

UMass Lowell Centers for Learning & Academic Support Services

Success of First-Year Calculus & Physics Students Using Online Tutoring

Final Report June 2009

Sheila Riley-Callahan, Executive Director of Academic Services & Special Programs, Centers for Learning & Academic Support Services, UMass Lowell

David Driscoll, Associate Director of Educational Computing, Centers for Learning & Academic Support Services, UMass Lowell

Suzanne Gamache, Coordinator of Tutoring Services, Centers for Learning & Academic Support Services, UMass Lowell

Objectives and strategies

This project was designed to provide online supplemental instruction support to first-year Science and Engineering students in randomly selected sections of Calculus I and Physics I during Fall 08. These courses are considered high risk with a 40% - 60% DF/W rate in previous semesters. After meeting with the Chairs of both the Mathematics and Physics Departments, the consensus was reached to make this additional online tutoring support available to one section each of Calculus I and Physics I and to analyze the DF/W rate of those students compared with the control group. At the beginning of the semester the Coordinator of Tutoring Services visited the participating sections of Physics I and Calculus I and explained the project to students. Instructions on how to log in to online tutoring were given verbally and in print, and printed copies of tutoring schedules were distributed. The project was promoted to the students as an effort among academic support staff and faculty to assist them in understanding difficult course content and an effort to improve retention rates in the Engineering major.

Adjustments

After the first two weeks it became apparent that few students in either the Calculus or Physics classes were participating in the online tutoring sessions, and efforts were made to increase participation. Professional staff members met with faculty involved in the courses to determine a method to 'require' students to log-in. Course Wizards (tutors) visited the classes once again. The Calculus professor met individually with students who were deemed to be 'at risk' by mid-point of the semester and told them they must use the online tutoring or risk failure. By the end of the project it was clear that the number of

students who had made use of the supplemental tutoring was not sufficient to provide data needed to compare with the control group.

Activities carried out

All tasks that were included in the original project timeline (see below) were completed between June and December 2008.

Project Timetable

Spring 08	Identify participating sections of Calculus I and Physics I
Summer 08	Meet with instructors of participating sections Train peer tutors and technical assistant Design Supplemental Instruction program
September 08	Peer tutors/tutoring coordinator meet with participating students Students begin online interaction
October 08	Mid-term exam review session Meeting of all investigators, instructors, peer tutors to assess progress to date
November 08	Special tutoring sessions prior to withdrawal date
December 08	Final exam review session Collection of all data
January 09	Analysis of data

The Executive Director of Academic Services & Special Programs, the two peer tutors, and the Coordinator of Tutoring Services collaborated with Calculus I and Physics I faculty and Department Chairs at various times over the course of the semester to assess progress and develop strategies to increase student participation.

Deliverables

Although only a small number of students in the participating sections of Physics and Calculus made use of the supplemental online tutoring during the semester, one of the Course Wizards worked with students who had received a grade of D in Calculus I during the Winter Intersession course. 80% of those students improved their grade and were able to register for Calculus II during the Spring 09 semester.

Assessment

We did not foresee that students would be so reluctant to participate. Understanding that we as academic support staff do not have the authority to make participation in a project such as this a mandatory or graded component in an academic course, we believed that a larger number of students would participate simply to take advantage of this additional service to improve their performance in the class. This prediction was overly optimistic, and in spite of various efforts to entice student engagement, the number of participating students was not sufficient to draw a statistically significant conclusion on the impact of online tutoring.

In spite of the fact that the original objective of the project was not achieved, an unexpected positive outcome was an improved sense of collaboration which resulted from the partnership between faculty and professional staff who worked on this project. Oftentimes faculty and staff are working toward the same goal from different perspectives. This project provided a platform for us to work and plan together and share strategies for improving the retention rate of students. We were able to discuss various concerns that students bring to us as academic support professionals with faculty who don't often hear from students who are in distress. In many cases the student simply withdraws from the course and the instructor never has the opportunity to determine what caused the student to make that decision. Conversations with students and peer tutoring staff provide us with information and feedback which we then carried back to faculty.

Issues and further questions

It appears that the major weak point in this project was the lack a requirement placed on students to compel them to utilize online tutoring. Making it a mandatory component in the course would have provided sufficient log-in data for us to do a comparison of their grades with the grades of the control

group. Unfortunately the intrinsic motivation to improve one's grade was not sufficient in this case and most students did not take advantage of the assistance that was being offered to them.

Disposition of funds

Funding provided	\$17,000
Tablet PCs and headsets	4,348
Peer Tutors	7,428
Technical Assistant	3,600
Total Expenses	\$15, 376
Balance	\$1,624

Comments

The grant program provided an opportunity for professional staff at the Centers for Learning to become actively involved in the strategic initiative to retain students at UMass Lowell. The funding offered a way for us to obtain laptops which will continue to be used as we expand our online tutoring program. The compensation that was made to the peer tutors and to the technical assistant was utilized to fund their educations, and this type of experience enhanced their employment histories. Professional staff members and peer tutoring staff made visits to classrooms which increased our outreach as we described the types of academic assistance we offer to students. In spite of the lack of data and the disappointing results that we did not fully achieve the original goals of this project, it did focus our attention on pro-active intervention and we will continue to work toward improving the academic experience of our students at UMass Lowell.