



HLC Accreditation Evidence

Title: Developmental Math Project

Office of Origin: Vice President of Instruction - Academic Division

Developmental Math Project

Problem:

In 2010, developmental math instructors recognized that developmental courses were not helping students to be successful in college level math courses. The team requested spring 2011 pass rate and retention rate data (within the course, within the course sequence, and at the College) in order to confirm their observations.

The data showed:

- There were three courses in the math sequence:
 - MATH 1809 Basic Applied Math,
 - MATH 1821 Basic Algebra, and
 - MATH 1824 Intermediate Algebra.
- Pass rate averaged over fall and spring terms from Fall 2007 to Spring 2011
 - CPM 1809 was 66%,
 - CPM 1821 was 48%, and
 - CPM 1824 was 49%.
- Retention within the course sequence (if they failed the course, did they re-enroll in the same course and retake it the NEXT term):
 - CPM 1809 was 30%,
 - CPM 1821 was 38%, and
 - CPM 1824 was 45%.
- Less than half of the students who failed 1809 returned to school the next term.
- If a student passed 1809, only 25% of those students passed 1821 the next term.
- If a student passes 1821, only 35% of those students passed 1824 the next term.

Conclusion

The developmental courses weren't helping students even be successful in the next course. We HAD TO make a change.

Goal

Our goal was to develop a system of courses that could save students time and money while increasing pass rates and retention rates.

Actions to Solve the Problems:

- We began our planning process in August 2011 and took the entire academic year to plan the new structure of courses. We borrowed heavily from other schools who had undertaken similar redesign projects and had seen success (and we learned from their mistakes too so we didn't repeat those).

- We built twelve math modules that covered topics from arithmetic to the “edge” of College Algebra. We eliminated overlap of topics that were in the previous course sequence. We built four new courses (shadow courses) that students enroll into and work on the modules. We established minimum requirement for students to “pass”.
- We implemented a pilot in Fall 2012 with three class times (max of 48 students) then expanded to four class times in Spring 2013 (max of 64 students). In the Fall 2012, we only used one instructor (for the sake of consistency and, if there were issues/“hiccups”, only one faculty member was affected). In the spring term, a second instructor was brought into the system.
- The pass rate for the “first course” in the new College Prep Math (CPM) sequence (CPM I) over the Fall 2012 and Spring 2013 terms was $47/80 = 59\%$ and the “second course” in the new sequence (CPM II) which was only offered in the Spring 2013 term was $16/20 = 80\%$. Retention within the sequence for CPM I was $11/33 = 33\%$, however 6 of the 33 who didn’t return left school for a variety of other reasons that had nothing to do with the math course itself like being kicked off an athletic team, major car accident, etc. A more realistic percentage of retention for CPM I would be $11/27 = 41\%$.
- We made the choice, after seeing the data, that the project was worth continuing so we went with full implementation in Fall 2013. We saw pass rates continue to improve. Pass rates in Fall 2013 were 63% in CPM I, 42% in CPM II and 86% in CPM III (“third” course in the sequence). Retention in the sequences also improved. Overall the retention was 57% and retention at the institution was 63%.
- We began to share our journey at conferences within the state (eduKan and KAMATYC). After sharing and over the next few years, other schools came to visit us including Wichita Area Technical College and Dodge City Community College. WATC took our model and built their PACERmath program from it and their visits with us.

Data

The aggregated data report for CPM I, II, and III reflects the sequence pass rate. The Developmental Math Team designed the courses so that students would work at a pace aligned with their progress; therefore, students enrolled in CPM II, for example, may be completing different modules. One student might be starting in module 5 and doing modules 5, 6, 7, and 8 while another student might be starting on module 7 and doing modules 7, 8, 9 and 10.

CPM Sequence Pass Rates

Academic Year	Pass Rate
2013/14	62%
2014/15	68%
2015/16	79%
2016/17	71%