

A Corequisite College Algebra Support Program With Undergraduate Peer Facilitators

Natasha Speer
The University of Maine

Steven Kimball
The University of Maine

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Many undergraduate science, technology, engineering and mathematics (STEM) degrees require one or more calculus courses. For some, the path to those courses includes one or more prior-to-calculus courses. Not all students who begin this journey end up succeeding, and the higher the number of pre-requisite courses students need, the less likely they are to eventually succeed in the course needed for their program (Jaggars & Stacey, 2014). Many factors influence student success, however, pre-requisite skill fluency and understanding of foundational ideas can impact learning in calculus sequence courses and are thus often the foci of placement tests.

We report on a student support program in college algebra, designed by combining principles of co-requisite support (Zaback et al., 2016) and Peer Led Team Learning (PLTL) (Willson & Varma-Nelson, 2016). Co-requisite support typically takes the form of a supplementary course taken concurrently with the target course and provided as an alternative to having students take a term-long course on the prerequisite material.

Our program is a variation on this model. The university does not offer a course as preparation for college algebra. Historically, students who did not place into college algebra were unable to begin their path towards calculus. Now, students whose placement scores are below the requirement for college algebra enroll in the combination of mainstream 3-credit college algebra and a 1-credit support course. The course coordinator developed groupwork materials and supervised undergraduate facilitators, overseeing hiring and preparation meetings. This approach was modeled after PLTL which had been implemented previously on campus (for other purposes), including in mathematics. Experienced undergraduates were student group facilitators and time was spent strengthening prerequisite skills needed for upcoming topics, reducing potential impediments to student learning.

We share findings from the first year of implementation at a research-intensive university in the northeastern U.S. Data included grades from the 63 participants for both the semester when they were in college algebra and for subsequent semesters. Findings confirmed our hypothesis: students who were under-prepared for college algebra (as measured by placement scores) could succeed (earn grade needed to move to the next course) with additional support. A chi-square test revealed that success rates of those in the course and those in the course plus support were statistically indistinguishable (at the $p < .05$ level). In addition, the vast majority who enrolled in a next course in the calculus sequence were successful in that course.

Our findings suggest that what was found in community college settings (i.e., Zaback et al., 2016) can also be true in university settings. In particular, findings suggest that co-requisite support enabled student success in college algebra and in subsequent calculus sequence courses. In addition, findings suggest that undergraduate peers can staff such programs which could help with wider-spread implementation. The poster includes additional details and we seek feedback on evaluation design and ideas for additional research questions to pursue. Of particular interest are the undergraduate peer facilitators since their involvement is a variation from the typical co-requisite support program model. In addition, we seek discussion about further research questions that might be possible to investigate if this program were expanded to other courses in the calculus sequence (e.g., pre-calculus and first-semester calculus).

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