

**Developmental Education Pilot Report
Combined Developmental Math and College Algebra**

Southeastern Louisiana University

Piloted Fall 2012 and Fall 2013

Submitted January 24, 2014

Fall 2012 Pilot

Description of pilot course

Course information

Developmental Math Students: Enrolled in Math 92, Transitional Mathematics, Section 14 (3 credit hours, fulfilling students' developmental requirement but not counting toward graduation) and Math 161A, College Algebra, Section 01 (3 credit hours, fulfilling students' College Algebra requirement)

Non-developmental Math Students: Enrolled in Math 155, College Algebra (5 credit hours)

Both developmental and non-development math students in the pilot attended the same classes as described below.

Instructor: Rebecca Muller

Number of developmental students: 26

Narrative explanation of delivery method

Twenty-six students co-enrolled in Math 92 and Math 161A and met concurrently with 19 non-developmental students enrolled in Math 155, Section 28. (Math 155 is a 5 credit-hour version of College Algebra which Southeastern Louisiana University offers to students with Math ACT scores of 19 or 20.) These two groups of students met together for 4 hours weekly and were taught by the same instructor – Rebecca Muller – who offered as needed (using the “just-in-time” approach) remediation on Intermediate Algebra topics that were crucial to College Algebra success. Students were told they would be allowed only three absences before the instructor removed them from the class. (Note that the instructor believes this contributed to above-normal attendance even though she never took action on withdrawing any student.)

Prior to the onset of the Fall 2012 semester, letters were sent to students who were already enrolled in Math 92 (Transitional Mathematics) and who had a Math ACT score of either 17 or 18. The letter informed them of the creation of the pilot class and invited them to apply. The first 26 students to respond to the invitation became the pilot group. The other 19 students in the class were already registered for a regular Math 155 section meeting Tuesdays and Thursdays from 9:30 to 10:45 and Fridays from 9:30 to 10:20. All students also had a three-hour weekly requirement to attend the Math Lab located in Sims Library to work on homework and quizzes in an asynchronous framework.

Observations, recommendations, changes for subsequent semester offerings

To the instructor, students in the two groups were generally indistinguishable from each other as far as their academic abilities were concerned. Although their Math ACT scores placed them in different Southeastern Louisiana University – Developmental Math Pilot, Fall 2012, Fall 2013

groups, there were strong students and weak students in both groups and there were motivated students and non-motivated students in both groups. Although all of the students were aware that there were two groups in the class and that they were part of a pilot section, the instructor was very careful to never divulge who was from what group. In all correspondence, the class was not referred to by course and section, but just as “College Algebra.” This allowed all students to interact on an equal footing with no stigmas attached.

Recommendations included continuing to pilot this with the same format while increasing the numbers in the pilot (both in terms of students and in numbers of instructors offering these classes). More detailed studies of the test results (item-by-item analysis and a review of supplemental assignments) were conducted in Spring 2013 prior to offering the class again in Fall 2013. Changes in the workbook that accompanies the class as well as changes in the homework and quizzes were made to incorporate even more remediation.

Differences between the Developmental Pilot Group, Non-Developmental Group in the Pilot Course, and Developmental Math Students not in the Pilot Course (Math 92 Students): Retention Rates and College Algebra Course Grades

In prior reports to the Board of Regents, only a comparison between the developmental and non-development pilot groups was requested and, hence, reported. However, we think a comparison that includes developmental students who did not participate in the pilot allows for a more complete assessment of the relative effectiveness of the two approaches, pilot vs. traditional, to developmental math education. Thus, where such data are available, we have included them in this report.

The following table shows that both developmental and non-development students in the pilot course had better 1st to 2nd year retention rates from Fall 2012 to Fall 2013 than developmental students (Math 92) students who were not in the pilot course. However, students’ grades in College Algebra were worse if they participated in the pilot than if they did not. That is, the developmental students who took Math 92 in Fall 2012 performed better as a group in College Algebra than both the developmental and non-developmental students in the pilot course section.

| Student Progress Information for Fall 2012 Developmental Pilot Course | | | | | | | | |
|---|---------------------------------|-------|------|-------------------|-------|-------------------------------------|-------|-------------------------------|
| | Developmental Students in Pilot | | | Non-Developmental | | Developmental Students Not in Pilot | | |
| Retained Fall 2013 | 16 | 61.5% | | 10 | 52.6% | 284 | 49.9% | |
| Not Retained Fall 2013 | 10 | 38.5% | | 9 | 47.4% | 285 | 50.1% | |
| Grades in College Algebra | | | | | | | | % Enrolled in College Algebra |
| A | 0 | 0.0% | | 0 | 0.0% | 6 | 1.1% | 3.2% |
| B | 0 | 0.0% | | 2 | 10.5% | 35 | 6.2% | 18.5% |
| C | 6 | 23.1% | | 1 | 5.3% | 54 | 9.5% | 28.6% |
| D | 7 | 26.9% | | 4 | 21.1% | 41 | 7.2% | 21.7% |
| F | 9 | 34.6% | | 8 | 42.1% | 39 | 6.9% | 20.6% |
| W | 4 | 15.4% | | 4 | 21.1% | 14 | 2.5% | 7.4% |
| Not Enrolled in College Algebra | N/A | | | N/A | | 380 | 66.8% | |
| Total | 26 | | | 19 | | 569 | | |
| GPA | | | 0.86 | | 0.80 | | | 1.59 |

**Combined Developmental and College Algebra Pilot
Southeastern Louisiana University**

Fall 2013 Pilot

Description of pilot course

Course information

Developmental Math Students: Co-enrolled in Math 92, Transitional Mathematics, Sections 1-12 (3 credit-hours, fulfilling students' developmental requirement but not counting toward graduation) and Math 161A, College Algebra, Sections 1-12 (3 credit-hours, fulfilling students' College Algebra requirement); Math ACT scores of 17 or 18

Non-developmental Math Students: Enrolled in Math 155, College Algebra (5 credit hours); Math ACT scores of 19 or 20

Both developmental and non-development math students in the pilot attended the same classes as described below.

Instructors (3 sections for each): Susan Guidroz, John Szeto, Natalie Svyeshnikova, Christine Terranova

Number of developmental students: 244

Narrative explanation of delivery method

Pilot students were enrolled in two courses: Math 92, Transitional Mathematics, which does not count towards graduation and Math 161A, College Algebra, which does count towards graduation. Even though they were enrolled in two courses, students attended only one class that met in our Math 155 class pattern. Participating students attended class on Mondays/Wednesdays or Tuesdays/Thursdays for 1.5 hours each, and on Fridays for 50 minutes. In addition, students spent a total of three hours each week in our Mathematics Computer Lab, where they completed homework, quizzes, and exams. (Note: This lab time is also a requirement of any "regular" Math 92 class.)

Students in these pilot sections attended class alongside students with Math ACT scores of 19 or 20 who were enrolled in Math 155A, Sections 1-12. We tried to maintain a balance close to 50-50 of those with the developmental requirement and those without the requirement. Both groups were treated in the same manner in the classroom and had to meet the same requirements.

Class attendance on each class day was mandatory for students; they were told they would be dropped from the class upon three unexcused absences. These pilot sections included review topics on an as-needed basis, as opposed to spending an entire course on developmental material. Successful completion of the course with a passing grade satisfied the development math requirement as well as the College Algebra requirement.

The pilot sections in Fall 2013 were conducted in the same general manner as our Fall 2012 pilot section. However, based on the exam item analyses referred to previously, changes in the workbook that accompanied the class as well as changes in the homework and quizzes were made to incorporate even

more remediation. We increased the number of students from 26 (Fall 2012) to 244 (Fall 2013) and expanded the number of instructors from one to four. The instructor from Fall 2012 met with the current instructors on a monthly basis to help monitor progress and to facilitate a dialogue among instructors in the program.

The workbook that accompanied the Math 155 class was revised in the summer of 2013 to include more review material. This workbook was adopted for *all* of our Math 155 classes, not just the pilot sections.

Differences between Developmental and Non-Developmental Students in the Pilot: Test Scores and College Algebra Course Grades

At this time, comparative data between the groups of students who would have been placed in the developmental math course and those with direct placement in college algebra have been analyzed on three measures – scores on a course pre-test (a subset of material from the College Algebra course to assess prior knowledge), scores on an end-of-course COMPASS test administration, and final grades in the course.

Math ACT scores were the initial placement scores used. All developmental students in the pilot had Math ACT scores of 17 or 18. All non-developmental students placed in the pilot had Math ACT scores of 19 or 20.

Course Pre-test

A college algebra pre-test given to the students within the first three days of class showed that the non-developmental students did score better on the pretest as a whole, confirming the Math ACT score differences between the two groups of students. However, the difference was only slightly over three percentage points.

| | MEAN | MEDIAN | MIN | MAX |
|-------------------------------------|-------|--------|------|-------|
| NON-DEVELOPMENTAL STUDENTS IN PILOT | 24.43 | 23.65 | 2.00 | 57.50 |
| DEVELOPMENTAL STUDENTS IN PILOT | 21.33 | 20.72 | 1.00 | 54.70 |

End-of-course COMPASS Test

The COMPASS test was given to students on the final day of class. The scores on this test did not contribute to the student's overall course grade, so enthusiasm and attendance were not stellar. However, as shown in the following table, the averages for the non-developmental math students in the pilot were about 5 points higher than the averages for the developmental students in the pilot.

| | MEAN | MEDIAN | MIN | MAX |
|-------------------------------------|------|--------|-----|-----|
| NON-DEVELOPMENTAL STUDENTS IN PILOT | 44.7 | 43 | 15 | 81 |
| DEVELOPMENTAL STUDENTS IN PILOT | 39 | 38 | 15 | 89 |

College Algebra Course Grades

Not surprisingly, the grade distributions presented below show that, overall, the non-development students in the pilot had higher final course grades in College Algebra than the developmental students in the pilot.

More importantly, however, the College Algebra final course grade distributions indicate that 61% of the developmental math students in the pilot passed College Algebra and were able to progress to their next math courses (and to any other courses for which completion of College Algebra is a prerequisite), thus saving them a semester of math preparation. It is also important to note that the course pass rate for our regular developmental math course is typically lower than 50%. In Fall 2012, it was 47.2% (compared to the 61% College Algebra pass rate of developmental math students in the Fall 2013 pilot; we do not yet have the pass rate of the Fall 2013 Math 92/regular developmental math students).

| | NON-DEVELOPMENTAL STUDENTS IN PILOT | DEVELOPMENTAL STUDENTS IN PILOT |
|---|-------------------------------------|---------------------------------|
| A | 8% | 3% |
| B | 24% | 11% |
| C | 19% | 24% |
| D | 16% | 22% |
| F | 19% | 31% |
| W | 14% | 8% |

Differences between the Developmental Pilot Group, Non-Developmental Group in the Pilot Course, and Developmental Math Students not in the Pilot Course (Math 92 Students): Retention Rates and College Algebra Course Grades

We currently have no way of determining the 1st to 2nd year retention rates for the students involved in the Fall 2013 pilot, as this information will not be available until Fall 2014. We must also wait until the end of the Spring 2014 semester to include in the comparison of College Algebra course grades the Fall 2013 developmental math students who did not participate in the pilot (i.e., the developmental math students who completed the regular, stand-alone developmental math course – Math 92).