

## LBWCC Math Emporium



### MacArthur Math Lab

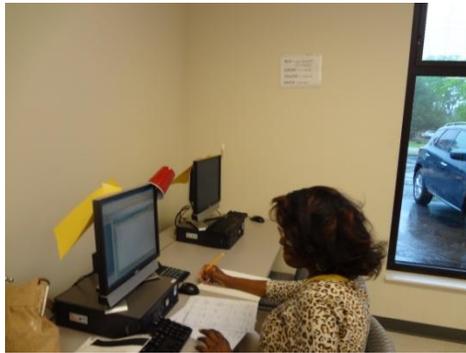
Lurleen B. Wallace Community College (LBWCC) enrolled 1,779 students Fall Semester 2011 on three campuses and one site. During the Spring 2011 and Fall 2011 semesters, 1146 students were enrolled in three developmental mathematics courses including Basic Math, Elementary Algebra, and Intermediate Algebra. Students who enroll in Basic Math and pass each course will exit the developmental program in three semesters.

The developmental courses consistently project a common problem of low success rates. The number of D, F, U, W, and IP (in-progress) grades average 48.7 percent in these courses. Students receiving an IP will repeat the entire course the next semester. So basically the IP is a failure of the course. LBWCC's current procedure of enrolling students for an entire semester in one course is delaying many students who must take a sequence of two or three developmental classes prior to taking Precalculus Algebra, Precalculus Trigonometry or Calculus.

LBWCC developmental redesign courses are based on NCAT's Emporium Model. A math computer center developed on each campus provides sufficient work areas for students to be scheduled for three mandatory hours per week. Students are required to attend a scheduled 75-minute session along with two hours of flexible mandatory lab time. Individualized instruction and review of student progress is provided during the scheduled session and the flexible lab time. Course management software ( MyMathLab) provides the means for course delivery, and interactive tutorials and monitoring of student performance enables students to receive immediate one-on-one assistance from instructors and tutors. Developmental math courses are redesigned into 17 clearly defined modules that reflect the course competencies. Basic Mathematics is comprised of 4 modules. Elementary Algebra and Intermediate College Algebra are comprised of 5 modules each. In addition, a final exam module is included in each of the 3 courses. Students are expected to complete modules at the rate of one or more per week.

The Redesign improved the quality of developmental instruction by increasing consistency in course content for sections taught by multiple instructors and adjuncts on different campuses. The students are more active in the learning process by engaging in frequent practice of quizzes and tutorials and getting immediate feedback. Students are encouraged as they get help when it is needed and progressed with more confidence through the modules. Redesigning all developmental courses increases the amount of one on one time that instructors spend with students and answer questions.

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### Student Testing

Improved Learning: Students who completed a redesigned course mastered significantly more mathematical skills than students enrolled in the traditional classroom format as evidenced by common comprehensive final examination scores. From traditional to redesign, the Basic Math final exam scores increased 19.39%, the Elementary Algebra final exam scores increased 50.66%, and the Intermediate Algebra final exam scores increased 65.03%.

The mastery-based component of each redesigned course encompasses rigorous repetitive problem solving, forces the student to maintain a minimum 75% posttest average, a prerequisite for the final exam, and thus provides the student with sufficient preparation crucial to passing the comprehensive final exam.

	Traditional Fall 2010	Redesign Fall 2011	Percent Increase in Comprehensive Final Exam Scores
Basic Math	68.42	81.69	19.39%
Elementary Algebra	49.51	74.59	50.66%
Intermediate Algebra	46.84	77.30	65.03%

### Improved Course Completion

LBWCC's grading system for Basic Math and Elementary Algebra in the traditional setting utilizes the following letter grades: S (Satisfactory), indicates satisfactory completion of each mandatory objective and allows the student to gain entry to the next course in the sequence, U (Unsatisfactory), indicates the student failed to satisfactorily complete the mandatory objectives and is required to retake the course, IP (In Progress), indicates the student failed to satisfactorily complete each mandatory objective but

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through diligence and effort satisfactorily completed one or more of the objectives and is required to retake the course.

In the traditional setting, the IP and the U were interpreted similarly because each grade required the student to retake the entire course indicating failure in both cases. The table below indicates student completion rates in Basic Math and Elementary Algebra illustrated by the percentage of S's assigned in the redesigned courses as compared to the percentage of S's assigned in the traditional courses.

<b>Course</b>	<b>Traditional Fall 2010</b>	<b>Redesign Fall 2011</b>
Basic Math	64% received S	41% received S
Elementary Algebra	53% received S	25% received S
Intermediate College Algebra	57.4% A-B-C 42.6% I-D-F-W	36.02% A-B-C 63.97% I-D-F-W

In the redesigned setting, a policy change in the interpretation of the IP is enhancing student completion rates in the Basic Math and Elementary Algebra courses. In such a setting the IP is not considered a failure; it is a continuation. Students receiving an IP are given the option of continuing the course the following semester from their last point of activity within the course the previous semester. This is a testament to a key benefit of the redesign, its accommodation of the student's need to work at either a fast pace or a somewhat slower pace. This policy change allows some students to complete the course in 1.5 semesters thus allowing the student to move on to the next course in the sequence. Currently in the redesign, progressing from one math course to another in a sequence is ongoing for students who initially enrolled with IP's in Basic Math or Elementary Algebra in Spring 2012.

Viewing the IP as a positive grade lends clarity to the improved completion rate of students enrolled in the redesigned developmental math courses. The table below indicates student completion rates in Basic Math and Elementary Algebra illustrated by the percentage of S's and IP's assigned in the redesigned courses as compared to the percentage of S's assigned in the traditional courses.

<b>Course</b>	<b>Traditional Fall 2010</b>	<b>Redesign Fall 2011</b>
Basic Math	64% received S	64% received S or IP
Elementary Algebra	53% received S	65% received S or IP

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Videos of live lectures corresponding to each section assigned are accessible through course management software (MYMATHLAB) and through Tegrity recordings. These lectures accommodate both visual and auditory learning styles of the student. They also provide reinforcement of concepts crucial to passing quizzes and tests. The few students who take advantage of this tool tend to ask fewer questions indicating that learning has been facilitated. Promoting such a benefit requires consistent monitoring on the instructor's part which is not practical in a setting of twenty-five to thirty students with only one instructor and one or two tutors providing assistance in the math lab. A lab facilitator whose duties include the verification of students viewing video lectures can result in a student's enhanced proficiency of mathematical concepts.



Student watching a video lecture