

**Somerset Community College
Transitional Mathematics
Redesign “At-A-Glance”**



Program Overview

Somerset Community College (SCC) in South Central Kentucky is one of the 16 community colleges in the Kentucky Community and Technical College System (KCTCS). The SCC campus has 6 sites serving approximately a 10,000 student population in a 16 county area. The SCC Math Redesign was a part of the National Center for Academic Transformation (NCAT) Changing the Equation grant program that implemented the Emporium Redesign Model for both its developmental Pre-Algebra (MAT 55) and Basic Algebra (MAT 65), with Intermediate Algebra (MAT 85) being added to the Redesign during Fall 2012 semester.

The SCC Math Redesign structure includes the use of an e-textbook, e-Learning through MyMathLab (MML), online instructor-created videos (supplementing the author-created videos already available in MML) housed on You Tube site and linked in MML. Students have 2.5 in-seat hour per week, with an additional 1.5 outside hours per week (total of 4 hrs per week). Both MAT 55 and MAT 65 have a six-module structure with each module including: a pre-test that determines student homework; students moving at their own pace to complete the 6 modules; a course calendar provided to keep students “on target” to complete the course in one semester; multiple attempts for quizzes and exit-tests; 80% mastery required on all coursework; pooled question exams eliminating the possibility of cheating as multiple exams for the same content are taken; and, a common final exam developed by the math department and administered upon completion of the course modules.

The structure of the redesign gives students the opportunity to complete a partial course or multiple courses during one semester for a single fee, depending on the student’s level of mathematics expertise. The Emporium/modular lecture-free redesign reduces inactive listening time in the classroom and simultaneously increases the time students are actively engaged in learning. Redesign has impacted learning by turning the classroom over to the students. The “one size fits all” lecture format has not been able to yield results in developmental mathematics and the emporium model gives SCC students the opportunity to become active math learners rather than passive observers.

The SCC Transitional Mathematics Redesign is highlighted in the NCAT Marketplace Newsletter at <http://www.thencat.org/Newsletters/Jul12.html#1>

Improving Student Success

For the NCAT grant, SCC used a comparison of common final exam scores in traditional and redesign courses to identify the changes in student performance in the table below. Student performance significantly improved on common comprehensive finals in both MAT 55/Pre-Algebra and MAT 65/Basic Algebra.

	Traditional Spring 2010	Pilot Redesign Spring 2011	Traditional Fall 2010	Redesign Fall 2011
Pre-Algebra (MAT 55)	MEAN=75.13 SD=18.8	MEAN=84.1 SD=12.19	MEAN=74.52 SD=19.47	MEAN=86.91 SD= 12
Basic Algebra (MAT 65)	MEAN=71.83 SD=17.38	MEAN=84.24 SD=10.77	MEAN =72.32 SD=17.59	MEAN=81.53 SD=10.81

For SCC students who are course completers in the Redesigned MAT 55/MAT 65 (who take the final exam), overall performance is better as a group than those in traditional courses as is evidenced in higher means and lower standard deviations above.

Students taking the Redesigned MAT 55/MAT 65 courses show the following completion data:

COMPARISON (%) OF COURSE COMPLETION WITH TRADITIONAL AND REDESIGNED INSTRUCTION				
Grade	FALL 2010 Traditional MAT 55	FALL 2011 Redesign MAT 55	FALL 2010 Traditional MAT 65	FALL 2011 Redesign MAT 65
A	22%	29%	20%	26%
B	21%	13%	18%	16%
C	14%	1%	17%	1%
D	0%	0%	1%	0%
F	27%	23%	25%	23%
W	10%	10%	12%	14%
MP	7%	24%	7%	20%

While course completion rates have not changed significantly, ~25% of students who previously failed, are achieving 80% mastery and partial completion with the redesign MP grade in Pre-Algebra. In Basic Algebra, ~20% of students who previously failed are achieving 80% mastery and partial completion. These changes in student performance related to the MP grade indicates that students are simply mastering the content at a slower rate and will then be able to complete the remainder of the course and final exam in the following semester.

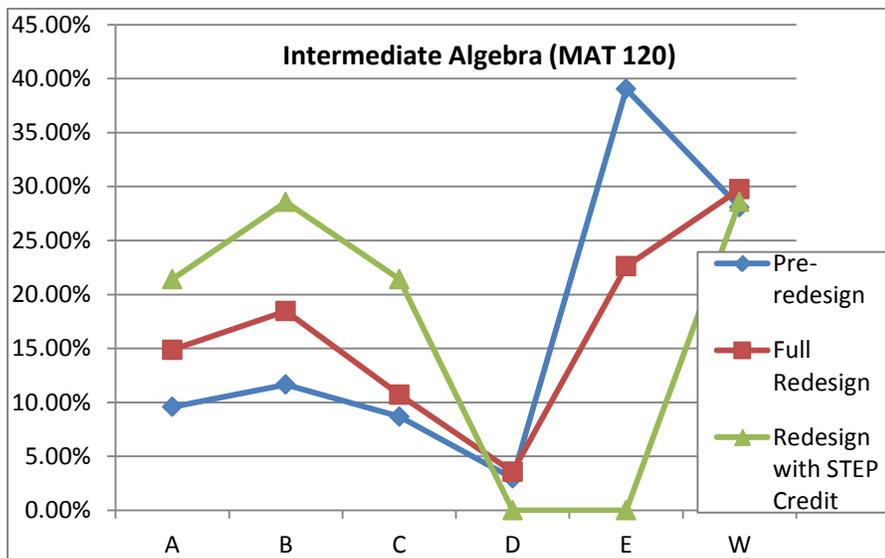
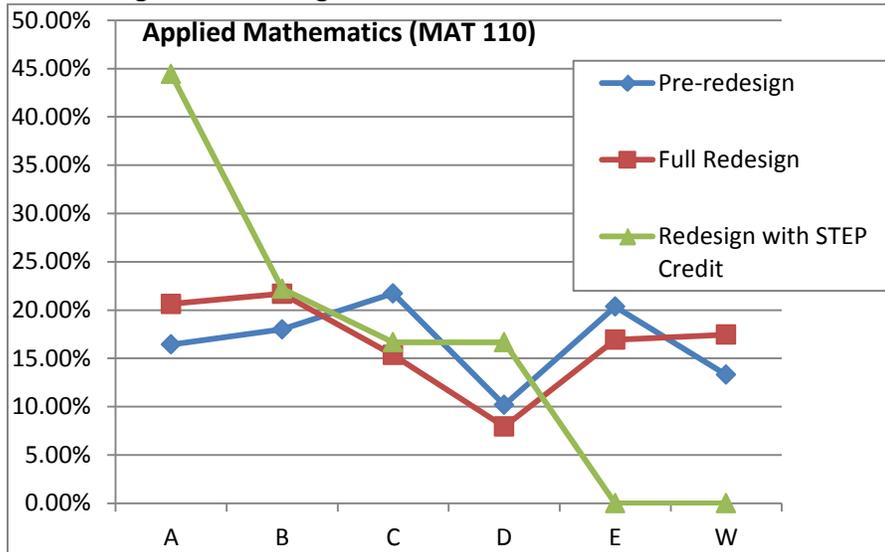
Further analysis of the completion data show: of the students receiving an MP in MAT 55 (Pre-Algebra) during the Spring 2011 Redesign Pilot, 33% enrolled and completed the course in either Summer 2011 or Fall 2011; of the students receiving an MP grade in MAT 65 (Basic Algebra) during the Spring 2011 Redesign Pilot, 50% completed MAT 65 in either Summer 2011 or Fall 2011, with one student able to complete MAT 120—Intermediate Algebra; of those students who failed MAT 55 or MAT 65 during Fall 2011, 85% failed ALL classes they were enrolled in; and, only 15% of the students who failed either MAT 55 or MAT 65 passed one or more classes. This suggests that 85% of the students who failed MAT 55 or MAT 65 were either not prepared to pass their courses or had no intention of passing (students scamming financial aid system).

Tracking transitional students who were completers into their credit-bearing courses yielded the following:

- 109 of the students completing MAT 65 during Spring 2011 enrolled in Intermediate Algebra during Fall 2011. 43% of these students completed.
- 173 of the students completing MAT 65 during Spring 2011 enrolled in Applied Mathematics during Fall 2011. 66% of these students completed.
- 26 of the students completing MAT 65 during Summer 2011 enrolled in Applied Mathematics during Fall 2011. 77% of these students successfully completed.
- 24 of the students completing MAT 65 during Summer 2011 enrolled in Intermediate Algebra during Fall 2011. 45% successfully completed.

- Fall 2011 overall completion rate for Applied Mathematics (MAT 110) was 56%.
- Fall 2011 overall completion rate for Intermediate Algebra (MAT 120) was 37%.

Data on the charts below show completion of students in traditional, redesign, and those completing multiple courses in redesign during a single semester. These findings show a significant increase in student performance when students are motivated and complete multiple courses in a single semester and further a significant decrease in the number of students receiving “D” and “E” grades.



In addition, these findings indicate an increase in credit-bearing course completion when courses are completed in the following semester, which resulted in a change in policy requiring students to complete their MP grade in the following semester. While this information is not shocking as students who continue math instruction without a “break” have a higher content retention rate, our syllabus did NOT require this, so the policy was changed.

Benefits to Students

Redesign offers students many benefits that traditional mathematics courses do not. Most significantly for SCC students is the reduction in time to completion, allowing earlier entry into credit-bearing mathematics. In the Fall 2011 semester, 43 students successfully completed both MAT 55 and MAT 65 in one semester, for ONE course fee. These students received credit for their MAT 55 coursework, and upon completion of the MAT 65 requirements and examination, they received STEP Credit (credit by examination) and were then able to enroll in their credit-bearing mathematics courses in the subsequent semester or bi-term.

Pearson publishers provided SCC with an integrated course code which provides a single fee (including customized workbook, MML code, and electronic textbook) which reduced costs for students by 69%.

Strength of the Redesign

Primary concern of many instructors is the concept of academic freedom for an instructor. With the Redesign, the course content provided in the MML electronic homework component is based on the KCTCS course competencies, which would be the same for all courses in MAT 55 and MAT 65. Instructors reviewed the content and it was revised based on instructor recommendations. Once the content is ready, instructors are able to provide their own recorded lectures in smaller blocks of 5-10 minute duration, which the students can access in their courses 24/7—enabling the instructor to teach the content as is desired.

One “strength” of the Redesign is that students can complete their MML homework and quizzes on their own as quickly as they desire. They can then come to class and receive one-on-one assistance from ANY instructor in the lab, or from the Mathematics Instructional Specialist who is available from 8-5PM daily. Their one-on-one instruction is based on THEIR needs, not the needs of the class as in traditional instruction.

Another “strength” of the Redesign is the elimination of test anxiety through multiple attempts for quizzes and exams, with students receiving one-on-one assistance from instructors to review non-mastery problems and correct student misconceptions before taking a subsequent exit-test. Students enrolled in transitional courses are typically those who have not previously experienced success in mathematics. Allowing for multiple attempts on tests, along with the personalized assistance from instructors gives students an opportunity to build confidence in their own ability to do mathematics.

Another “strength” of the Redesign is the addition of the Custom Workbook for SCC. The workbook is designed to help students learn to define the important concepts in mathematics and to help them better organize their “note-taking” to provide them with instructional models which can be used during their homework. Students say the notebook has helped focus them on what is important in each module.

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