PEER-LED TEAM LEARNING IMPLEMENTATION

PEER LEADERSHIP SPURS INTEREST IN SCIENCE AT UNIVERSITY OF PORTLAND

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In the past year (1999-2000), four faculties in two disciplines, chemistry and biology, adapted the PLTL Workshop model with supplemental funding to the University of Portland. How did we come to adopt this approach? How did it work out? Where are we going from here?

For several years, the chemistry and biology departments at the University of Portland have been focusing their efforts on improving and increasing the success of their first semester freshmen in general chemistry and biology. The University of Portland is a private, primarily residential university in the city of Portland, Oregon, with an enrolment of about 2600 students. The number of students who declare science, primarily biology, as their major has steadily increased with a corresponding increase in their SAT's and high school GPA's. However, we were not seeing increasing success in general chemistry and general biology. Students' study skills were weak. Freshmen reported that they seldom had to study to do well in science in high school, but were finding out too late to recover academically that this was not the case in college.

In chemistry, attempts were made to include more interactivity in the lecture with team projects. The lecture typically had between 100-120 students, a very large section for the University of Portland. Toward that end, during 1998, three upper division chemistry majors were hired by the Department to attend the lecture course and facilitate group work in an auditorium setting. Although this improved students' participation, three major problems arose. Firstly, these upper division students had no formal training in working with groups. Secondly, although these were junior and senior chemistry majors, their knowledge of the content was at times inadequate. Lastly, three mentors for 120 students were not enough.

Biology had tried to increase their students' success in general biology lecture (160 students) by offering several sections of a course called *Readings in Biology*. This course typically had 25 students in each section and was offered by a faculty member in biology. This approach was very time-intensive for the faculty in biology and still resulted in 40% of their declared majors changing their major from biology after the first semester.

Both the lead instructors in general chemistry and biology had been participants in an NSF sponsored initiative, OCEPT, the Oregon Collaborative for Excellence in the Preparation of Teachers. It was through this connection that they became familiar with the PLTL Workshop model. This approach addressed many of the deficiencies that were present in their earlier attempts. Thus, peer led team learning was instituted in the Fall of 1999 in the first semester general chemistry course for science majors and in the first semester general biology course. Nineteen peer leaders were hired and trained in a two-day workshop on group facilitation skills prior to the start of the Fall semester.

Ten of these leaders were in chemistry and were primarily sophomores. The chemistry lecture class had an enrolment of 99 students. Nine leaders led fifteen workshops in biology and were primarily seniors in biology. There were 160 students enrolled in biology. Around 80 students were enrolled in both workshop chemistry and workshop biology.

In chemistry, students were required to attend their two-hour workshop and questions from the workshops were integrated in exams. The peer leaders were also expected to attend the lecture so that they could facilitate group work. In contrast, in biology, the students were encouraged to attend the biology workshops with extra credit but the workshops were not required. Also, the peer leaders did not attend or participate in the biology lecture. Only the first semester of general chemistry had PLTL whereas both semesters of general biology used this workshop approach.

At the start of the semester, some of the students in chemistry objected to the required workshops but by the end of the term these same students were lamenting not having workshops available to them for second semester chemistry. Ninety-five percent of the students participating in both workshop chemistry and workshop biology reported that the workshops were helpful. In chemistry, 10% of the students dropped or failed the class. All of these students, save one, did not attend the chemistry workshop.

In both biology and chemistry we observed increases in A's and B's compared to previous semesters. Observed retention of biology majors significantly increased. The data have been forwarded to the Project Evaluator to add to the meta-study of the PLTL Project. We are hopeful that the PLTL approach helps students improve their study skills. Random interviews by the Dean of the College of Arts and Sciences also reported high student satisfaction with the workshop approach.

A somewhat unexpected but ancillary benefit of this approach has been the blossoming of the peer leaders. At the start of the Fall semester, they were a very tentative group and lacked confidence. They have matured into insightful advocates and representatives for their students. As a result of their peer leadership, some are now considering careers in teaching science.

We have been very encouraged by our preliminary results. Next year, our leaders have been invited to work in developing workshop chemistry and workshop math with the high school faculty of a neighborhood high school with a large Hispanic population and a high drop-out rate. Also, at the University of Portland, we will be extending workshop chemistry for the full-year course in general chemistry and incorporating the workshop model in half of the general chemistry laboratories. Organic chemistry and the chemistry sequence for the allied health majors will also be using the Workshop approach. Both semesters of general biology will again be using the Workshop approach. Physics is considering implementing PLTL in 2001. The PLTL model is robust and flexible and thriving on the left coast!

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