

Faculty and Student Perceptions of Course-Based Research Experiences at 78 Degrees North

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The benefits of engaging students in meaningful research are well established, and include increased understanding of scientific processes, persistence in science, and interest in science as a career. However, traditional, “apprentice”-style research experiences are typically restricted to a select few students, further expanding gaps in equity in science, technology, engineering, and math (STEM). Course-based research experiences (CREs), or those embedded in a standard curriculum, can lower barriers to access to research experiences and give a broad range of students the ability to develop key science-process skills (e.g. developing a hypothesis, designing and executing experiments, interpreting data, etc.). While many educators have taken the initiative to design CREs in areas such as microbial ecology, experimental evolution, and marine biology, we are in our infancy not only with regard to curricular transformation, but also with respect to assessment.

The University Centre in Svalbard (UNIS) is the world’s northernmost institution for higher education, and is specialized for field-based inquiry and education in the High Arctic. UNIS courses are characterized by CREs, therefore UNIS is an ideal location to investigate questions related to optimizing these experiences—for both students and faculty. Further, the field-based nature of these courses allows us to consider the unique challenges and potential of field courses. These courses are often expensive and require more planning and internal resources than traditional lecturing in a classroom setting. Given the costs associated with field courses, it is critical to quantify and optimize their benefits.

We will introduce UNIS, give an overview of some of the CREs, and present our findings from a survey- and interview-based study of students and faculty in Winter 2017. Specifically, we found that faculty employ a range of different types of inquiry in their courses—from open inquiry, to discovery-based inquiry, to CREs. Faculty value the integration of research and teaching, but worry about exploiting student efforts for the faculty’s research aims. Student perceptions are similarly positive. On a post-course survey, students were asked about their level of investment during course-based research projects; on average, students claim to have been “very invested” in the research projects. An emergent concern involves the collaborative aspect of the research projects, and how best to navigating challenging inter-cultural group dynamics. Thus, our discussion will center on ways to facilitate effective group work, with a consideration of culturally relevant pedagogy, in future courses.