

A DBER Science Education Seminar

# Project-Based Learning to Achieve Skill-Based Learning Goals in an Introductory-Level Atmospheric & Oceanic Sciences Course

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ATOC introduced a new undergraduate major in the Fall of 2016. The required curriculum includes skill-based learning goals to meet the demands of employers for graduates trained to provide quantitative solutions to real-world problems. For students to succeed in this rigorous major, it is important that they start learning such skills from the start of their undergraduate career. To meet this need ATOC 2050: Introduction to Atmospheric Research was designed. The course is a partially flipped classroom. The traditional physical processes learning goals that focus on identifying and explaining the basic physical processes that drive atmospheric and oceanic behaviors, are taught outside of the classroom via videos, tutorials, or other activities, while skill-based learning goals are explicitly taught in the classroom. The instructor introduces a skill-based learning goal to students, followed by an in-class project that uses the skill-based learning goal to prove the physical processes learned outside of the classroom. To assess the effectiveness of the skill-based learning goals, students complete a pre and post survey on learning attitudes about science, a mid-semester student survey, and an end of the semester passion project. For the passion project, the students design a scientific question around this physical process and use the skill-based learning goals learned throughout the semester to make data-driven conclusions to answer the question and then effectively communicate this to the other students in the class. This presentation will describe the details of ATOC 2050, as well as the successes and the opportunities for growth within the class.

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