



Winter 2024

NWAC Snow School Intern

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COLLEGE OF THE ENVIRONMENT



Internship Title: Snow School Intern

Organization Worked For: Northwest Avalanch Center

Student Name: Zoe Kass

Internship Dates: 2/22/24 3/31/24

Faculty Advisor Name: Rebecca Bunn

Department: ESCI

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STUDENT SIGNATURE 

DATE: 6/12/24

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INTRODUCTION

Mt. Baker Snow School is a cooperative program between Mt. Baker Ski Area, the Northwest Avalanche Center, Western Washington University, and the U.S. Forest Service (Mt. Baker Ski Area Inc). The aim of the program is to provide a hands-on educational experience for middle school students to learn about snow science. Snow School is primarily run by volunteer instructors, along with a few professional lead instructors from NWAC and WWU, the education coordinator Devon Schoos, the onsite coordinator Pat Kennedy and the Mt. Baker Ski Area representative Rachel Grasso. As an intern with Mt. Baker Snow School, I worked as an instructor and group guide for the six week duration of the 2024 winter program.

DESCRIPTION OF DUTIES AND RESPONSIBILITIES

As an NWAC Snow School Instructor, I was primarily responsible for acting as a guide for groups of 5-12 middle schoolers in the Mt. Baker ski area as they moved through educational stations taught by lead instructors. This involved greeting students as they arrived at the lodge, outfitting them with appropriate snow gear and leading a lesson on using snowshoes, discussing safety precautions in deep snow and coordinating with my fellow instructors to move the groups smoothly through each of the stations. When not working directly with students, I was responsible for setting up, cleaning, and sorting gear, snowshoes and educational aids such as loupes, snow crystal cards, maps and shovels.

We began each day with a team meeting where we discussed the schedule and logistics for the day, as well as weather conditions and any relevant safety concerns. We then met the students at the bus and outfitted them with warm outer layers if needed, snow boots and snowshoes. Many of the students we worked with did not own snow gear and the clothes provided by NWAC as well as the boots provided by the Mt. Baker ski area contribute to the accessibility and safety of the program.

Before hiking a short distance to the field area where the lessons are conducted, I lead a game used to help students get comfortable moving in their snowshoes and talked about snow safety. We discussed hazards such as avoiding tree wells, snow mobiles and skiers, as well as hypothermia. I carried extra gloves, warm layers and handwarmers in my pack for students who had underdressed.

During the field portion of the day, I escorted groups of students between four hands-on learning stations:

- Snow pit profiles: students learn to perform a hand hardness test to evaluate snowpack conditions and determine avalanche risk.
- Snow-water equivalency: students learn to use a probe and a hanging scale to calculate the amount of water in the snowpack and draw connections between the source of our water and its uses in the lowlands.
- Snow albedo: students learn about the concept of albedo, measure albedo in different conditions, and draw connections to climate change, avalanche conditions and snow water equivalency.
- Watershed: students recreate the mountains in our local watersheds out of snow and look at magnified snow crystals.

While I did not teach the first three stations, I aided the lead instructors by modeling asking questions, redirecting students if they were disengaged or distracting and helping students draw connections between stations and concepts. While the watershed station had an intended curriculum, it was flexible, and I was able to change it as needed depending on the needs and attention span of the group. I also used this time as an opportunity for students to snack, add layers, play in the snow and generally make sure everyone's physical needs were met so they could best focus on learning.

We ended each day by collecting borrowed gear from the students and saying goodbye, followed by a team meeting to debrief the day.

OUTCOMES

My internship did not focus on a central tangible project. I was primarily focused on personal learning and professional growth while facilitating a meaningful outdoor learning experience for the middle schoolers who participated in the program. As a result of our work, we were able to bring approximately 300 middle schoolers up the mountain over six sessions to have an immersive experience learning about snow science. For many of the students I met, it was their first time on Mt. Baker and for many more, their first time wearing snowshoes. We were able to introduce them to a new biome, new ways of locomotion and new areas of science that many of them may not have considered as accessible to them.

Personally, I learned quite a bit about both snow science, education, outreach and facilitation. I can evaluate a snow profile using a hand hardness assessment, explain albedo, different factors that impact it and its implications for climate change and snow melt and determine the water-equivalency of snowpack. I have a deeper understanding of how these concepts relate to each other and the impact they each have on lowland systems and our local communities.

ASSESSMENT

I consider my internship with Snow School to have been successful on every level, including team facilitation and management, program outcomes and personal growth and learning. The success of the program curriculum goals were impacted somewhat by the variability of the schedule and the engagement of the students. There were a few sessions where snow conditions delayed the bus and we had to shorten or skip some of the lessons, but as Pat reminded us every session, the baseline goal is just to get kids outside and having fun in the snow.

I was truly impressed with the facilitation of the program, not just watching the lead instructors interact with and educate the students, but also with how they managed our team. It was a special feeling to be part of a team where my feedback was not only valued, but an integral part of a constantly evolving program. Mountain conditions can be so variable that every day was different, from the schedule to the weather to the size and age range of the student groups. This variability called for a high degree of flexibility, a trait that I would consider one of the greatest and most important strengths of the Snow School Program.

While many of the lead instructors had significantly more experience than most of the interns, they constantly asked for our feedback. Instead of assuming that the way they had run the program would in the past would work for every season and every group, we met every day after the students left to discuss what went well, what didn't go as well and what ideas we had to try the next week. The focus wasn't just on how we could teach the students, but what we could learn from each other. As the interns were with the students from the minute they stepped off the bus, through each station, to boarding the bus at the end of the day, we had a more comprehensive perspective on how the schedule ran, how each lesson plan was received and how to best engage the students. I felt valued and empowered to participate in providing curriculum and program feedback. It felt like a team effort to make the program the best it could be for the benefit of the students. I want to bring that kind of attention to team building and care into all my work and workplaces, whatever I decide to pursue.

The other greatest strength of the program is the commitment to fun. This goes hand in hand with flexibility. Pat reiterated weekly that the most important thing, above education, is that the kids have fun. Snow School lists the overarching program goal as "providing experiential, place-based, environmental education for 6-12th grade students and their teachers during winter months" (Mt. Baker Ski Area Inc). I think that at its core, the intent of Snow School is to help students create a personal connection and relationship to the mountain and to the outdoors in general. Regardless of how much of the actual educational content students retained, we considered it a successful day if they got outside and interacted with the environment. The students who faceplanted in the snow with their friends, who learned how to walk in snowshoes, who listened to the lead instructors talk about their careers, those are the students who will want to come back and learn more in the future. Those are the students who will grow to care about the mountain and about our connection to it.

This is perhaps best demonstrated through the watershed station. While the other three stations focused on applying and connecting scientific concepts, the watershed station was mostly for play. In theory, students were supposed to learn how to read and orient a map and then recreate the surrounding watershed in snow. In reality, we often didn't have the time or the attention from students to accomplish that lesson plan. Instead we focused on ways to integrate learning into play. We challenged them to see who could build the tallest mountain out of snow and then talked about slope aspect and connected it back to avalanche safety. How steep does a slope need to be to cause an avalanche? Why can you only build a mountain so high before it collapses? Can you build it taller if you make the base wider? We used crystal cards and magnifying loupes to observe and test which types of snow crystals formed the best snowballs and talked about the role of surface area in cohesion and snowpack. Pat even started a game of baseball using snowballs and shovels. He was able to engage some of the students who hadn't been willing to interact all day. Their teacher shared with me later that it was the most she had seen some of them open up that year.

On a personal level, I feel much more comfortable in mountain environment. I was intimidated to start this internship because I was not raised in a snow sport family and in contrast to my experienced coworkers knew very little about mountain environments or snow safety. The experience of being honest with everyone about my lack of experience and knowledge was both a helpful learning

experience for me and a unique perspective that I brought to the team. It pushed me out of my comfort zone and I grew more confident asking questions most other people already knew the answers to or assumed I knew.

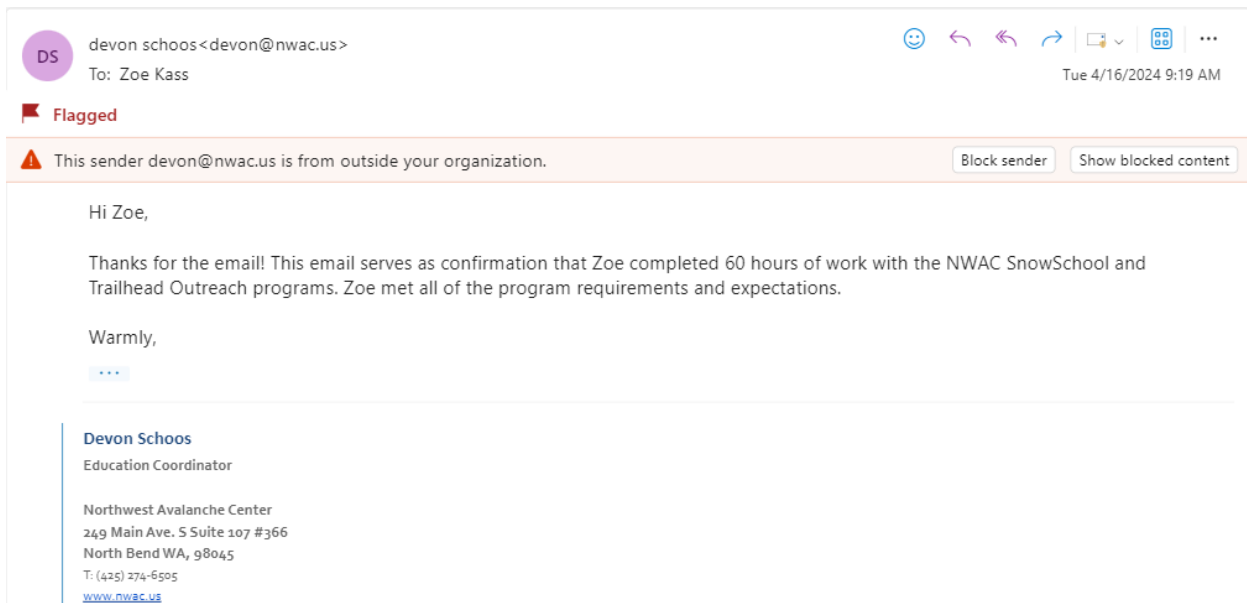
It also provided a point of connection between myself and the students. Many of the students we worked with had never been on the mountain before. They had never worn snowshoes and struggled to put them on even after a demonstration. I was able to connect with some of the shyer or more hesitant students by sharing about my experience becoming comfortable on the mountain. While I appeared knowledgeable and confident, I think it put some of the students more at ease to learn that I was a relative beginner too. This experience instilled in me the importance of creating welcoming and accessible paths to outdoor adventures and education. I have at times felt like an outsider in outdoor communities and even in the College of the Environment because I didn't have the same experience or knowledge. Through my work with Snow School, I was able to create a welcoming, accessible space for students to start learning about their environment, start building their own relationship with nature and to see that there are more ways to get out in nature that don't require expensive sports or equipment. I hope to do more work like this in the future.

LITERATURE CITED

Mt Baker Ski Area Inc. (2022, July 6). *Mt. baker Snow School*. Mt. Baker Ski Area.
<https://www.mtbaker.us/safety-education/mt-baker-snow-school/>

APPENDICES

Appendix 1: Email confirmation of met internship requirements



Appendix 2: Log of hours

Date	Hours	Description of work
22-Feb	7:30a-3:30p	Training Day: Along with the other interns, I walked through a typical day in the program as a student. We learned the same content that we would be assisting in teaching the middle schoolers. We went through all of the gear and assembled field bags for each group with various teaching instruments and safety equipment.
3/1/2024	8:30a-3:30p	Program Day: We met with Pat to go over the schedule for the day as well as any relevant weather or safety concerns and get our group assignments. I met my group as they came off the bus and helped outfit with any additional snow gear they needed. I lead a lesson on putting on and walking in snow shoes as well as deep snow safety. I escorted my group between lesson stations and lead group discussions connecting the concepts between stations. After the field lessons, I checked in and put away the borrowed snow gear and saw the students back on to the bus. We ended the day with a group meeting to debrief the day and discuss what went well and what we wanted to try differently next week.
3/8/2024	8:30a-3:30p	Program Day: See above.
3/15/2024	8:30a-3:30p	Program Day: See above.
3/22/2024	8:30a-3:30p	Program Day: See above.
3/29/2024	8:30a-3:30p	Program Day: See above.
3/30/2024	8:00a-5:00p	NWAC Trailhead Outreach Day: I joined an NWAC snow forecaster and a few other Snow School interns to volunteer with the NWAC trailhead outreach program. We set up an information tent at the Mt. Baker Ski Area trailhead. I kept track of the number of skiers, snowboarders, hikers and snowshoers, taught visitors about NWAC and the resources they provide and relayed the avalanche forecaster to visitors.
3/31/2024	8:00a-5:00p	NWAC Trailhead Outreach Day: I joined an NWAC snow forecaster and a few other Snow School interns to volunteer with the NWAC trailhead outreach program. We set up an information tent at the Mt. Baker Ski Area trailhead. I kept track of the number of skiers, snowboarders, hikers and snowshoers, taught visitors about NWAC and the resources they provide and relayed the avalanche forecaster to visitors.