



MATHEMATICS PROJECT
Winter 2014 BRIEF

Project Begin Date: Rollout to all faculty in Spring 2011 with some aspects implemented during Fall 2010 and Winter 2011.

PROJECT GOALS, OUTCOMES, AND MEASUREMENT

The goal of the project is twofold: (1) to allow students to progress through developmental math courses Math 20 and Math 70 at their own rate of learning while requiring mastery of the concepts; and (2) for developmental math students who complete Math 20 and Math 70 to successfully complete Math 94, Math 95, and Math 105 or Math 111 at the same rate or higher as students who do not enroll in developmental courses.

Outcomes and Measurements	Criteria for Success	Baseline Average
Increase Student Success in MTH 20	Increase 5% from baseline	59.2%
Increase Student Success in MTH 70	Increase 5% from baseline	55.9%
Comparable student success in MTH 94 MTH 95 MTH 105 MTH 111 for students who enrolled in MTH 20/70 and successfully completed MTH 94/95/105/111	Increase 5% from baseline	60.0% 62.3% 62.0% 65.0%

ABOUT THE PROJECT

President Scott met with all developmental instructors and requested that departments look at redesigning their courses with the end goal of increasing student success. This led to investigation into the math emporium and its applicability to what we were trying to accomplish.

The goal of the MLC is to teach developmental math in a mastery format, utilizing computerized instruction as well as intensive 1:1 instruction and tutoring. The software is set up so the student must complete an instruct section, practice section, and certify (homework) section. The practice section has videos and tutoring available. Since the class is mastery based, the certifies must be completed at an 80% level.

When all the certifies for a chapter are completed the student takes a chapter test proctored in the MLC. Tests are graded immediately after a student finishes. If the test score is at least 80% that will be the student's module completion grade for the chapter. If the score is under 80%, the student will have access to the test for study purposes, and will repeat the chapter test until a score of 80% or better is obtained. There is a final when all chapter tests are complete, which may not be retaken.

During fall 2010 and winter 2011 all sections of Math 20 and Math 70 began working with computerized homework and paper and pencil tests with one class session a week spent in a computer lab. This was the precursor to the opening of the Math Learning Center (MLC) in spring 2011. Students are required to attend class in the MLC three days a week. One day a week they spend in a traditional setting for group work and lecture. As a type of flipped classroom, student spend their class time doing math problems, taking longer over material new to them, and less time when they are reviewing material they've had before. Students get assistance when they get stuck, in class from faculty and aids and outside the classroom from the Hawkes tutorials.

The students are given a schedule and checklist the first day of class. To complete the course in one term each student must meet the schedule. However, some students finish well ahead of schedule with a few students finishing both Math 20 and Math 70 in a single term. Since mastery is required, some students with weak math skills may require more time to complete.

PROJECT INSIGHTS FROM THE PROJECT LEAD – BILLIE SHANNON

The approach taken is intended to teach students independence and focus in learning mathematics, while also learning study skills, especially as applied to mathematics. Many students appreciate the responsibility of being independent learners while others need to

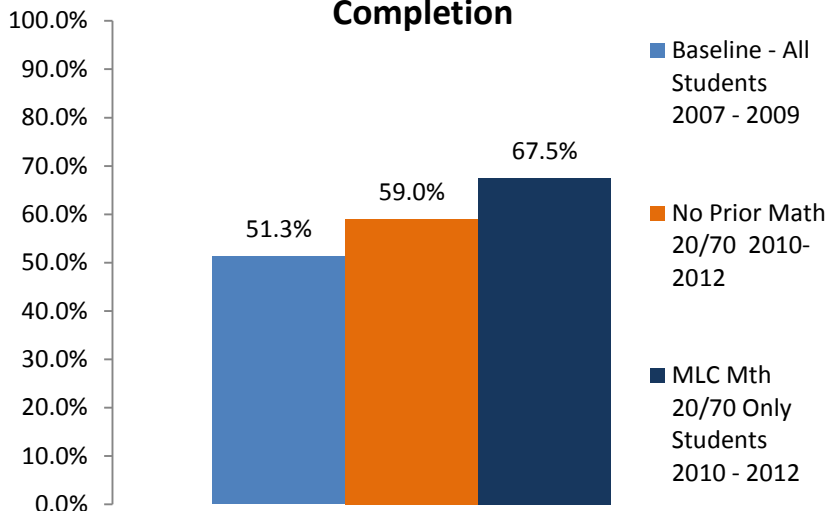
build confidence. In the MLC environment it is possible for the students to develop a sense of power over math together with confidence that they can achieve their mathematical goals.

STUDENT SUCCESS

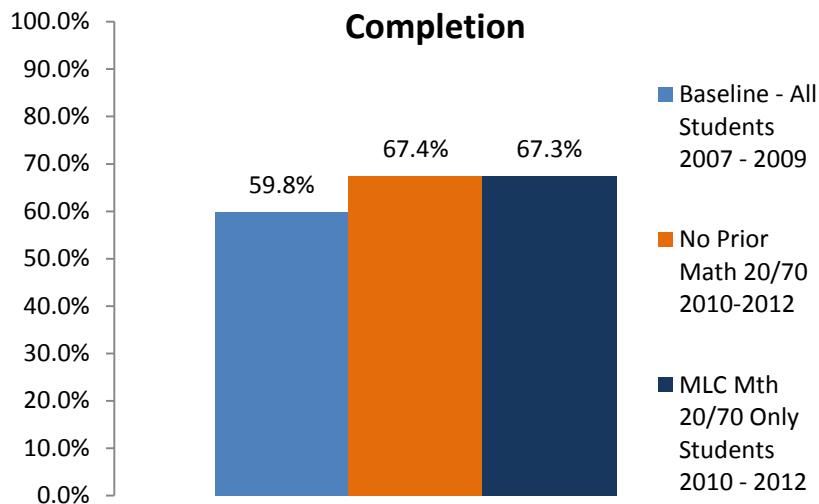
At the start of the project a major concern was the completion rates for Math 94. This indicated that students entering Math 94 were not adequately prepared and as evidenced by the baseline data demonstrated the lowest achievement of any developmental math course. As a department there was agreement that something different needed to happen to eliminate the progression of students barely passing Math 20 and Math 70 and to improve student success in subsequent math courses.

In the fall of 2010 the Hawkes software was introduced in semi-traditional classes using the Hawkes software for homework and paper and pencil tests generated using the Hawkes software. Students were still all working at the same pace. Since the MLC was opened in spring 2011 and mastery was required (all homework and tests must be passed at 80% over higher) there was an initial decrease in the completion rate for Math 20 and Math 70. This was expected due to the requirements for mastery and allowing students to learn material at a rate that worked from them. Due to changes in the learning environment and instructor training, there has been a 3% increase in the Math 20 completion rate while the increase for Math 70 shows a slower increase. Students completing Math 20 and Math 70 are being held to a higher standard than previously and the curriculum is more strenuous.

Math 94 Subsequent Course Student Completion



Math 95 Subsequent Course Student Completion



Our major goal was to affect the completion rates in Math 94 and Math 95. Students enrolled in only courses through the MLC achieved over 16 percentage points higher in Mth 94 during the pilot years of 2010 through 2012 compared to the baseline for all students (2007 through 2009) and increased by 7.5 percentage points in Mth 95 as compared to the baseline for all students. Comparatively, students who enrolled in both Mth 20 and Mth 70 and then subsequently enrolled in Mth 94 achieved nearly 8.5 percentage points higher than students who had no prior math courses while student achievement in Mth 95 was similar at just over 67%.

SUCCESS GAPS

Students who enroll in Mth 20 and Mth 70 are must attain mastery skills within a module before moving to the next module. While this has resulted in increased student achievement in subsequent courses, in some cases students are not progressing as fast through an individual course and there are more student who fail to pass the courses.

In addition, a statewide development education group has been reviewing student achievement and completion of students who begin their coursework in development courses. One initiative has been to align Southwestern courses with the other 16 community college

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developmental math sequence with the goal to increase student success by adopting the development math sequence Math 20/60/65/95. This allows for a more linear approach and should show in student success. The other more challenging approach is how to keep the students who do not complete the courses to finish. The students who stay the entire time are generally successful. The next challenge is to increase student retention within the developmental math courses as it is the students who are not retained in the course (fail to complete the course within one term including students who do not attend the entire term and either officially withdraw or stop attending).

ABOUT THE DATA: Course success rate is defined as students who earned a grade of A, B, or C Baseline data was established from students who enrolled in 2007 - 2009. Project data compares students who enrolled in both MTh 20 and Mth 70 and then subsequently enrolled in a higher level developmental or college level math course within a three-year period beginning from 2010 through 2012. Due to the realignment of the developmental math courses, the project evaluation must be revised for the future..

DATA SOURCE: Students were tracked within the Jenzabar system using the ATD_Math_Project query to extract student information and grades based on the dataset parameters listed in *the About the Data* section. For more information contact the math department or Institutional Research at IR@socc.edu.

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