

Seminars to Support Learning Assistants in Mathematics

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Abstract: This poster reports on the design and implementation of a series of seminars to support undergraduate learning assistants (ULAs) working in university mathematics courses. The ULAs participating in this study work as tutors and classroom assistants in early college mathematics courses through Calculus 2. The seminars support ULAs to more fully understand their roles and to consider ways that they can improve equity and access for all students in their classes. The work is grounded in the perspective that learning is a sociocultural process (Lave, 1991) and that students' learning is significantly impacted by opportunities to participate in actively doing mathematics (Laursen, 2014; Freeman et al, 2014). This project strives to answer research questions related to understanding how ULAs conceptualize teaching for equity and access, how conceptualizations change through participation in seminars, and how these conceptualizations are related to students' experiences in mathematics classes.

Keywords: Learning assistants, Calculus, Equity, Active learning, Professional development

Background and Conceptual Framework

Undergraduate Learning Assistants (ULAs) are employed at University of Colorado at Boulder in mathematics courses ranging from Mathematical Analysis in Business through Functions and Models, which is a post Calculus upper level course. Their roles include acting as classroom assistants and serving as tutors in the mathematics department's academic resource center. These undergraduate students enter their positions because they are interested in helping others learn mathematics. They begin their jobs with little or no prior experience in teaching or tutoring, and they may have limited foundational knowledge of design principles for active learning or strategies for teaching for equity and access. They are enrolled in a course which supports ULAs from a range of math and science subject areas. The seminars on which this study is based support the ULAs specifically within the context of their work in mathematics.

This work is grounded in research on design principles of active learning (Webb, 2016) which demonstrates the effectiveness of active learning for increasing persistence to subsequent mathematics courses (Laursen, 2014; Freeman et al, 2014). The work is also informed by sociocultural learning theory which explains the ways in which learning develops from the conversations and activities in which students take part, as well as their own roles within those conversations (Yackel & Cobb, 1996). The seminars on which this work is focused are designed to increase the degree to which ULAs are able to help cultivate opportunities for students to actively participate in doing mathematics in their college courses.

Research Methodology, Results and Implications

This poster will report on the design and implementation of seminars to support ULAs in university mathematics classes to better understand their roles in increasing equitable opportunities for students to actively participate in doing mathematics. Results from a survey administered to the ULAs after the seminar will be reported, as well as analysis of those results. Results from interviews conducted with a small group of ULAs will also be included.

The results from this study will serve to inform the research community about ways to support ULAs to maximize their positive impact on opportunities to learn for all students in undergraduate mathematics classes. Specifically, these results will inform further research about how ULAs developing conceptualizations of teaching for equity and access, and how this relates to students' learning opportunities in undergraduate mathematics.

References

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