

A Report on an Online Course for Non-science Majors

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ABSTRACT: Quantitative Skills for the Modern World, a mathematics course for non-science majors, was one of the online courses that Loyola Marymount University has offered during the summer of 2002. I created an online version of this course and piloted it. The main goal of this project was to evaluate effectiveness of this new course delivery system. After having taught this course online, I believe that the new delivery system is at least as effective as the traditional delivery of this course. In this talk, I will share my experiences in teaching this course online. The discussion will include the course content and its delivery, the course mechanics, problems faced in teaching a course online, student reaction, evaluation of student learning, and some general observations and comments.

I Introduction

Math 100, Quantitative Skills for the Modern World, was one of the three online courses that Loyola Marymount University has offered during the summer of 2002. I created an online version of this course and piloted it during the first summer session. The main goal of this project was to evaluate effectiveness of this new course delivery system for Math 100. After having taught the first session, I believe that the new delivery system is at least as effective as the traditional delivery of this course during the summer. However, the online version of this course should be taught at least once during the regular school year to assess its effectiveness when the class size is larger.

II Course Mechanics

1. The course: Math 100 is a course in quantitative and analytic skills used to understand personal and social issues faced in everyday life. Topics include problem solving, computer spreadsheets, probability and statistics, and mathematics of finance. This course has a spreadsheet lab component also as a co-requisite.
2. Class Meetings: Since this course was a pilot course, it was taught both online and in class. The students had a choice of completing the coursework over the Internet or by attending the class. However, each student was required to come to campus three times during the term. The first required class meeting was at the beginning of the session, the second was for the midterm exam and the last was for the final exam.
3. Student Enrollment: There were 15 students registered for the course, out of which 8 students choose to complete their course work entirely online and the rest chose to attend regular classes or tried a combination of the two. The enrollment was closed several weeks before the classes started and consequently several students were unable to register for the course. I received at least six more inquiries about the possibility of adding the course after the enrollment was closed.
4. Prerequisite for Taking the Course Online: A student taking this course online
 - must be a highly motivated independent learner

- must have access to high speed internet connection, Netscape 4.0 or Internet Explorer 4.0 or higher,
 - must have an active email account and know how to use it efficiently,
 - must have Microsoft Word, Excel, and PowerPoint.
5. Delivery of the Course Material: The required text was *Using and Understanding Mathematics, 2e* by Bennett and Briggs, and the primary medium of delivery of this course was the Internet, using the university's "Blackboard." Email, telephone, and face-to-face meeting during the office hours were the primary medium of communication between me and the students. I used Blackboard to post course documents, daily assignments, communication activities and online quizzes, and to link to resource sites.
 6. Course Format: Each student was contacted by a letter prior to the beginning of the course. The students were given individual user ID and password to login to the blackboard site. When the student login to her/his online classroom, s/he will find announcements, syllabus, lecture materials, assignments, as well as links to online resources. Each day course materials including the supplementary lessons, homework assignments, and the daily communication assignments were placed in the "Course Documents" folder within Blackboard. The lab materials and instructions were also posted in this folder.

Each day, students are given instructions on completing the class work for that day. After completing that day's reading assignment, they are to complete a communication activity based on their reading and communicate it to the instructor using e-mail usually by the following day. Then they are to complete the homework assignments (usually 15 – 20 problems for each class). Students, who came to the class regularly, turned-in their homework assignment two days after the homework was assigned and the students who took it online brought their assignments the next time they came to campus. The answers of the online quizzes were emailed to me 30 minutes after a student first opened the quiz file.

I conducted office hours for $1\frac{1}{2}$ hours each class day. Students either came to the office hours during the scheduled office hours or emailed me their questions when they needed help.

All students took their midterm exam and the final exam on campus.

III Observations about the Course

1. Students: Online students need the technological prerequisite skills (as delineated in II-4) as well as high motivation and self-discipline. An online course is no place for the procrastinator. Students lacking any of these prerequisites are destined to fail in an online mathematics course.
2. Testing: Testing students in online classes is suspect since you can never be sure who is at the other end of the computer taking the tests or quizzes. Therefore, the students were required to come to campus to take the midterm exam and the final exam (or to visit a testing center to take their exams while being monitored). These two exams constituted a significant part (about 56%) of the final grade.

3. Online Environment: Some students preferred the online environment. One student commented “I didn't become frustrated the way I do when I am in traditional classes. I like communicating via e-mail. In traditional classes, I probably would not have spoken with the teacher at all. This way I actually had contact with the professor.”
4. Technological Skills for the Instructor: Online instructors need several technological skills. I have used the following technologies in teaching Math 100: Netscape Navigator and Microsoft Internet Explorer for browsing the Web, Netscape Composer and HTML for composing Web pages, Microsoft Word and its built-in Equation Editor for preparing course handouts and Web pages, a scanner and image editing software to create Web pages of certain materials, Adobe Acrobat to create PDF files, Adobe Reader to download and read PDF files, Microsoft Excel for teaching computer spreadsheets, Microsoft PowerPoint for posting additional presentation of course documents and the Blackboard for managing the course.
5. Time Commitment: The up-front time commitment to design the course including learning the technology, creating web pages, designing Web-based assignments, and conducting face-to-face and email sessions is enormous. During the semester, part of the course notes and other instructions must be created daily in a publishable and student-friendly format, complete with mathematical symbols. Most of the teacher-student interactions must be written down using e-mail. A five-minute face-to-face conversation may translate into twenty to thirty minutes of typing and a long email message. It would be extremely difficult to manage a large online class without the help of TA's .

IV Problems

1. Students: Some students signed up for taking the course online even when they lacked the technological skills or the necessary equipment and software to complete the course over the Internet. This problem was solved last summer by giving them the option of coming to the class regularly. But, in the future students who sign up for online course must be screened to make sure that they have the necessary skills and equipment.
2. Unreliable Network: The university network including the Blackboard and the email failed several times during the six-week period resulting in enormous wastage of time and effort.
3. Technical Support: There should be better technical support for hosting online courses.
4. Equipment/software: Availability of additional equipments and software would have made preparation of the course documents easier.

Conclusion

Based on performance of the students, I believe that the online course I taught during the summer was at least as effective as the traditional course, provided the students have sufficient technological skills and high motivation. Many students liked the online class because of the flexibility it offered in accommodating their busy summer schedule. The

online format also forced them to “stay on top of things.” Students need skills in using several software applications and a hardware system that allows them to access the course site online with ease and regularity. Students lacking any of these prerequisites are certain to fail in an online mathematics course.

Reference

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