Developing Freshmen Math without Developmental Math

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Abstract: Most universities and community colleges are struggling with how to prepare incoming students for the rigor of college-level mathematics courses. At Governors State University, developmental courses are not offered, although a significant number of students do not have the required prerequisite mathematics knowledge for college-level courses. This poster has three themes: an analysis of institutional data on freshmen mathematics, a discussion about navigating conflicting goals and ideas from university leadership, and an examination of mathematics interventions, both those that were tried and recommendations for next steps.

Keywords: developmental mathematics, remedial mathematics, freshmen

At Governors State University (GSU), the Board of Trustees mandated that they would not offer or require any developmental mathematics courses, and that the only courses offered were at college level for college credit. At the same time, the university supports a diverse body of non-traditional students, many of whom do not have the prerequisite knowledge to succeed in a college-level mathematics course. After four years, and given the body of research on success rates for students who may need developmental mathematics, it is not surprising that most of these freshmen were not successful in their first-semester mathematics courses (Bailey, 2009).

Instead of required remedial instruction, the university offers a variety of resources for students, including the Academic Resource Center, mathematics success workshops, Supplemental Instruction, Smart Start Mathematics, and other initiatives. What administrators did not do is examine the possible reasons why many freshmen do not succeed in mathematics. Without this critical information, any interventions produced to remedy high rates of D/F/W grades are not likely to be effective (Ashby & Sadera, 2011, Sadler & Sonnert, 2016).

The university now has four years of data that can be mapped to local-area high school curriculum, the placement exam, research on strategies in higher education and mathematics, and possible intervention techniques; both ones that have been tried and others that haven't. For this poster, I will summarize the findings based on data from four years of enrolling freshmen at GSU. Each intervention implemented is correlated with success rates. A review of research and an exploration of interventions offered by other universities will help point to more targeted solutions that meet each student's individual needs (Melguizo, Kosiewicz, Prather, & Bos, 2014, Jaggers & Stacey, 2014, Woodard, 2004).

A second theme for this poster is navigating between colleges, administration, and faculty who all have different ideas on how to approach freshmen mathematics and the specific needs of our students, whether they are accurately understood or not. For example, many university mathematics professors may lack the pedagogical skills required by a high school teacher, and may be resistant to change, particularly if it seems more work will be required (Brownell & Tanner, 2017). Qualitative data is also being collected in order to better understand reasons why a student may not be successful in college-level mathematics.

The final theme of the poster details the changes recommended for this university, based on current data analysis and research. It is the author's expectation to implement some of these changes beginning with the Spring 2019 semester, and so by the next RUME meeting, a full paper with results will be forthcoming.

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