GTAs' Conceptualization of Active Learning in Undergraduate Mathematical Sciences Courses

Scotty Houston
The University of Memphis

Josias Gomez
The University of Memphis

Leigh Harrell-Williams
The University of Memphis

Jessica Webb
The University of Memphis

Throughout the past few decades, the term active learning has been used to describe a variety of classroom instructional techniques and pedagogy. In this poster, we explore the graduate teaching assistants' conceptualization and implementation of active learning strategies at the start of a funded project evaluating a multifaceted GTA training model.

Keywords: Active Learning, Graduate Teaching Assistants, Post-secondary Education

The term *active learning* has gained much attention in the past few decades, and it is perceived as different from passive lecture instruction (Prince, 2004). The use of active learning techniques has been shown to increase examination performance (Freeman, Eddy, McDonough, Smith, Okoroafor, Jordt & Wenderoth, 2014), improve both attitudes toward learning and thinking and writing skills (Bonwell & Eison, 1991; Prince, 2004), and "eliminate a sizeable gender gap" (Laursen, S., Hassi, M.-L, Kogan, M. & Weston, T., 2014). Because graduate teaching assistants (GTAs) often serve as instructors for undergraduate mathematical sciences courses (Speer, Gutmann, & Murphy, 2005; Meyer, Arnold, & Green, 2018), their views and experiences with active learning are important to explore.

Drawing on Vygotsky's sociocultural theory, Yee (2019) developed an active learning framework with two dimensions categorizing who/what the instructor engages with and who/what the participants engage with. As part of a multi-university funded study about a comprehensive model of graduate student instructor development, survey questions were developed using this framework to assess what activities GTAs thought were considered active learning, what activities they have used in the classroom, and what activities they have never heard of before, and what GTAs describe active learning would look like in their classroom. Sixty-seven mathematical sciences GTAs completed the survey at the start of the grant, including some GTAs who participated in the pilot phase of the training program at University A.

All of the GTAs at University A used lecture in the classroom, compared to 74% at B and 100% at C, with 11%, 42% and 0%, respectively, considering lecture to be active learning. The most used active learning techniques across all three universities included brainstorming, student questioning, and teacher questioning. The techniques that students were least familiar with included jigsaw and role playing (at A, B, and C) and think-pair-share (at B and C). This poster will look more deeply at the remaining quantitative results and the descriptions of what active learning looks like in their classrooms. The initial results inform the GTA training program and the body of knowledge about GTA training in general about pre-existing familiarity with active learning.