- over-exertion;
- hyper- and hypothermia;
- and injury from tools or animals.

Risks in kitchens and food handling could include, but are not limited to:

- food allergies;
- injuries from knives or other cooking utensils;
- burns;
- and slips and falls.

Precautions

Make sure you're taking precautions such as keeping a well-stocked first aid kit on hand and being aware of any student allergies. Set and adhere to expectations for appropriate clothing to suit the working environment. For the outdoors, this includes weather-appropriate layers that allow for movement and can get dirty. In the kitchen avoid loose-fitting clothing and hairstyles, and recommend non-slip shoes or shoe covers. Provide your students with aprons.

Legal precautions, including waivers and risk acknowledgment and agreement forms are advised.

Nutrition and Health

A brief disclaimer, I am not a nutritionist and have received little formal training in nutritional sciences. This curriculum is not intended to prescribe any dietary changes on the basis of improving individual health. Instead, this curriculum takes a systems-thinking approach to

understanding the layered web of our food system and considers how individuals and communities might support fairness and resiliency in these systems. It is the opinion of many leaders in the local food movement that this extends to a healthful diet and planet.

Health Codes

Certain lessons in this curriculum are subject to counties' Health Department food handling codes. These vary from county to county and should be followed accordingly.

This curriculum aims to create a more fair and resilient local food system by empowering people as consumers with knowledge and skills for everyday decisions around food.

The goals of this curriculum are to:

*Lesson titles are in **green** followed by lesson objectives.

1. Examine the layers, and relationships between local, regional, and global food systems.

1.1 **Think Global, Act Local, Eat Glocal** page XX

1.1.1 Define, generally, food systems, resiliency, and local food movement

1.1.2 Examine prevailing environmental concerns related to food including: climate change, pollution, loss of habitat and biodiversity, and soil nutrient depletion

1.1.3 Discuss food system challenges at global, national, and your regional/ local scales

1.1.4 Identify currently held values and notions within the class concerning everyday interactions with food

1.2 **Mapping Food** page XX

1.2.1 Draw the lifecycle analysis of commonly eaten foods from seed or factory to table

1.2.2 Contrast benefits and disadvantages of food that travels great distances such as cross-continental, and trans-continental distances

1.2.3 Identify alternative local/regional foods to self-identified "kitchen staples" and discuss their phenology

1.2.4 Re-evaluate our "food maps" from 1.2.1

1.3 **Deciphering Policies and Regulations of Food Production** page XX

1.3.1 Describe United States government influence on food systems through farm bills, the Clean Water Act and Clean Air Act, and agribusiness lobbyists

1.3.2 Dissect and share in groups the various policy areas of the U.S. Farm Bill

1.3.3 Examine implications of the current U. S. Farm Bill on food system resiliency and discuss the trickle-down impacts on students as consumers

2. Emphasize national and regional social justice concerns in food systems.

2.1 **Many Forms of Injustice** page XX

2.1.1 Define food-related social justice concerns including food deserts, immigrant-worker conditions and rights, disenfranchisement of rural communities and small-scale farms, consequences of pesticide and fertilizer use, and pollution from concentrated animal feeding operations

2.1.2 Read, share, and discuss, jigsaw-style, papers that contemporarily exemplify the concerns from 2.1.1

2.2 **The Backbone of our Food Systems** page XX

2.1.1 Describe the history of labor and farming in the United States including slavery, immigrant and migrant workforce, Bracero workers, and the United Farm Workers

2.1.2 Recognize the current demographic makeup of United States farm workers

2.1.3 Relate personal consumer choices to the realities of farm workers

3. Connect with the natural processes of food production.

3.1 **Farms Around Here** Page XX

3.1.1 Identify crops that grow well in the area
3.1.2 Examine regional soil and weather conditions, and how they relate to crops from 3.1.1
3.1.3 Practice setting up a garden bed

3.2 Composting for Everyone
3.2.1 Define composting and its benefits
3.2.2 Describe different compost methods (I.e. Pile, pit, three-bin, vermicomposting, and tumbler)
3.2.3 Construct a worm bin

3.3 Greens at Home Page XX
3.3.1 Discuss class-identified challenges to at-home gardening
3.3.2 Label common, local edible and wild plants
3.3.3 Create a salad greens and herbs container garden

4. Provide practical advice on consumer decision-making.

4.1 What do food labels really mean? page XX
4.1.1 Differentiate between verified food labels related to environmental and ethical practices, and labels for marketing (I.e. USDA Organic, Non-GMO Project Verified, "Natural," Fair Trade Certified, Food Alliance, USDA Process Verified Grass-fed, "Fresh," "Healthy," and "Hormone Free")
4.1.2 Contextualize the origins of different food labels

4.2 Cents-ible Localvore page XX
4.2.1 Discriminate budgeting to accommodate local food choices and individual constraints
4.2.2 Identify planning and shopping strategies

4.3 Waste Not, Want Not page XX
4.3.1 Breakdown the fiscal and energy costs of packaging
4.3.2 Identify strategies for reducing waste when shopping

5. Explore and practice culinary conventions that support sustainable food systems.

5.1 Efficiently Tasty page xx
5.1.1 List class-identified challenges for cooking at home

SCHEDULE Each day allows for a 1-hour lunch break with the exception of Week 5 Sunday

WEEK, DAY	TOTAL TIME	LESSON	LOCATION
WEEK 1 SATURDAY	4 HOURS	1.1, 1.2, 1.3	CLASSROOM
WEEK 1 SUNDAY	3 HOURS	2.1, 2.2	CLASSROOM
WEEK 2 SATURDAY	5 HOURS	3.1	FARM OR COMMUNITY GARDEN
WEEK 2 SUNDAY	5 HOURS	3.2, 3.3	FARM OR COMMUNITY GARDEN
WEEK 3 SATURDAY	4 HOURS	4.1, 4.2, 4.3	FOOD CO-OP, LOCAL GROCERY STORE, CLASSROOM
WEEK 3 SUNDAY	5 HOURS	5.1	KITCHEN
WEEK 4 SATURDAY	5 HOURS	5.2	KITCHEN
WEEK 4 SUNDAY	5 HOURS	6.1	KITCHEN
WEEK 5 SATURDAY	5 HOURS	6.2	CLASSROOM
WEEK 5 SUNDAY	4.5 HOURS	6.3	KITCHEN AND COMMUNITY SPACE

LESSONS

1.1 Think Global, Act Local, Eat Glocal

An original lesson plan by Ciera Mead

SUBJECTS

Food systems, local food, resiliency

STUDENTS

9th grade to Adult

TIME

1 hour 25 minutes

OVERVIEW

This lesson introduces broad concepts in understanding food systems and narrows to the application of these concepts in your own region or community. Activities include defining terminology, examining food system's impacts and emergence from the environment, and discussing examples in your own community. Definitions are included for key terms introduced. Instructors should be familiar or have done research on relevant topics and issues in their regions. Additional resources are included at the end of the lesson.

OBJECTIVES	Define, generally, food systems, resiliency, and local food movement Discuss food system challenges at global, national, and your regional/ local scale Examine prevailing environmental concerns related to food including: climate change, pollution, loss of habitat and biodiversity, and soil nutrient depletion Identify currently held values and notions within the class concerning everyday interactions with food
MATERIALS	Whiteboard, easel and flip paper, or a chalkboard. Marker or chalk. PowerPoint presentation.
ACTIVITIES 5 MINUTES	1. Introduce the lesson as the foundational beginnings of thinking complexly about food systems and our individual interactions and connections to food. Refer to the Introductory letter on pg. 1, Curriculum in Practice on pg.3, and Curriculum Schedule on pg. 9, to highlight topics, points of interest, or lessons you find particularly exciting.

30 MINUTES	2. Write “Food” on the board or poster and ask students to offer, *What comes to mind when thinking about food?* Write their input on the board around it. Follow-up or deepen the conversation by asking additional questions such as, *Is food nature? Is food a human right? Is food a “life “right? What comes to mind when you hear the term “good food”? Do all people have a right to good food? What are some things we are willing to compromise for “good food”?* By this time, food systems, webs, or other complex portrayals of food may already be listed on the board. If so, draw the students’ attention to food systems. If not, write “Food Systems” on the board or poster. *This curriculum is designed to scaffold thinking about integrated food systems with a focus on the placement of communities and individuals in the system. What might be meant by food systems, and more specifically, integrated food systems?* Invite input from the class. Share the following definitions. <u>Food Systems</u>: Food systems are the processes involved in the path of food from its origins to the consumer such as the growing, harvesting, processing, packaging, transporting, marketing, consuming, and disposing of food. The food system includes the governance and economics of food production, its sustainability, the degree to which we waste food, health, and how food production affects the natural environment. (Adapted from The Oxford Martin Programme on the Future of Food) <u>Integrated Food Systems</u>: For the purposes of this curriculum, an integrated food system doesn't just see the parts of the food system, but also attempts to understand how they interact and react, and includes the positionality of the individual among all other stakeholders. The ideas of biological necessity and sustainability likely emerged in the prior discussion. Revisit these points. Raise them if necessary. Introduce the term resiliency. Have the students heard the term in reference to food systems before? Write “Resiliency” on the board and ask one *What might it mean for food systems for being resilient? How is resiliency different from sustainability?* Define resiliency on the board.

15 MINUTES	Resiliency: Resiliency in food systems refers to the durability of food security under random disturbances through adaptation and flexibility. Disturbances include weather events, war, drastic policy change, and disease and pests. Introduce the "local food movement" as a popular way communities across the United States are trying to increase resiliency. Write "local food movement" on the board. Ask your students *To define local foods.* Offer the following definition in response. Local food: Frequently cited by surveys to be generally agreed upon as food coming from a 100-mile radius Local food movement: 3. Provide some of the following complicating factors in the local food movement • Offer two snack options, one that is locally-produced, packaged and somewhat processed such as chocolate, granola, chips, etc., and one piece of produce from somewhere else within the United States. Is one "better" than the other? In what regards? • Swedish researcher Annika Carlsson-Kanyama led a study that found it was better, from a greenhouse-gas perspective, for Swedes to buy Spanish tomatoes than Swedish tomatoes, because the Spanish tomatoes were grown in open fields while the local ones were grown in fossil-fuel-heated greenhouses. (WorldWatch Institute) • In 2008 a study published by Christopher Weber and H. Scott Matthews, of Carnegie Mellon University showed final delivery from producer or processor to the point of retail sale accounts for only 4 percent of the U.S. food system's greenhouse gas emissions. Overall, transport accounts for about 11 percent of the food system's emissions. Agricultural production accounts for the bulk of the food system's greenhouse gas emissions: 83 percent of emissions occur before the food even leaves the farm gate. (WorldWatch Institute)
10 MINUTES	As they're eating their food, have students partner up and draw on a scrap paper a T-table. The columns are "Local," and "Traveled" foods. Given the definitions provided earlier have the students list benefits under each category and discuss disadvantages. 4. Bring the students back together and draw a T-table on the poster or board. Fill out the T-table with input from the different pairs. *Are the*

15 MINUTES 10 MINUTES	*benefits worth the disadvantages? Based on whose ideals? Does one side appear to more heavily impact the environment?* 5. Display a PowerPoint that addresses environmental impacts, in brief, of common food production practices in the United States. It is encouraged you open and close your presentation with reminders that food is environmental, just like our bodies that they nourish, in processes that are similar across life-forms. The idea is not to separate food from the environment as something that needs to be clean and sanctified, but rather highlighting actions that have impacts so intense they compromise the future of food production and supporting life. Recommendations for PowerPoint slides include climate change, pollution, loss of habitat and biodiversity, and soil nutrient depletion. Choose topics that are especially relevant to your region or recent news. Provide definitions and contemporary examples. One to two slides per topic and pictures are strongly recommended. 5. *How often do we (class members) think about the consequences and reach of our food choices?* Have students write in journals/notebooks or reflect on meals eaten in the past week and where each individual ingredient and component exists in the food system. *What impacts and experiences did each ingredient and component have in its life or existence?* At this point in the series of lessons for day 1, it is encouraged to take a short 5 to 10-minute break. Invite your students to share reflections with their peers during the break.
ASSESSMENT OUTCOMES	1. Students will contribute critical thinking in constructing food system terminology. 2. Students will demonstrate complexity to attributing value in comparing “local” and “traveled” foods. 3. Students will make intrinsic and extrinsic connections between food and the environment. 4. Students will reflect on environmental impacts associated with everyday decisions around food.

ONLINE RESOURCES	**TEACHER NOTES**

- Food Security Information Network (FSIN) -Resilience Measurement. http://www.fsincop.net/topics/resilience-measurement/en/
- GRACE Communications Foundation, Sustainable Table. Local & Regional Food Systems. http://www.sustainabletable.org/254/local-regional-food-systems
- What is the Food System? | Future of Food. (n.d.). Retrieved March 9, 2017, from http://www.futureoffood.ox.ac.uk/what-food-system
- Is Local Food Better? | Worldwatch Institute. (2016). Retrieved March 9, 2017, from http://www.worldwatch.org/node/6064

2.1 Many Forms of injustice

An original lesson plan by Ciera Mead

SUBJECTS	STUDENTS	TIME
Food systems, human rights, social justice, pollution	9th grade to Adult	1 hour 10 minutes

OVERVIEW

Social injustice exists in the food system in many forms. As with many injustices, attention is not given to the matter unless one is a direct stakeholder. However, as human beings with biological needs causing us to grow, produce, purchase, and/or consume food, our daily decisions are steps in the processes that inform and are informed by these injustices. This lesson highlights prevalent food justice scenarios in the United States and asks students to make connections between personal choices and actions, and these issues.

OBJECTIVES	Define relevant food-related social justice concerns including food deserts, immigrant-worker conditions and rights, disenfranchisement of rural communities and small-scale farms, consequences of pesticide and fertilizer use, and pollution from concentrated animal feeding operations Read, share, and discuss, jigsaw-style, papers that contemporarily exemplify the concerns from 2.1.1
MATERIALS	Projector for PowerPoint. PowerPoint presentation on food-system social justice concerns. Printouts of contemporary papers (scholarly articles or newspaper/magazine articles) that discuss one of each of the following: food deserts, immigrant-worker conditions and rights, disenfranchisement of rural communities and small-scale farms, consequences of pesticide and fertilizer use, and pollution from concentrated animal feeding operations
ACTIVITIES 8 MINUTES 20 MINUTES	1. Introduce the day's lessons as a setting to learn about and understand the human and societal pieces in integrated food systems. Emphasize that while humans are a part of the system in obvious ways as farmers, culinary professionals, and consumers, individuals and whole communities are also implicated through issues of social justice related to health, quality of life, and economics. 2. Display a PowerPoint that defines social justice issues related to food systems in the United States. Take questions from the class, but refrain from offering too many specifics. Students will have the opportunity to engage in the details and critical thinking in the following activity. Recommendations for PowerPoint slides include food deserts, immigrant-worker conditions and rights, farms, consequences of pesticide

20 MINUTES 12 MINUTES	and fertilizer use, and pollution from concentrated animal feeding operations (CAFOs). There are other possible topics beyond these. Choose topics that are especially relevant to your region or recent news. Provide definitions and common stakeholders. 3. Divide the class into groups for a jigsaw reading activity. Give each group multiple copies of a paper (scholarly or from a contemporary news source) that depicts a real-world case of one of the justice issues identified in the PowerPoint. Have the students read the papers and attempt to identify the following questions: • Who are the stakeholders of the issue? Are their parties who are clearly benefiting and others who are directly disadvantaged? Are there peripheral stakeholders? • What is the issue? How did it arise? • What claims are made or inferred by each side(s)? • Is there a resolution? How could it be resolved? Possible resources for each topic include: • **Food deserts** Food insecurity in Chicago neighborhoods Bowen, E., Bowen, S., & Barman-Adhikari, A. (2016). Prevalence and covariates of food insecurity among residents of single-room occupancy housing in Chicago, IL, USA. *Public Health Nutrition, 19*(6), 1122-1130. doi:10.1017/S1368980015002384 • **Immigrant-worker conditions and rights** United States Dairy Industry Keller, J.C., Gray M, & Harrison, J.L. (2016). Milking workers, breaking bodies. *New Labor Forum, 26*(1), 36-44. doi:10.1177/1095796016681763 • **Pollution from pesticide and fertilizer use** Pesticide use in California Harrison, J.L. (2014). Neoliberal environmental justice: mainstream ideas of justice in political conflict over agricultural pesticides in the United States. *Environmental Politics, 23*(4), 650-669. doi:10.1080/09644016.2013.877558 • **Impacts from concentrated animal feeding operations (CAFOs)** North Carolina hog farms Nicole, W. (2013). CAFOs and Environmental Justice: The Case of North Carolina. *Environmental Health Perspectives, 121*(6), a182–a189. doi:10.1289/ehp.121-a182

10 MINUTES	4. Have each group present their answers to the class following a brief synopsis of their paper. 5. End the lesson asking students to reflect, or write in a notebook/journal, on how they fit into these processes leading to social justice concerns, and actions they could take to alleviate their impact and promote change or resolution.
ASSESSMENT OUTCOMES	1. Students will be able to identify and discuss contemporary issues of social justice as they relate to food systems. 2. Students will be able to assess the potential societal impacts of their daily decisions regarding food.

ONLINE RESOURCES	**TEACHER NOTES**
• Berkley Food Institute https://food.berkeley.edu/cultivating-justice-in-food-systems/ • Food Empowerment Project, Environmental Racism http://www.foodispower.org/environmental-racism/ • National Farm Worker Ministry • http://nfwm.org/education-center/farm-worker-issues/farm-workers-immigration/ • Sustainable Table http://www.sustainabletable.org/860/community-and-economy	

3.2 Composting for Everyone

A lesson plan adapted from the Indiana Department of Environmental Management, Vermicomposting: A Starter's Guide For Teachers, the United States EPA, and the United State Composting Council.

SUBJECTS	STUDENTS	TIME
Composting, waste, vermicomposting	9th grade to Adult	1 hour 15 minutes to 1 hour 45 minutes

OVERVIEW

This lesson introduces composting, its myriad forms, and its benefits. Specifically, students who have indicated in advance they are interested in constructing a vermicomposting (worm-composting) bin to take home will have the opportunity to do so. This lesson is encouraged to take place on-site at a garden or farm in your community that practices composting on the property. Utilize their composting methods and knowledge, if possible, to supplement the lesson.

This lesson includes tools that could inflict injury if used improperly. Practice precautions, provide safe tool demonstration and have a first-aid kit on hand.

OBJECTIVES	Define composting and its benefits Describe different compost methods (I.e. Pile, pit, three-bin, vermicomposting, and tumbler) Construct a worm bin
MATERIALS	On-site composting. 5-gallon buckets (enough for every student interested in taking one home). Soil. Shredded newspaper soaked in water for 24 hours (enough to fill the number of buckets 2/3 of the way full). Red worms *(Lubricous rubellas) or* compost worms *(Eugenia* fetid*)* (20x the number of buckets). Power drill or nail and hammer.
ACTIVITIES 10 TO 30 MINUTES	1. Introduce the garden or farm site for this day's lessons. Invite the host to speak about the history and production at the site, and what kind of composting production occurs at their location. If possible, have students touch and put their arm into the compost to feel the heat. 2. Depending on the detail offered, if at all, by site hosts, describe the chemical processes of composting, and why it's beneficial to compost.

15 MINUTES	What is compost? Compost is an organic matter resource resulting from controlled biological decomposition of organic material. Decomposition occurs through aerobic activities of microorganisms. (United States Composting Council) What are the benefits of composting? • Enriches soil, helping retain moisture and suppress plant diseases and pests. • Reduces the need for chemical fertilizers. • Encourages the production of beneficial bacteria and fungi that break down organic matter to create humus, a rich nutrient-filled material. • Reduces methane emissions from landfills and lowers your carbon footprint. (EPA)
20 MINUTES	3. In addition to the compost methods used on site, describe the other common methods of composting (I.e. Pile, pit, three-bin, vermicomposting, and tumbler), and their benefits, drawbacks, and resources. Provide pictures of what the various methods look like.
30 MINUTES	4. Transition to an open space to safely construct worm bins for vermicomposting. Partner or group students so that individuals who are not interested in bringing home a worm composting bin are working with students who are leading the construction of the bin. • Provide each group with a 5-gallon bucket and lid. • Drill or nail ¼ to ½ holes in the lid to allow for oxygen circulation. • Prepare the worm bedding o Wring out the strips of previously soaked newspaper so it feels like a wet sponge. Water should not be dripping from the newspaper. o Fluff the paper so that worms can easily move throughout the paper. o Fill the bin two-thirds full with fluffed paper.

10 MINUTE	○ Add a small handful of soil or sand to the bedding • Give each bucket ~ 20 worms Debrief with important knowledge on maintaining worm bins listed below. Break for day 6 lunch.
VERMICOMPOSTING BACKGROUND INFO	IMPORTANT KNOWLEDGE ON MAINTAINING WORM BINS: • Red worms survive best if the temperature is kept between 55° - 77° Fahrenheit. Keep your worm bin away from vents and do not place on window sills as the temperature can fluctuate in these two areas. • You only need to add bedding when you first set up the bin and after harvesting the castings. ○ Avoid using glossy paper or newspaper inserts. • The worms in your bin, also known as a worm herd, will populate naturally and stabilize at levels that can be supported by the food given to them and the size of the bin. • Give the worms a few days to acclimate to their new bin before you begin feeding them. When starting a new bin add a small amount of food and check on the worms every few days. • See how quickly they are eating and adjust the food amounts visually. ○ Foods to add can include: ▪ Fruit and vegetable trimmings. (Some foods take longer to break down because they are fibrous, such as broccoli, carrots and potato peels.) ▪ Bread (should not have anything on it, like peanut butter, mayonnaise, butter, etc.) ▪ Coffee grounds and filters ▪ Tea leaves and tea bags ▪ Eggshells (washed and ground up) ○ Foods to avoid include:

	▪ Meat ▪ Fish ▪ Dairy ▪ Citrus ▪ Oily foods • Harvest the compost when no more scraps of paper exist and the bucket contents resemble soil. o Worm compost is an excellent soil amendment or fertilizer you can add to plants, flowers, and gardens. o Expect to harvest the bin every 3 to 6 months. • Harvesting methods include o **Migrating Method**: Open your bin and gently push the compost over to one side. In the other half add new bedding and some tasty food scraps. Once the worms have migrated to the new bedding, you can remove the compost (pick out any stragglers) and add more bedding to the now empty side of the bin. o **Cone Method**: This is a fun method to use with students. Lay a piece of plastic down on a table. Gently remove the compost and place into cone-shaped piles on the table. Each cone-shaped pile should be approximately six inches in diameter. Give the worms about ten minutes to burrow down and move away from the light. Next, take a small handful of the compost from the top of each cone and place in a separate container. Give the worms another ten minutes to burrow down again and you can repeat the process until all you have left is worms. Return the worms to the bin where you have added new bedding. o **Scoop Method**: Remove the lid to your bin and give the worms about ten minutes to burrow down deeper into the compost. You can then scoop the top layer of compost out of the bin. Repeat process until all that is left is the worms and add new bedding. Troubleshooting your worm bin • **Smell:** o Cause: Too much food. o Solution: Feed worms less. • **Bin too dry:**

	○ Cause: Not enough moisture. ○ Solution: Add a piece of food with high water content, such as an apple core, watermelon, or berries. You could also add newspaper that you've soaked and wrung out excess water. • **Bin too wet:** ○ Cause: Did not wring newspaper out enough. ○ Solution: Add strips of dry newspaper. ○ Cause: High content of water in food. ○ Solution: Add less high water content foods. • **Fruit Flies:** ○ Cause: Food. ○ Solution: Burry food under bedding.
ASSESSMENT OUTCOMES	1. Students will understand the chemical processes by which composting works. 2. Students will be able to distinguish between composting methods. 3. Students will be able to identify beneficial applications of compost. 4. Students will help construct a vermicomposting bin.

ONLINE RESOURCES	**TEACHER NOTES**
• Indiana Department of Environmental Management http://www.in.gov/idem/iee/2367.htm • United States Composting Council http://compostingcouncil.org/admin/wp-content/uploads/2010/09/Compost-and-Its-Benefits.pdf • United State Environmental Protection Agency https://www.epa.gov/recycle/composting-home	

5.1 Efficiently Tasty

Adapted from Food & Culinary Professionals, Incorporating Seasonal & Local Foods into Meal Planning Lessons

SUBJECTS	STUDENTS	TIME
Meal planning, efficient cooking, seasonal cooking	9th grade to Adult	5 hours

OVERVIEW

Not so long ago, people consumed fresh foods only when they were seasonally available and accessible. Today many fresh foods remain available year-round, making it easier to focus less on seasonal availability, however, research has shown the buying food in-season tends to be more cost-effective, and less resource intensive. Practicing meal planning, whether that's monthly, weekly, or a few days at a time can streamline meals that center on seasonal food. This lesson requires planning ahead of time for the cooking portion and developing an example meal plan that draws on produce in-season for your reason. See Appendix B for a blank sample meal planning sheet.

OBJECTIVES	List class-identified challenges for cooking at home Discuss benefits of meal planning and strategies to making cooking more efficient Cook simple, quick and customizable meals
MATERIALS	Whiteboard, easel and flip paper, or a chalkboard. Marker or chalk. Handouts of an example meal plan that include recipes to be cooked in-class. Aprons. Kitchen utensils and ingredients for recipes.
ACTIVITIES 5 MINUTES	1. Introduce the lesson as a seasonal orientation to meal-planning. Address safety precautions early to be taken in the kitchen.
15 MINUTES	2. Poll your students on how many and how often they cook at home. Ask, *What are self-identified barriers to cooking at home?* Write their responses on the board or paper. Follow-up with the question, *How many of you keep seasonality in mind when shopping or planning recipes? Why might it be a good idea to shop and cook in-season?* Write their responses on the board.

	Reasons could include: • to reduce the energy (and associated CO2 emissions) needed to grow and transport the food we eat • to avoid paying a premium for food that is scarcer or has traveled a long way • to support the local economy • to reconnect with nature's cycles and the passing of time • seasonal food is fresher and so tends to be tastier and more nutritious
10 MINUTES	3. Transition to how meal-planning can be a great tool to optimize seasonal produce in students' cooking and adhere to any household budget. *Many people find weekly planning works best. Creating your plan on Friday and do shopping and preparation over the weekend can prepare you for 4 days with leftovers. Planning recipes ahead of time also makes grocery shopping more efficient. Resources exist online and in print on cooking seasonally for regions around the United States. Sustainable Table lists produce in season regionally online http://www.sustainabletable.org/875/ shop-sustainably and localharvest.org is a nationwide directory of Community Supported Agriculture (CSAs).*
15 MINUTES	4. Draw a table with three columns on the board or poster paper. Title the columns Prep, Tools, and Freeze. Present these as strategies and tips to streamline work in the kitchen. **Prep** is best done on a day that consistently allows for an hour to two hours of time to prepare for a week of meals. Whole entrees can be prepped in advance or simple ingredients. Highlight the following strategies: • chop vegetables • cook grains & oatmeal • make marinades & vinaigrettes • cut melons and larger fruit • toss vegetable or fruit salads (leaving dressing on the side) • cook soups & stews • bake frittatas, casseroles, & muffins **Tools** include common kitchen items that streamline the cooking process and may be worth buying to speed-up cooking which could include the prep work. Highlight the following strategies: • "trash bowl:" for discarding scraps when chopping • chef knife: for chopping produce (a paring knife does not cut it!) • slow cooker: for soups, stews and roasts • food processor and/or blender: for pestos, sauces, soups, and chopping produce • glass containers: for keeping foods organized and fresh • re-usable labels: for organization and keeping record of dates **Freeze** refers to strategies for storing food to last through the week using a household freezer. Highlight the following foods that freeze well: • soups • stews • chilis • lasagnas • grains • meatballs • muffins • cookies & other baked goods • smoothies: place all items in a baggy and in the morning, toss baggy contents in a blender with liquid of choice Add additional ideas from the class.

15 MINUTES 3 HOURS 1 HOUR	5. Hand-out copies of an example meal-planning sheet filled in with recipes that include seasonal and regional produce. Hand-out copies of the recipes you will be covering for the remainder of the lesson. Choose 1 to 3 recipes that include produce that is in-season for your region and are well-known and beloved by you. Cover safety ground rules for working and observing in the kitchen and hand-out aprons. 6. Prepare the selected recipes. Including in, and sharing tastes with the class as appropriate for program, and location. Demonstrate strategies for efficient prep, cooking, and storage. Plan on making enough to share at least small bites with the class afterward. 7. Eat, clean-up and wrap-up asking students what foods are in-season or will be in the next season that they are excited to cook with.
ASSESSMENT OUTCOMES	1. Students will understand why it is beneficial for integrated food systems to eat in season. 2. Students will know where to access information about shopping and cooking seasonally. 3. Students will understand basic strategies for meal planning, prep, cooking, and storage. 4. Students will learn new recipes that incorporate local, seasonal produce

ONLINE RESOURCES	**TEACHER NOTES**
• Food & Culinary Professionals http://www.foodculinaryprofs.org • Local Harvest CSA www.localharvest.org • North American Eat the Seasons www.eattheseasons.org • GRACE Communications Foundation, Sustainable Table http://www.sustainabletable.org/875/shop-sustainably	

EVALUATION PLAN

This curriculum encourages ongoing evaluation of its successes and where there may be room to adapt and grow. At its conclusion, each

student is encouraged to fill out a survey, that considers new material learned, perceived usefulness, and enjoyment. Refer to Appendix C for a complete sample survey. Every five-years in practice, this curriculum should be evaluated by a third-party entity and process.

ABOUT THE AUTHOR

I wrote this curriculum in 2017 as part of a course towards my M.Ed. degree in Environmental Education at Western Washington University in Bellingham, WA. The knowledge that informs this curriculum comes from academic training, research on scholarly and professional sources, feedback and insights from key members of the Bellingham community, and the Nourish Curriculum shared for free by the Center of Ecoliteracy. My passion comes from the aforementioned and includes my own culinary and gardening adventures, and everlasting quest to learn about the complexities of my local and global food system. I have over five years of experience working in food-related industries, including as a dairy science lab assistant, restaurant server, confectionary crafter, grocery clerk at both a small, independent storefront in Seattle as well as the city's busiest Whole Foods Market, and most recently as the sole weekend baker for a Bellingham coffeehouse. I was trained in permagardening and family nutrition through the United States Peace Corps in Ethiopia. I have been in flux between veganism and ovo-lacto-vegetarianism since 2012.

(SUB) APPENDICES

APPENDIX B1. MATERIALS LIST AT A GLANCE

Modules 1, 2, and 4

- Chalkboard, whiteboard, or easel and poster paper
- Markers
- PowerPoint Presentations
- Scrap paper
- Packaging labels or print-outs of labels (Module 4 only)

Module 3

- Work gloves*
- Garden spades*
- Hoe *
- 5-gallon bucket(s) with lid
- Soil
- Shredded newspapers soaked in water for 24 hours
- Red worms *(Lubricous rubellas) or* compost worms *(Eugenia* fetid*)*
- Cuttings of local, edible plants
- Potting containers
- Herbs and salad green starts or seeds

*Inquire to the hosting garden/farm site if there are tools that can be shared for on-site work.

Modules 5 and 6

Lessons in modules 5 and 6 center on prepping and cooking in the kitchen. Instructors are encouraged to prepare foods and recipes that reflect the region and phenology, are beloved, and includes input from the students. As such, cooking instruments will vary. Look to the hosting location of your kitchen-based classes to borrow supplies. This could include community centers, local colleges, grocery stores and food co-ops, restaurants, and commercial kitchens for rent.

APPENDIX B2. ONE WEEK MEAL PLAN TEMPLATE

Weekly Menu Plan

Week of _____

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Breakfast							
Snack							
Lunch							
Snack							
Dinner							
Side 1							
Side 2							
Dessert							

Refrigerated	Canned	Bakery	Produce	General Household
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐

Meat	Dry Goods	Dairy	Frozen	Misc
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐

Notes

APPENDIX B3. CURRICULUM EVALUATION SURVEY

Learning and Experience Survey for Integrated Food Systems

This survey is being administered to evaluate and further develop the Integrated Food Systems curriculum in order to make the lessons the most informative and enjoyable. The survey is not compulsory. Your feedback is anonymous and used solely internally. Please answer honestly, we appreciate your feedback.

Dates of attendance _____

The following section lists lesson topics and dates from this course. Please indicate whether you Agree (A), Somewhat Agree (SA), Somewhat Disagree (SD), or Disagree (D) for each statement under the lesson topics.

1. Introducing food systems, food maps, and policies XX/XX/XXXX

Statement	**A**	**SA**	**SD**	**D**
I enjoyed this lesson.				
I learned something new in this lesson.				
My instructor was well-prepared and knowledgeable about the subject material.				
I felt engaged more often than not with the lesson.				
The content covered in this lesson was relevant to my everyday life.				

2. Social Justice Issues and farm workers XX/XX/XXXX

Statement	**A**	**SA**	**SD**	**D**
I enjoyed this lesson.				
I learned something new in this lesson.				
My instructor was well-prepared and knowledgeable about the subject material.				
I felt engaged more often than not with the lesson.				
The content covered in this lesson was relevant to my everyday life.				

3. Visiting a farm or garden site

Statement	**A**	**SA**	**SD**	**D**
I enjoyed this lesson.				

I learned something new in this lesson.				
My instructor was well-prepared and knowledgeable about the subject material.				
I felt engaged more often than not with the lesson.				
The content covered in this lesson was relevant to my everyday life.				

4. Composting and growing food at home XX/XX/XXXX

Statement	**A**	**SA**	**SD**	**D**
I enjoyed this lesson.				
I learned something new in this lesson.				
My instructor was well-prepared and knowledgeable about the subject material.				
I felt engaged more often than not with the lesson.				
The content covered in this lesson was relevant to my everyday life.				

5. Food labels, budgeting, and waste XX/XX/XXXX

Statement	**A**	**SA**	**SD**	**D**
I enjoyed this lesson.				
I learned something new in this lesson.				
My instructor was well-prepared and knowledgeable about the subject material.				
I felt engaged more often than not with the lesson.				
The content covered in this lesson was relevant to my everyday life.				

6. Cooking efficiently at home XX/XX/XXXX

Statement	**A**	**SA**	**SD**	**D**
I enjoyed this lesson.				
I learned something new in this lesson.				
My instructor was well-prepared and knowledgeable about the subject material.				
I felt engaged more often than not with the lesson.				
The content covered in this lesson was relevant to my everyday life.				

7. Zero-waste cooking XX/XX/XXXX

Statement	**A**	**SA**	**SD**	**D**

I enjoyed this lesson.				
I learned something new in this lesson.				
My instructor was well-prepared and knowledgeable about the subject material.				
I felt engaged more often than not with the lesson.				
The content covered in this lesson was relevant to my everyday life.				

8. Emotions and traditions in the kitchen XX/XX/XXXX

Statement	**A**	**SA**	**SD**	**D**
I enjoyed this lesson.				
I learned something new in this lesson.				
My instructor was well-prepared and knowledgeable about the subject material.				
I felt engaged more often than not with the lesson.				
The content covered in this lesson was relevant to my everyday life.				

9. Culminating discussion and menu planning XX/XX/XXXX

Statement	**A**	**SA**	**SD**	**D**
I enjoyed this lesson.				
I learned something new in this lesson.				
My instructor was well-prepared and knowledgeable about the subject material.				
I felt engaged more often than not with the lesson.				
The content covered in this lesson was relevant to my everyday life.				

10. Final feast XX/XX/XXXX

Statement	**A**	**SA**	**SD**	**D**
I enjoyed this lesson.				
I learned something new in this lesson.				
My instructor was well-prepared and knowledgeable about the subject material.				
I felt engaged more often than not with the lesson.				
The content covered in this lesson was relevant to my everyday life.				

What were your expectations at the beginning of this course?

Do you feel your expectations were met? Why or why not?

Would you recommend this course to a friend? Why or why not?

What changes would you like to see made to the lesson material or teaching styles?

Additional comments:

Thank you!

APPENDIX C. CAMPUS FLYER