ASSESSMENT OF STUDENT LEARNING DURING A COMPLEX MULTI-YEAR, MULTI-DISCIPLINARY PROJECT: A MODEL FROM TRINITY UNIVERSITY

PROJECT BACKGROUND

Rigorous assessment of student outcomes has become increasingly important in college education. While many higher education assessment methods are available, proving the right tools for the job is crucial. We provide an example of outcomes assessment from the Alamo Project at Trinity University, a multi-year, multi-disciplinary project that has been in progress for over a decade. The project is designed to improve student learning, curricular/pedagogical efficacy for impacted courses, the worked from the micro- to the macro-scale, providing us data for individual student assessment and overall project success at both formative and summative assessment sections.

PROJECT GOALS

We propose to improve both science and non-science majors understanding and engagement of the scientific method by providing engaging, interdisciplinary project activities in Chemistry and Geosciences at Trinity University in San Antonio, Texas. To address these challenges, we designed a multi-year project that has received support from the Department of Chemistry and Geosciences, the Department of Physics, the Department of Mathematics, and the Science, Technology, Engineering, and Mathematics (STEM) education community. The project focuses on developing student research skills, fostering interdisciplinary collaborations, and engaging students in the scientific process. We also propose to improve both student understanding and overall attitude in these areas through a series of project activities.

ASSESSMENT OF STUDENT LEARNING

Course activities

In the intensity of developing new course activities, course materials for the Alamo Project have been developed at Trinity University. The project has involved various instructional strategies, such as project-based learning, flipped classrooms, peer review, and online discussion forums. These instructional strategies are designed to improve student engagement and understanding of the scientific method.

Students' comprehension of the scientific method was measured through pre- and post-assessments. The pre-assessment was conducted at the beginning of the academic year, and the post-assessment was conducted at the end of the academic year. Both pre- and post-assessment included multiple-choice and true/false questions, with students asked to identify the correct steps in the scientific method and to explain their reasoning.

A MODEL FOR MULTI-YEAR PROJECT ASSESSMENT

As many students failed to see the direct connection between scientific analysis of scientific data and the real world, we used a multifaceted approach to address this issue. We developed a series of assessment tools and methodologies to track student progress and assess the effectiveness of our project.

1. Plan your assessment framework when the project itself is in the planning stages.
2. Maximize the number and type of assessment tools - the more data, the better!
3. Build in feedback mechanisms, including benchmark formative project evaluations.
4. Find ways to integrate assessment of project activities with existing course/institutional tools.

REFERENCES


