Plastics, Oceans, and Ships: Field-based Learning Influencing Education

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INTRODUCTION
Experiential and hands on learning is embedded in the Environmental Science curriculum at University of Washington Tacoma. Faculty at the UW Tacoma offer several opportunities for students to engage in field-based learning to explore science topics. These experiences are intended to enhance students ability to apply the process of doing science, use quantitative reasoning, and connect science with society. This presentation will highlight student projects from three courses including Introduction to science (100-level), oceanography (200-level), and estuarine Field studies (400-level).

UWT DEMOGRAPHICS
- Urban Commuter Campus
- Demographics
  - Diverse student population
  - 80% transfer students
  - 65% first in family
  - 10% Veterans

INTRODUCTION TO SCIENCE
Description: Introduction to Science: Oceans Full of Trash is a general education course, affording a field experience for incoming freshmen. Initially students watch popular videos and review internet reports and blogs. Students then collect samples from a local beach and surface waters of Commencement Bay to evaluate the presence of plastics in the ocean. Results from the field are then evaluated against the popular media. A survey is given to each student at the beginning and end of the course to assess their growth in learning the process of scientific applications and discovery.

Objective: Explore popular environmental issues and gather field evidence to better understand the complex issue.

Outcome: Form an opinion from experiential activities instead of following the popular media.

OCEANOGRAPHY
Description: Oceanography is a laboratory science course designed for both science and non-science majors. Students participate in lectures and laboratories with an oceanographic cruise on a research vessel, affording students an opportunity to look at water properties discussed in class.

Objective: Apply a wide variety of oceanographic concepts to explore ocean properties

Outcome: Create a comprehensive report on observations and related interpretations from ideas learned.

ESTUARINE FIELD STUDIES
Description: Estuarine Field studies is offered to upperclassman in environmental science. These students are out in the field weekly collecting samples and data throughout Puget Sound, examining the connection between estuarine ecosystems, the ocean and local watersheds.

Objective: Utilize analytical skills acquired throughout environmental science program to explore the regional environment.

Outcome: Create a website that illustrates the natural history of the region, makes available data collected during the course, and offers interpretation of data through graphs and descriptions.

CONCLUDING THOUGHTS
Field-based experiences are not only important for upper division environmental science majors, but also important for all students entering the university as freshman. Results from each of these courses have shown that students gain a better understanding of concepts addressed in class when they participate in real-world, hands-on activities. Furthermore, field work is invaluable for advancing student learning and creating the excitement needed to recruit and retain undergraduates at the university and in the sciences.