A Glimpse of Change in GTA PD Programs in U.S. Mathematics Departments

| Brittney Ellis | Tenchita Alzaga Elizondo | Jessica Ellis Hagman |
|---------------------------|---------------------------|---------------------------|
| Portland State University | Portland State University | Colorado State University |

As part of an ongoing effort to understand how mathematics departments in the U.S. can better support graduate students teaching in precalculus and calculus courses, we are interested in investigating plans (or potential plans) departments are making toward improving their graduate teaching assistant (GTA) professional development (PD) programs. Contributing to a larger national project of first-year mathematics, this study looked at mathematics departments' survey responses to three items regarding changes to GTA PD programs. Out of the 223 departments that responded to the survey 66 of them indicated some level of plans of change to their program. For those schools, we analyzed the open-ended responses elaborating on the current status of the GTA PD program and found several noticeable themes regarding changes or plans to change their programs.

Keywords: GTA, professional development, institutional change, survey

As graduate teaching assistants (GTAs) become more integrated in the teaching of courses in precalculus through calculus two (P2C2) sequences (Vroom, Kirin, & Larsen, 2017), further research is needed to better understand how departments can effectively support GTAs in their teaching (Ellis, 2014). In a recent study, Ellis, Deshler, and Speer (2016) reported that nearly 40% of mathematics departments surveyed said changes to the current graduate teaching preparation program were being carried out or are planned. To better understand what types of changes departments are making, we further investigated departments that indicated changes (or plans to change) by considering their responses to follow-up survey items. Guiding this study is the following research question: *Of the departments that indicated plans or potential plans to change their GTA PD program, what changes did they implement or plan to implement?*

The data for this analysis comes from a census survey designed for a multiphase national project aimed to examine current P2C2 programs. The survey was administered to all universities in the United States granting either a Masters or PhD in mathematics. To answer our research question we looked at responses to three items of the survey regarding changes (or potential changes) to GTA PD programs. Out of the 223 schools that responded to the survey 66 of them indicated some level of plans of change to their program.

For the preliminary results shown here, we used a general qualitative approach to search for patterns in the open-ended responses elaborating on the status of the GTA prep program (e.g., no change, change being implemented, change being discussed). In our initial pass through the data, we recorded some obvious patterns in responses around change: (1) *From pre-semester orientation to more ongoing support* (15%), (2) *change in personnel* (14%), and (3) *creation of a new program* (25%). Note that these results do not add up to 100% since not all schools have been categorized and some responses fell under multiple categories. We hope to continue refining these results by searching for additional descriptive patterns as well as considering connections with previous findings, such as connecting the changes to how departments are evaluating the success of their programs (Ellis, Deshler, & Speer, 2016) and the structure of their programs (Bragdon, Ellis, & Gehrtz, 2017).

References

- Ellis, J. F. (2014). Preparing Future College Instructors: The Role of Graduate Student Teaching Assistants (GTAs) in Successful College Calculus Programs, 1 PDF (1 online resource xxi, 310 pages)
- Ellis, J., Deshler, J., & Speer, N. (2016). How do mathematics departments evaluate their graduate teaching assistant professional development programs? *Proceedings of the 40th Conference of the International Group for the Psychology of Mathematics Education*, Szeged, Hungary (pp. 227-234).
- Bragdon, D., Ellis, J., & Gehrtz, J. (2017). Interaction, activities, and feedback: A taxonomy of GTA Professional Development. *Proceedings of the 20th Annual Conference on Research in Undergraduate Mathematics Education*. San Diego, California.
- Vroom, K., Kirin, D., & the Progress through Calculus Team. (2017). Who is teaching the precalculus through single-variable calculus sequence and how are they teaching it? Poster presentation at the 20th Annual Conference on Research in Undergraduate Mathematics Education. San Diego, California.