APPLICATION BASED LEARNING IN STEM: IMPLEMENTING ENVIRONMENTAL HEALTH LEARNING TOOLS IN A PHYSIOLOGY LAB COURSE

Session: B, Breakout Room #1

Madeleine Ambrose*, @AmbroseMadi, Program on the Environment, Interdisciplinary Honors, University of Washington
Faculty Advisor: Oscar Chacon, Biology, University of Washington

Effective education that includes an environmental curriculum primes the next generation to become environmentally conscious stewards. The big question is, how do we incorporate environmental education into 'standard' STEM classrooms and what mode of delivery is most effective? I worked with the Biology Department here at UW to find out how to specifically and critically implement environmental health education into BIOL 119, the physiology lab class. The goal was not only to increase students' knowledge of environmental health, but to also do this in an effective manner so that it would supplement the normal physiology curriculum. In my capstone project, I implemented four application-based learning tools on a specific unit of physiology using an environmental health lens. I used three different modes of implementation (worked examples, observational learning and analogical reasoning) to test out these strategies but found that analogical reasoning was the most effective way to implement my tools. Analogical reasoning is the use of two or more similar topics or ideas to explain one, complicated system or topic. With this, I measured effectiveness and performance through analyzing post-lab quiz score data between and within lab sections and found a correlation between my tool implementation and higher post-lab quiz scores. I came away from this experience with two main takeaways. Active, application-based learning aids students in content retention and test performance and environmental health curriculum is an effective and interesting topic for students to use as an important learning tool for 'hard' STEM based courses.