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PARTNERSHIP FOR MATH SUCCESS:
DEVELOPMENT OF A MATHEMATICS READINESS CLASS
FOR HIGH SCHOOL STUDENTS

BY YVONNE JESSEE

As part of his remarks on the American Graduation Initiative at Macomb Community College in Warren, Michigan on July 14, 2009, President Obama stated, “We’ll challenge these schools [community colleges] to find new and better ways to help students catch up on the basics, like math and science, that are essential to our competitiveness.” He added later, “We want to propose new funding for innovative strategies that promote not just enrollment in a community college program, but completion of that program” (The White House).

“Upon completion of the readiness course, eighty-one (82.65%) of the ninety-eight students were eligible to enroll in a non- developmental college mathematics course.”

In 2008-2009, the Developmental Education Task Force (DETF) examined the state of developmental mathematics in the VCCS, and presented its recommendations in the report *The Turning Point: Developmental Education in Virginia’s Community Colleges*. *The Turning Point* affirmed three goals for the VCCS: 1) to reduce the overall need for developmental education, 2) to design developmental education in a way that reduces the time to complete developmental reading, writing, and mathematics requirements for most VCCS students in one academic year, and 3) to increase the number of developmental education students graduating or transferring in four years, from one in four students (25%) to at least one in three students (33%). (2)

To support the developmental mathematics redesign, the DETF made four recommendations that must be implemented as well: 1) *Program Evaluation*, 2) *Professional Development*, 3) *Cooperation with local school divisions*, and 4) *VCCS policy review and development* (4).

Mountain Empire Community College and two of the public school systems in the MECC service region decided to partner in an effort to meet the third recommendation. This recommendation is stated in the DMRT’s August 2010 report as *Cooperation with local school divisions*: Colleges’ cooperative efforts with local school divisions should be enhanced and expanded upon to reduce the need for developmental mathematics prior to student enrollment in a community college. These efforts include early placement testing, development of capstone courses in the senior year, and opportunities for summer fast track or bridge courses (4).

MECC was awarded a Chancellor's Innovation Fund Grant entitled *Partnership for Math Success* for Spring Semester 2011. In accordance with the terms of this grant, MECC and the two public school systems partnered to pilot an approach to improve high school students' readiness for college-level mathematics. As part of the project, MECC designated a project director to coordinate the project, and a full-time math faculty member to work with the high school mathematics teachers to develop a readiness course to be piloted in the high schools during Fall Semester 2011. The public school systems designated a guidance counselor and a mathematics teacher from each of their high schools to participate in this project. At the initial phase of the grant, there were seven high schools. Before the 2011-2012 school year began, one of the school systems consolidated its six high schools into three. At the beginning of the 2011-2012, there were four high schools implementing the pilot readiness course, three during Fall Semester 2011 and one Spring Semester 2012.

The guidance counselors' role was to notify the students and their parents of the purpose of the mathematics placement test, and the counselors. The counselors administered the placement test at the end of March 2011. The counselors then informed the students and their parents of the student's initial placement test results. For students who were not ready for college level math, the counselors presented the pilot course as an option for a class during the students' senior year. The goal was to have 10 students from each high school (a total of 70 students) enrolled in the course Fall Semester 2011. Upon completion of the readiness course, the placement test was administered again to measure each student's improvement.

Of the 558 juniors in the combined high schools Spring 2011, 367 took the COMPASS Math Placement test. Dual Enrollment math students were not tested with this group since they had already been tested. Fifty-six (15.3%) of the juniors tested ready for college-level math and 311 (84.7%) tested not ready for college-level math. College-level math was defined as ready for a transfer level mathematics course. At the time of our test, the students needed to have a score on the COMPASS Math Test placing them above Algebra II to meet this requirement. At the end of the school year, 153 students were enrolled in the pilot class.

The teachers' role was to build a course with the content of the college's developmental mathematics curriculum. The MECC math faculty member worked closely with the teachers during Spring Semester 2011 to develop a readiness course. The course consists of nine units modeling the new Mathematic Essentials curriculum in the VCCS system. MyMathLab, an Instructional Software/Course Management System by Pearson, was used for the development of this course.

During Fall Semester 2011 the readiness course was piloted in three of the high schools, with the fourth school teaching the pilot readiness class this spring. During fall semester there were ninety-eight students enrolled in the readiness class, and an additional twenty-one students enrolled in the class this spring making a total of 119 students in the pilot. The results in this article are based on the Fall Semester 2011 data.

Table 1. Pre- and Post-Test COMPASS Placement Scores

Upon completion of the Fall Semester 2011 readiness class, the COMPASS Math Placement Test was repeated with the following results. The table below shows the Pre- and Post-Test Results of the students:

98 Students enrolled Fall 2011 Readiness Classes	Pre-Test COMPASS Placement	Post-Test COMPASS Placement
Tested for MTH 2 - Arithmetic	5 5.1%	2 2%
Decision Zone (Algebra I if ENG 111 ready)	8 8.2%	2 2%
Tested for MTH 3 - Algebra I	56 57.1%	39 39.8%
Decision Zone (Algebra II if HS Algebra I is \geq "C")	8 8.2%	12 12.2%
Tested for MTH 4 -Algebra II	15 15.3%	16 16.3%
College -level	4 4.1%	20 20.4%
No Score	1 1%	
Dropped		4 4.1%

Table 2. Total Number of Units Completed by Each Student

The following table shows the number of units completed by each student in the readiness class during Fall Semester 2011. Forty-seven (47.95%) of the students completed four or more units. A student could complete four units in one semester at MECC.

UNITS COMPLETED	Number of Students	Percentage of Students
9	0	0.00%
8	1	1.02%
7	4	4.08%
6	11	11.22%
5	11	11.22%
4	20	20.41%
3	14	14.29%
2	13	13.27%
1	13	13.27%
0	8	8.16%
Dropped from high school	3	3.06%

Table 3. Number of Students Ready for Non-Developmental Mathematics Courses

The following table shows the number and percentage of students ready for a non-developmental college mathematics course. Due to a change in course prerequisites, some of the college transfer courses now have 5 units as a prerequisite instead of the nine that would have been required prior to Fall 2012 Semester.

MTH Course	Number of units required:	Number and percentage of students ready for course:
MTH 163 Pre-calculus	9	0 0%
MTH 151 & 152 Liberal Arts Math MTH 157 Statistics	5	27 27.55%
MTH 105 Technical Mathematics	4	20 20.41%
MTH 126 Allied Health Mathematics MTH 141 Business Math	3	14 14.29%

In the effort to meet the goal to reduce the need for developmental mathematics prior to student enrollment in a community college, early placement testing and development of a capstone readiness course in the senior year were completed.

Early placement testing was done during the junior year, a year before the students would test for college entrance. By using these scores and the fact that most of the students would have already completed their mathematics requirement for high school graduation, the students knew they were or were not ready for the college-level mathematics courses. With the readiness course developed and ready to pilot Fall Semester 2011, the students had an opportunity to enroll in the readiness course during their senior year in an effort to reduce their need for developmental mathematics courses.

Upon completion of the readiness course, eighty-one (82.65%) of the ninety-eight students were eligible to enroll in a non-developmental college mathematics course. The number of students ready to enroll in Pre-Calculus went from four (4.1%) to twenty (20.41%). Sixty-one (62.24%) of the students completed the required number of units to enroll in a non-developmental college mathematics course. Fourteen students were ready for the mathematics course in a Business Technology or a Nursing degree; twenty students were ready for the mathematics course in an Industrial Technology degree; and twenty-seven were ready for a transfer mathematics course, either Mathematics for the Liberal Arts or Statistics. Based on the program of study and the prerequisites for the required mathematics course, the students might still need additional developmental units.

Based on the 82.65% success rate, it appears that this course has had a positive impact for the participating students. Students' comments in regard to the "best thing about this course" included the facts that the course was self-paced, step-by-step instructions were included in the example problems, and immediate feed-back was given on their work.

When the course began, the public schools were having difficulty with the video portion of the course. One school system has corrected this problem, and the other is working on a solution. The fact that the videos did not work properly in the high school classrooms was the biggest negative for the class. There are some minor modifications that are being planned for the course to only allow the student's access to the units upon completion of the previous unit.

The plan is to track the students during Fall Semester 2012 to determine the mathematics courses in which they enrolled and follow the students' success rates in these classes. At the present time, the two public school systems have completed COMPASS Placement Testing of the current junior class in preparation for offering the readiness class during the 2012-2013 school year. The COMPASS Math Post-Test for the spring pilot class is to be administered on May 18th.

References

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