

PAC-Math Protocol: A Framework for Assessing the Professional Development of Graduate Teaching Assistants

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Graduate Teaching Assistants (GTAs) play a critical role in undergraduate mathematics instruction across the U.S., and their preparedness directly impacts undergraduate student experiences (Ellis et al., 2016). Given the importance of Professional Development for Teaching (PDT) in preparing GTAs, stakeholders are increasingly interested in understanding the effectiveness of these programs (Braley et al., 2023). Key questions arise: Are these PDT programs improving GTAs' teaching performance? Are they adequately preparing GTAs for their future careers? Addressing these questions requires a robust, cyclical assessment framework that can guide departments in evaluating and improving their programs. This poster presents the PAC-Math Assessment Protocol, a new tool designed to systematically assess and improve GTA PDT programs.

The PAC-Math Protocol provides a flexible, iterative approach to assessment. It is built around six key phases: **Actions, Aims, Assessment, Analysis, Adaption, and Alignment**. These phases guide programs in defining their goals, collecting meaningful evidence, analyzing the outcomes, and making informed adaptations. The framework is intentionally adaptable, allowing programs to refine their aims and activities based on the evolving needs of their GTAs, departments, and institutions. This cyclical protocol also promotes alignment between program actions and intended outcomes, encouraging programs to sustain continuous improvement in their PDT efforts.

The PAC-Math Protocol has been piloted in a small-scale study with six mathematics department's GTA PDT programs. This initial phase asked pilot sites to focus on a specific component of their GTA PDT program (e.g. orientation, micro-teaching practice) and to use the PAC-Math protocol to guide their assessment. The pilot supported departments in initiating program assessment in a flexible way to meet their particular departmental goals. This poster will present the results of the PAC-Math pilot study, including feedback from program providers about the usefulness of the protocol. Visitors to the poster will gain insights into the effectiveness of the PAC-Math Protocol in capturing meaningful data and informing programmatic changes. By sharing these results, we aim to promote discussion about GTA PDT assessment and contribute to the broader conversation about improving the preparation of future educators in mathematics.

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