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NWAC Snow School Intern

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COLLEGE OF THE ENVIRONMENT

WESTERN WASHINGTON UNIVERSITY
MAKE WAVES.

Internship Title: Mt. Baker Snow School

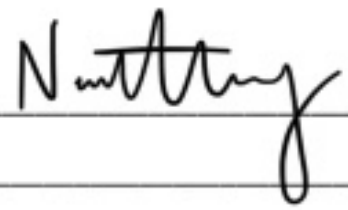
Organization Worked For: Northwest Avalanche Center

Student Name: Nathan Haong

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

Faculty Advisor Name Manuel Montaño

Department ESCI

STUDENT SIGNATURE 

DATE: 4/3/24

Nathan Haong
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Northwest Avalanche Center Snow School at Mt. Baker

Mt. Baker Snow school in collaboration with the Mt. Baker Ski Area, North Cascades Institute, and the Northwest Avalanche Center (NWAC) provides an insightful opportunity for kids grades 6 – 12 to experience hands on science education and exploration at the Mt. Baker Ski area. Covering niche environmental science topics not commonly covered in typical grade school curriculum, snow school is an opportunity for children to explore different scientific implications of what they already know and how it applies to snow science. Aside from education, snow school served as an opportunity for a large majority of kids to explore a place they had never been before and see snow for the first time for some.

My position as an NWAC intern involved many different tasks and responsibilities. My primary focus was to support the students as they interacted with the different snow science related activities planned for them during the day. Equally as important, my role involved maintaining the safety and comfort of our student visitors. Every day I was paired with 1-2 other interns who together would lead groups of 10-15 children and or adult chaperones at a time. Since most schools were on such a time crunch, our days were setup to optimize efficiency. A large portion of the day involved getting the kids properly outfitted for the snow with rental gear provided by the Mt. Baker ski resort such as jackets, boots, gloves, snowshoes, etc. Some days were easier than others in terms of giving out gear, especially when kids would come prepared with their own gear. Arguably the most challenging and time-consuming part of the day was getting everyone into their snowshoes. This part was especially hard since the snowshoes we had available were very old school and not the most ergonomic to put on. As we progressed through the weeks, we learned different ways of teaching the kids to put the snowshoes on more efficiently, making our timing less squished together for the activity and content heavy portion of the day.

Once all the students were feeling comfortable and ready, we embarked on a short, less than a mile traverse uphill to where the activities were being taught (nearby chair 1 of the ski resort). This area consisted of 4 different stations in which each group of students would spend anywhere from 10-25 minutes rotating through, which was heavily dependent on how early the kids were able to make it up to the mountain. The various stations were titled: Snow Profile, Snow-Water Equivalency, snow algae/albedo, and the Watershed activity.

The Snow Profile station involved implementing the concept of different layers within a snowpack and how it relates to avalanche hazard potential. This station's main activity was teaching the students how to perform a hand-hardness test which was a way of visualizing the different densities of the different layers of snow, allow us to distinguish between the different layers and predict avalanche susceptibility. We then related the different densities to visualizations in the form of a snow profile graph. One thing that seemed to stand out the most to the kids was how standardization of snow science terminology allowed for communication universally of avalanche science. I think that this station was especially beneficial in the way that it brought awareness to how avalanches worked and what warning signs to look for.

Following the snow profile station was the snow-water equivalency station (SWE). This station’s primary focus was demonstrating how amount of snow relates its water content. This station involved a bit of math to do a conversion which the kids struggled with understanding a bit. Nonetheless, this was an interactive station which involved the measuring snow-water equivalency that the students seemed to

enjoy. A main point that was made during this activity that caught the attention of myself and the students was how little snowpack we received this year (nearly half of last year).

The last station that was being taught by an NWAC educator was the albedo/snow algae station. Here the kids learned about the differences in albedo and its implications on snow melt. This was displayed by having three different bowls of snow, each with special treatments. One with dirt in it, resembling black carbon buildup, one with regular snow as our control group, and the last with pink food coloring snow, meant to resemble snow algae. The kids would take turns measuring each sample's temperatures and then compare the three. The main takeaway from this was how black carbon emissions contribute to lower albedo, and higher surface temperatures.

The fourth station was a do it all "fun" station for the kids to let out any remaining energy they had before returning to the lodge. We provided tools such as magnifying lenses here to allow the kids to look at snow crystals, as well as shovels and maps to recreate the mountain ranges around us. The students seemed to appreciate opportunity to goof off at this station without much structure involved. For quite a few students this was their first ever time seeing snow, making it especially fun to get a chance to just play around in the snow.

Towards the end of the internship, I participated in two days of trailhead outreach. This entailed setting up an NWAC tent at the trailhead of the Mt. Baker backcountry, promoting and spreading information about avalanche safety to a wide array of different backcountry recreators. We primarily focused on educating the public about the daily avalanche forecasts. In addition to the forecast, we promoted NWAC's new phone application called the "Avy App" which is a resource containing avalanche hazard forecasts. One thing that stood out to me from this experience was the large amount of people who did not know that avalanche forecasts even existed.

PAYOFF:

My time with NWAC at Mt. Baker Snow School was a fulfilling journey. It allowed me to apply and combine my knowledge of what I've learned in the past 4 years at WWU with my passion and skills working with youth. My background as a summer camp counselor set me up for success at snow school since working with the students was a comfortable and familiar thing for me. Since the last time I worked with kids, snow school made me realize how much I enjoy working with youth and has helped me further my potential future career ideas. This experience further improved my confidence in a leadership position and helped me practice and gain experience leading youth through education.

Further, I also was able to learn a lot of things about snow science and avalanche safety. I learned several ways to test for avalanche dangers, as well as how to perform field measurements. Back country recreating has always been something I have been interested in participating in but have always been too nervous about doing without the proper knowledge. Now that I am equipped with a general sense of what to expect and how to best prepare for worst case scenarios, I am more confident in my safety. Snow school opened vast connections with a different field of study that I barely considered to be a fundamental part of our ecosystem.

Overall NWAC's snow school was an opportunity of a lifetime that I am glad to have been a part of. The people I got the chance to connect with during this experience are people that I hope to keep in touch with and potentially even work alongside again in future times. NWAC and snow school has forever left its mark on my journey as an environmental scientist.

Date	# of Hours	Description / Daily Reflection
2/22/24	7am-4pm (9hrs)	First day at the mountain was a training day. We got to meet all the North West Avalanche Center (NWAC) staff we would be working with. We did a rough mock day at snow school which involved going through the things that we as interns would be walking the kids through.
3/1/24	7am-3pm (8hrs)	Burlington Edison was the very first school to come to Snow School this season. Their bus was extremely late allowing them to have not much time outside at the various stations. This day was extremely hectic since it was all our first times as interns getting the kids suited up and ready to go outside.
3/8/24	7am-4pm (9hrs)	Our kids this week were from Nooksack Valley Middle School. They showed up at a more reasonable time allowing for a full unrushed day of Snow School.
3/15/24	7am-3pm (8hrs)	Nooksack Valley Middle School got another day of Snow School, but this time a different grade. This was one of my favorite days. The kids were the politest I had ever experienced.
3/16/24	7am-4pm (9hrs)	Trailhead Outreach days involved setting up a tent at the trailhead leading to the back country which is a popular spot amongst snow shoers as well as split boarders and back country skiers. Our purpose was to spread awareness about avalanche safety and promote the resources that NWAC has, such as the Avy app, which has daily avalanche hazard postings and conditions.
3/24/24	7am-3pm (8hrs)	Mt. Baker Junior High was a unique experience. This time I was grouped with a primarily Spanish speaking group of children. It was

		interesting to work alongside a translator the whole day as well as attempt to piece together some phrases from my high school Spanish knowledge.
3/31/24	7am-4pm (9hrs)	Trailhead Outreach: much less people than last time (maybe because of Easter).
	TOTAL: 60 hours	