

In Spring 2011 the mathematics department began a project to redesign our developmental mathematics courses. We knew intuitively that students weren't being successful & the data showed it.

Here's what the data before the redesign was showing:

- Overall pass rates for Basic Algebra and Intermediate Algebra were far below the national average (The national average pass rate is about 65% and ours was 48 – 49%).
- Retention in the course sequence (if a student failed the course, the percentage who persisted by reenrolling in the course in the following term) was in the mid-30% on average. It ranged from 30% to 45%.
- Less than half of the students who failed the first mathematics course returned to school the next semester.
- Of the students who passed the first math course (arithmetic), only 35% passed the next course (basic algebra). Only 46% passed College Algebra after they successfully completed Intermediate Algebra.
- These low pass rates were causing students to not be able to complete a two-year degree. In fact, over 77% who started in the lowest math course NEVER completed the developmental math sequence.

These were huge challenges to address but we needed to do something. Working with the developmental education coordinator, Carol Murphy, the mathematics department, which included Sarah Bretches, Kristen Hathcock, Joseph Harrington, Brian Howe and Jann Sherman, began a year-long planning process to change the structure and methods of teaching mathematics at the Great Bend campus.

From the data, we were able to set some goals that we wanted to accomplish in our redesign. Those included: (1) increase success rates to the national average, (2) improve retention rates to, at least, 50% within the course sequence, (3) save students time and money (shorten the 'pipeline') and (4) increase success in the subsequent course especially from the developmental sequence to College Algebra.

Early on in the process, we began looking for a model school, an institution that did a successful redesign of developmental math. We found one in Jackson State Community College and their [SMART Math](#) program which won a [Bellwether Award](#). JSCC was very similar to us in two ways: (1) they used eCollege as their learning management system and (2) they used BANNER as their student management system, so any hurdles that we would have to overcome in our planning process, they already found solutions to them.

We looked at all of our developmental mathematics competencies in our arithmetic and algebra courses. We eliminated any topic overlaps, reordered the sequence of the mathematics and built twelve math modules. By grouping the mathematics into modules, the traditional course structure wouldn't apply. We had to create new math courses for these modules. So we developed a series of classes titled College Preparatory Mathematics (1, 2, 3 and 4). CPM 1, 2 and 3 are three-credit hour courses and CPM 4 is a variable credit (1 to 2 hr) course that is only used when a student needs to complete 1 or 2 modules. Students enroll in the College Prep Math course and work on the modules. Once a student completes all twelve modules, then they are eligible to enroll in College Algebra.

Every module has the same structure: (1) **Pretest**, (2) **Learning Experiences** which include establishing *personal learning goals*, viewing *videos*, doing *practice problems*, evaluating their *effort & achievement*, and *journal writing* about the math & reflecting on their own learning, (3) **Notebook Problems** which are 10 handwritten problems that cover concepts from the whole module, (4) **Practice Test** and (5) **Post Test**. At the end of each module, students have the opportunity to give feedback on their experience with the mathematics in the module and we use that data to continuously improve the course.

Our pilot year was Fall 2012 – Spring 2013 and we went “all-in” in Fall 2013. Highlights of the data in the Fall 2013 term include:

- Average pass rate for College Prep Math (1, 2 and 3) was 64%. If students who dropped the course are removed from the pass rate calculation (that is, only count students who started and were still enrolled at the end of the course), then the average pass rate was 77%.
- Retention in the course sequence (students who failed but reenrolled in the spring) was 57%.
- Retention at the institution was 63% so we closed the gap between retention in the course and the school significantly.

These results could not have happened without the role of our Developmental Lab Coordinator, Nolan Einfeld. That full-time role has been an essential component in assisting the classroom instructors.

Besides the good news on the initial data, we are also finding that the redesigned course is also saving students money in the form of lower book costs and credit hours. For some it is saving them time by being able to complete their developmental mathematics needs in a year or less. It also allows students who need just a little more time on a certain topic(s) to get that time and not be rushed as it would be in a traditional classroom.

If you desire more specific information about the course structure, here are some video links to parts of our course orientation that we do with students during the first week of class (I would recommend viewing the Testimony video).

- [Course Overview](#): This 30 minute video takes the student through the course syllabus outlining the course structure and expectations
- [Course Navigation](#): This 21 minute video shows students how to navigate the course.
- [ACEmath Testimonies](#): In this 15 minute video, students share their experiences with the course and give advice on how to be successful (There are some volume issues).

Let me reiterate: this redesign only applies to the GB campus. Fort Riley, Leavenworth and BARTONline still have our traditional approach of Basic Applied Math (arithmetic), Basic Algebra and Intermediate Algebra. That system still works for them primarily because of the shortened sessions in which they offer those courses.

In the 10 minute presentation to the Board at the Study Session will focus on how the roles of instructor and student changes, the impact for students, and implications for degrees and programs at Barton.