Project Name

Math Course Redesign Project

Principal Investigator Nicole Adsitt

Campus Cayuga Community College

Year of Project 2013

Tier Tier Two

Project Team

- Shannon Reohr, Cayuga Community College

Overview Summary

Creation of modules to support personalized instruction in mathematics by allowing students to work at a guided self-pace, with a focus on content mastery.

Outcomes Summary

Cayuga College's vision is to create efficient educational pathways for students as they pursue their long term goals

Project Abstract

As was noted in the recent SUNY (2012) report titled, The SUNY Pathway to Success, “fewer than 10 percent of students who start two levels below college-level math ultimately pass the college-level math course or persist to graduation (p. 7). In line with these data, students in the traditional developmental math courses at CCC have low course completion and course success rates. D, F and W grades average ~54% in these courses. Developmental math courses often serve as an obstacle for students, and discouraged students may leave before earning a college degree.

In order to explore ways to promote student success in developmental math courses, Cayuga Community College sent a small group of faculty to the National Center for Academic Transformation (NCAT) Conference in the spring of 2011. This was shortly after the State University of New York (SUNY) began the SUNY Course Redesign Initiative (SUNY CRI). All reports from this initiative indicated that the redesign efforts yielded positive results. In fact, NCAT recommended that SUNY conduct a second round of the SUNY CRI (NCAT, http://thencat.org/States/NY/SUNY%20Outcomes_Summary.html, retrieved February 20, 2013).

As a result of the conference, Cayuga Community College (CCC) began the process of redesigning our developmental math course sequence starting with Elementary Algebra, where the traditional classroom lecture format is replaced with an individualized, actively engaged approach to learning mathematics using technology. Prior to the course redesign, these courses were offered primarily in the traditional lecture format, enrolling approximately 900-1000 students annually with ~500 in Basic Algebra and ~400 in Elementary Algebra.

CCC began by redesigning MTH 099: Elementary Algebra using elements of the Emporium Model where students come to class prepared to work through a series of activities (video notes, online homework and quiz assignments, tests, and department exams) within content modules at a guided self-pace, allowing them to spend less time on material they may already know and more time on material they have yet to master. Each module begins with a pre-test. If students show a level of mastery on the pretest, they are allowed to move on to the next module. In effect, students may complete the modules, and hence the course, as early as they are able, or they may follow the guided pace and complete the course throughout the intended semester. Additionally, peer tutors have provided support in the redesigned courses by attending the course and leading study groups for one hour per week.

The results from this pilot showed significant results as compared to the traditional format. It is important to note that all of the sections used for assessment were taught by the same instructor. 25% of students in the traditional format completed the course with a C or better, as compared to 47% who completed the redesigned course with a grade of C or better. The Math Department has identified that students who earn a C or better in developmental courses have higher success rates in their follow-on courses. Additionally, there was a stark difference in the number of F grades in the traditional course (44%) as compared to the redesigned course (18%). The results from the pilot led us to explore ways to further our redesign efforts.

This proposal seeks support to further the redesign efforts in MTH 070: Basic Algebra course and to redesign MTH 102: Intermediate Algebra. This will provide a full sequence of redesigned courses for students in the Liberal Arts who only need to complete MTH 102 in order to complete their math sequence. By redesigning the MTH 070 and MTH 102 course, students will have a more seamless transition through the sequence.

This project also seeks funding for a Smartboard to be used with the pilot redesigned courses. The smart board will enhance the redesigned courses by allowing the instructor to bring the class together to work through common questions/errors. The Smartboard will allow instructors to go over class notes, or open and work with any assignment the class has been engaging in - homework assignments, quiz assignments, test assignments (after the fact), and group work assignments. Students, tutors, or instructors can use the smart board to interact with the classroom and then save their work, allowing those who are absent to view the material, while also providing an opportunity for all students to review the material as needed.

Reports and Resources

- Final project report
- Transitional Studies Program: Remedial Education GAP Plan
- Project website
- PPT Presentation
- Mid-project report

Assessment, Understanding, Monitoring Student Progress ● Competency Based Education (CBE)
Discipline Specific Pedagogy ● Developmental Education
Instructional Design ● Hybrid/Flipped/Blended Learning