

To: ACS  
From: Leo Pezzementi  
Re: Megan Gibbons: Using The Learning Cycle to Teach Ecological Concepts in Intro to Environmental Studies  
Date: 12 March 2007

The guidelines for proposals stated that whether the proposal addresses a new course, module, or other learning/teaching activity, the resulting experience should increase students' ability to:

- understand and appreciate the scientific world-view, including its limitations, and how it differs from other perspectives;
- understand the increase of inter-relationships among the different disciplines of science;
- understand the connection between scientific concepts and technological developments, their impact on society, and the cultural and historical context in which they emerge; and
- use their understanding to evaluate rationally scientific controversies in the world.

Dr. Gibbons' course meets these goals quite well. It is a team-taught interdisciplinary course that examines the science of ecology and environmental management and the political, economic, and ethical issues in environmental sustainability (ES 150). The goals for and expectations of students are clearly presented, and described, in the course syllabus (which is included, along with other course and laboratory materials), and match those of the Mini-grant program. Her grant was one of the smallest awarded; yet, she has done a large amount of implementation. Her grant was for "Using the Learning Cycle to Teach Ecological Concepts in Introduction to Environmental Studies." In one of her abstracts Dr. Gibbons states that "The learning cycle is a teaching method that is generated from cognitive research and is based on the premise that learning is more effective when students are asked to reconstruct their understanding through interactive exercises. The method involves several phases: (1) engaging students with a question or activity that probes their prior knowledge and focuses their thinking; (2) encouraging students to explore their ideas and concepts with the instructor and other students; and (3) explaining the concepts and clarifying common misconceptions, which are especially prevalent in non-majors courses.

Dr. Gibbons has included a large amount of information in her report, including considerable assessment data and analyses, and I refer you item one in her report to access the details. She had been teaching this course prior to receiving the grant, and it was already very successful and very popular. The quantitative and qualitative college assessments show the success of the course, and improvement in virtually all areas after the introduction of the learning cycles, particularly in the area of student perceptions of her ability to facilitate comprehension. She also designed her own course assessments and analyzed them to determine the effects of the year of the students, whether they were majors or non-majors, and the amount of effort put into the course on their perceptions of (1) course design, (2) connectivity, and (3) overall satisfaction. There were positive correlations for the year of a student, being a biology major, and the amount of effort put into the course on all three variables, although they were not always significant. Dr. Gibbons also used the SAM-VI. The Drury group concluded "An overview of the analysis for your institution reveals that there was a slight increase in the perceived value of science after completing your course, with the most significant change in students' perceptions of the conflict between science and their religious commitments." The change is in the direction of a decrease in conflict.

You can also find quantitative data on enrollment, course offerings, etc. in her report.

Overall, the grant has had a positive impact on the already popular and successful introductory environmental studies course here at BSC. The numbers of students impacted may not be great yet, but that may change in the future, as the course is adopting an environmental studies major; however, it is anticipated that the course will serve a mixture of majors and minors.