

CSCC Math Redesign Report

Spring Semester 2009

2008 – 2009 AY Developmental Math (DSPM) Totals

	Previous AYs	2008-2009 AY	% increase
Students Passing a DSPM Course	657 (of 1234) or 54%	845 (of 1201) or 70%	29% (188/657)
Students Exiting the DSPM Program	330 (of 595) or 55%	436 (of 591) or 74%	32% (106/330)

Comments: These statistics are the true measure of the success of the redesign project. A 29% increase in the number of students passing a DSPM course, combined with a 32% increase in the number of students exiting the developmental math program, is exactly the sort of improvement the redesign was aiming for. Mobility within developmental math was also a goal of the redesign project. Fifty students completed two or more developmental math courses in one semester. Thirteen students completed Intermediate Algebra and a college level math class in the same semester. Two students completed three courses in one semester. Clearly, the ability of the students to move quickly through the developmental math program has been achieved.

Basic Math

	Previous Years	Fall 2008	Spring 2009
Completion Rate (ABC/ABCDFW)	52%	65%	50%
Passing Rate (ABC/ABCDF)	62%	71%	58%
Course GPA	1.92	2.53	2.00
Performance on Common Test Items	73.3	86.2	84.8

Comments: After experiencing improvement in the success rate in Fall 2008, Basic Math reverted to its historically high failure rates in Spring 2009. Problems still exist in the course, as students get stuck in modules 1 – 5 and get frustrated and quit. The course will be tweaked in the future in an attempt to address these problems.

Elementary Algebra

	Previous Years	Spring 2008	Fall 2008	Spring 2009
Completion Rate (ABC/ABCDFW)	52%	70%	67%	70%
Passing Rate (ABC/ABCDF)	63%	80%	74%	80%
Course GPA	1.95	2.88	2.63	2.82
Performance on Common Test Items	70.3	86.2	83.8	84.1

Comments: The improvement in success rates, course GPA, and student learning have been sustained over all three semesters of the redesign. Students are doing much better as a result of the new structure of this course.

Intermediate Algebra

	Previous 5 Years	Spring 2009	Fall 2008	Spring 2009
Completion Rate (ABC/ABCDFW)	56%	71%	79%	67%
Passing Rate (ABC/ABCDF)	67%	80%	87%	74%
Course GPA	2.02	2.85	3.20	2.61
Performance on Common Test Items	77.3	90.1	88.7	87.6

Comments: The improvement in success rates, course GPA, and student learning have been sustained over all three semesters of the redesign. Students are doing much better as a result of the new structure of this course.

Developmental Math Students in MATH Courses

	Completion Rate	Passing Rate	Course GPA
Before Redesign			
DSPM Students in MATH	71%	87%	2.41
After Redesign			
DSPM Students in MATH	76%	85%	2.89

Comments: This is one of the most important measures of success for any developmental math program. Given the higher success rates in the developmental math program under redesign, one might expect students to do worse in college level math courses, but just the opposite is true. The redesign appears to be doing a better job of preparing students for college level courses. The reasons can be traced to the amount of work the students are doing under the redesign and the mastery learning approach in which students must master all of the concepts in the developmental math program. Students are better prepared for college as a result of the redesign project.

MATH Totals

	Previous AYs	2008-2009 AY	% increase
Students Passing College Algebra, Finite Math, Statistics	490/681 = 72%	650/863 = 75%	160/490 = 33%

Comments: Enrollment in college level math courses increased by 42% in Spring 2009 over previous spring semesters. The reason for this increase is simple – students exiting developmental math increased by 47% in Fall 2008, so more students were eligible to take a college level math course. It should be noted that college retention increased by 7% in Spring 2009, and much of this can be directly attributed to the increased success rates of the developmental math program. With a 33% increase in students passing a college level math course in the 2008 – 2009 AY, the long term impact on the college’s retention and graduation rates are obvious. The success of the redesign project cannot be overstated. Students did better in both developmental math and college level math, benefiting both the students in those courses and the college as a whole.

College Algebra

	Previous 5 Years	Fall 2008	Spring 2009
Completion Rate (ABCD/ABCDFW)	65%	74%	79%
Passing Rate (ABCD/ABCDF)	82%	82%	85%
Course GPA	2.26	2.89	3.07
Performance on Common Test Items	75.64	86.34	86.5

Comments: The course redesign of college algebra resulted in improvements in both success rates and student learning. This improvement was sustained during both semesters of the redesign, which is promising.

Introductory Statistics

	Previous 5 Years	Fall 2008	Spring 2009
Completion Rate (ABCD/ABCDFW)	79%	68%	76%
Passing Rate (ABCD/ABCDF)	89%	84%	84%
Course GPA	2.79	3.04	2.91
Performance on Common Test Items	79.6	83.3	82.75

Comments: After addressing the problems in modules 3 and 5, the student success rate rebounded to a level comparable to the rate before redesign. None of the differences in student learning or success rates before redesign and after redesign are statistically significant. However, it is the consensus of the faculty that this course has been strengthened in content as a result of the redesign, so continued high success rates are encouraging.

Finite Math

	Previous 5 Years	Fall 2008	Spring 2009
Completion Rate (ABCD/ABCDFW)	75%	91%	64%
Passing Rate (ABCD/ABCDF)	87%	97%	88%
Course GPA	2.53	3.63	3.38
Performance on Common Test Items	82.1	87.5	90.2

Comments: Finite math is a low enrollment course – there were only 11 students in the course during Spring 2009. Success rates of low enrollment courses can fluctuate wildly, as one or two students dropping the course can greatly impact the course statistics. None of the improvements (or drops) are statistically significant. The course appears to be acceptable in both content and level of difficulty to both students and faculty.

Overview of the Project

Student Engagement

The students spent approximately 19,000 hours in the Cleveland and Athens math labs. The students also spent approximately 15,000 hours working in the classroom and logged thousands of additional hours at home. Students in the redesigned courses had to work harder than ever in order to be successful. It should be noted that students have become very accustomed to the redesign. They are completely on task in both the classroom and the math lab, focused on getting their work done in the math courses.

Lab Staffing

The staffing of the Cleveland lab with five tutors and faculty members worked well. Also, one volunteer worked in the lab five to six hours each week. Ways to gain additional volunteers from the community and a local four-year college are being explored. The math lab has been added to the community service opportunities list at a local university. Also, working in the math lab is an option for students in service learning courses at Cleveland State. The department is optimistic the volunteer portion of the lab staff will expand slightly in future years. The staffing of the Athens lab with one staff member and faculty members was sufficient.

Faculty Productivity

Faculty productivity rose by 23% in the 2008 – 2009 AY. The average student load per faculty member went from 106 to 130 and the FTE teaching load per faculty member went from 21.2 to 26.0. However, it should be stated that expecting faculty members to move beyond this range would be unreasonable. There is a limit to how many students a faculty member can manage and still give students the individual attention that they need to be successful. We are definitely approaching that limit. Going forward, faculty members should expect to teach 10 - 11 sections, work 8 – 10 hours in the lab, and handle 150+ students each semester.

Enrollment Strategies

The continuous enrollment approach of the math department is clearly a success, with students able to complete two courses in one semester or complete one course and start in the next course. Many students have taken advantage of this option, as evidenced by 63 students completing more than one course in a semester.

The one room schoolhouse, where students from multiple courses meet in the same classroom at the same time, has been implemented successfully. This strategy has led to an atmosphere of “math on demand”, where students can get their program needs met better than ever before. Students in Athens and Vonore will be able to take courses that have never been offered at those campuses starting in Fall 2009.

Reducing Costs

The increased faculty productivity has enabled the department to eliminate the use of adjunct faculty members at the same time that course offerings are actually increased. Other savings include less copying due to online homework and testing. Overloads have also been reduced as a result of the redesign project. All of this has resulted in annual savings of over \$50,000 as of fall 2009, which is a significant savings for a department of eight faculty members and one staff member.

Summary

The primary goals of the program were to increase success rates in the developmental math program, better prepare these students for success in college, and increase the ability of students to move quickly through the developmental math program, removing the roadblocks to success. All of this was to be done with an eye towards producing actual cost savings. So far, the project has to be deemed an overwhelming success.