Improving Online Instruction: A Case Study

Learning Abstracts

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In fall 2009, the Chattanooga State Community College math department faced a problem not uncommon to colleges around the nation: Online course offerings had high failure rates and were not a quality experience for students. After examining the data, the department made a bold decision to put a moratorium on online math courses for two years. This move provided time to improve the quality and success of online courses. Since re-offering online mathematics courses again in fall 2011, the college has seen a significant increase in student learning and success. This article outlines the reasons for the decision, the steps taken to improve the program, and the results since reintroducing the courses.

When department leadership examined the state of online math courses in fall 2009, the data revealed that these courses had unacceptably high failure rates. From fall 2005 to spring 2008, students in online math courses had a success rate of 36 percent and a GPA of 1.29. Some classes had failure rates as high as 90 percent. It was clear that the online courses did not incorporate best practices; in fact, they consisted of little more than a traditional course in look and feel. After examining the data and the courses, a decision was made to put a moratorium on offering all online math courses, effective spring 2010. This critical first step provided a fresh start, which was much needed in order to change the status quo. The decision was highly controversial and raised eyebrows among the campus community. In the long term, though, the moratorium proved to be the correct solution.

Once the moratorium was put into place, the department began working to redesign the online courses. Over a period of three years, a total of ten college math courses were redesigned by faculty. The emphasis was primarily on four best practices—course organization, quality resources, proactive faculty, and student engagement—each of which is outlined below. For faculty members wishing to dig deeper, there are a number of resources outlining best practices for online instruction, including the University of Maryland’s Quality Matters Higher Education Rubric.

Course Organization

Course layout makes a huge difference in student engagement and is very important in online courses. The National Center of Academic Transformation (NCAT) has five principles of successful course redesign (n.d.); two of these principles—continuous assessment and time on task—are directly linked to course structure. Too often, online courses simply list a series of two or three big exams dates, often with very little else in terms of assessment. Continuous assessment means regular homework, quizzes, and exams throughout the course. Constant quizzing is listed as one of the characteristics of a great online course (Williams, 2013). This stands in stark contrast to the typical approach of a few exams, which often leads to a night-before-the-test syndrome in which students do no work until the last minute. The course should be organized into bite-sized topics, with the appropriate resources for each topic appearing and organized in a manner that are both easily accessible and integrated as an essential part of the course. Weekly deadlines must be established and student progress must be monitored throughout. Proper course organization can go a long way toward keeping students on task and on track.

Quality Resources

Resources should be fully integrated into online courses in a seamless manner, providing students with a guided learning path. While there may be some flexibility in the organization of the course which reflects different learning styles, access to learning resources is critical to providing students with a quality online experience. Students should not be provided with a plethora of resources with little or no instruction on how to actually use them. Rather, faculty should locate quality resources to integrate into courses and develop resources locally when needed. These resources must follow best practices; for example, videos should be 5–10 minutes in length, and care must be taken to avoid color combinations that will not be discernible to color-blind students. When making videos, instructors should follow the 90-second rule for media, not spending more than 90 seconds on the same screen. This attention to detail makes a difference in the overall quality of the resources; if these practices are not followed, the student experience will be frustrating, thereby negatively impacting student success.

Proactive Faculty

Faculty engagement is crucial to the success of any course, traditional or online. The faculty member’s approach in an online course should be active, not passive. According to NCAT’s Five Principles of Course Redesign, faculty members must be vigilant in both monitoring student progress and providing individual assistance to each student (n.d.). If a faculty member only responds to emails from students, the online course will most likely fail due to a lack of faculty engagement. The faculty member teaching an online course should be consistently trying to keep students on task while also offering them assistance as needed. While some of this assistance can be done at scheduled times, most of it will need to be provided on an ad hoc basis due to the asynchronous nature of an online course. Student work must be reviewed promptly by faculty and strengths and weaknesses discussed. Faculty engagement is also directly linked to student engagement. The more proactive the faculty member is, the more engaged the students will be. Rita Sowell, a faculty member at Volunteer State Community College, has taught online courses successfully for many years and was consulted as a resource for Chattanooga State’s online math program. When asked about the key to having a successful online program, her response was straightforward: “The key is that the faculty members have to be willing to do a lot of hard work…period” (R. Sowell, personal communication, 2012).

Student Engagement

In any course, traditional or online, student engagement is the key to student success. Students that stay engaged, working in the course regularly throughout the semester, tend to succeed at much higher levels than students who procrastinate and are not engaged. Given this, the question becomes, what can be done to increase student engagement? The answer is that course layout, quality resources, and proactive faculty members can all contribute to increasing student engagement. When students understand how they are to go about learning course concepts, when they are provided with quality resources, and when they perceive that the faculty member cares about their success and is willing to assist them and teach them as needed, then they tend to be more engaged. Strategies that can be used to increase student engagement include giving points for posts on discussion boards and course activities, making involvement and activity a requisite part of the course, and encouraging peer-to-peer assistance and cooperation. Another important factor in student engagement at Chattanooga State is the Math Center. The center provides a connection to the campus and the individual assistance that students need for success, while also providing scheduling flexibility for students in online classes.

Math 1410 Structure of Number Systems I

Math 1410 Structure of Number Systems I is a general education mathematics course that targets students majoring in elementary education. All homework, quizzes, and exams are completed using Pearson’s MyLabsPlus software. All exams are proctored and taken in the Math Center on the main campus. At first glance, it sounds just like any other online math course. The philosophy behind this course is that every assignment must be related to mathematical ideas that strengthen students’ understanding of processes behind many of the math short cuts and memorized problem solving steps, therefore deepening their conceptualization of mathematics. Additional instructional videos within homework assignments are helpful to students as well. Included in this course are lecture notes from on-ground classes and PowerPoint presentations that provide overviews of the main ideas. Teachers closely examine each student’s work and provide written feedback to ensure a quality experience. Another important course requirement is the incorporation of group assignments. Students in Math 1410 have seven group activities that are completed, scanned, and submitted as a part of the work ethic grade. Students must submit at least one paragraph describing how and with whom each assignment was completed, and what mathematical concept/knowledge they gain from the group work. Some students become creative and enlist the assistance of children, husbands, boyfriends, spouses, significant others, neighbors, friends, or family, and then send a photo of their work and discuss how group members reacted to the activity. Finally, course instructors send text reminders as deadlines approach to keep students on track in the course. The results have been very positive, with a 70 percent success rate and 2.4 GPA since fall 2012.

Summary

Prior to the moratorium in fall 2009, the math department offered three college courses online. Over a period of five years, these courses served a total of 704 students, with a 36 percent success rate and 1.29 GPA. The department now offers seven redesigned college-level math courses online. Since fall 2011, these courses have served a total of 1,494 students, 61 percent success rate and 2.15 GPA. Before, online math courses had success rates below 50 percent, much lower than on-ground classes. Now, online math courses have success rates from 50 to 70 percent and are comparable to on-ground classes. By giving the program a fresh start, and by focusing on course organization, quality resources, proactive faculty, and student engagement, the Chattanooga State math department has seen a significant increase in student success in online courses. The department has been able to increase access to these courses while also improving the quality of the student experience.

References

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