Community Engagement Fellows Project Report

Georgianne Connell
2016-2017 CE Fellows Cohort
Department of Biology
Western Washington University

Title: Lake Whatcom Lab Inquiry for Nonmajors Biology Students.

Background: Biology 101 is a biology course for nonmajors at Western Washington University. In the lab portion of the curriculum, students conduct a 6 week, student-driven inquiry into how the eutrophication of Lake Whatcom affects water quality parameters and food web dynamics. Eutrophication occurs when nutrients are added to a body of water, typically through run off. This is an ongoing problem in Lake Whatcom and is directly related to policy concerning development and logging in the surrounding areas.

The Project: Next year, we will bring water, plankton, and sediment samples from Lake Whatcom to tanks in the BIO 101 lab. Students will fertilize some of the tanks but not others to see how food web composition and water quality variables change over time. As their final project, they will use microscope cameras to create visual displays of the food webs in the various treatments and will compare water quality data from the Institute of Watershed Studies Annual Lake Whatcom Report to their own findings. Students will analyze the data sets to come up with hypotheses about the health of Lake Whatcom. In addition, I will bring in a guest lecturer to talk about the work the city is doing in and around the lake to limit eutrophication once a quarter.
** I am still thinking about and working on a way to bring in a public display aspect to the final projects to help with motivation, accountability, and to mimic real-life work in science.

Project Evolution: Throughout this year I have leveraged the ideas of my CE cohort fellows to come up with ways to connect student work to community life. The lab portion of the course lends itself to a community connection since the students' research topics are so relevant to Bellingham life (our drinking water comes from Lake Whatcom). The biggest barrier to ideas is my class size. It is not feasible to bring 400 students a quarter to Lake Whatcom to take a tour, assist with remediation or to take lake samples. I could have them sign up individually with NSEA or other environmental groups but I have had poor success with this method in the past; students are not able to see the value in a single, isolated service event the events often do not directly relate to my curriculum, and managing multiple organizations is not sustainable for me. At one point this project evolved to consider using Lake Padden instead of Lake Whatcom, since the Padden Creek daylighting project is relatively close by. However, having students walk down to Padden Creek would be difficult to accomplish in a single lab period, let alone multiple times a quarter. A third site option, Outback Creek, came to mind in one of our meetings since it is an accessible water source on campus, but ideas using this source were shut down because the scope and implications for the community weren't broad enough. I want students to think about off campus community issues.

The final project breakthrough came when we starting thinking about how to bring the community *into* the lab versus taking students into the community. Once we started to think about the proposal from this perspective, feasible ideas started to flow. Initially, I had thought students would compete to produce a brochure synthesizing their final project from their lab work. The winning student would pass their work onto the city to be used for citizen science education. While I still like the idea of this type of project because it is a public display of work, only one or two students would benefit from showing their work to the community and I worry that the community would have no use for it.

Reflection: The CE fellows program was a fantastic experience. I still remember the 'aha' moment of when I realized I could bring community into the lab instead of taking students to the community. I do not think this would have been possible without the support of my cohort. Working with people outside my field has broadened my perspective and helped me to think outside the box. I intend to intentionally seek out individuals outside of biology to run biology ideas by in the future because of the valuable perspectives that I received in this program. I also enjoyed being a part of the planning of other cohort member's projects. Applying my skills to their discipline was interesting and rewarding. I felt a greater sense of community when hearing about all of the great work people are doing on campus and in the community.