

Adapting the TRU Framework: Tracking Changes in MGTAs' Instructional Practices

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Background

- Lecture-based teaching continues to dominate undergraduate mathematics, despite its negative impact on student success in STEM.
- Mathematics graduate teaching assistants (MGTAs) make up significant portion of the undergraduate teaching force.
- However, MGTAs are often not adequately prepared to teach in engaging, inclusive, and equitable ways.
- Without robust professional development (PD) for teaching that focuses on active, engaged teaching practices, MGTAs often replicate the lecture-based teaching practices that they have experienced.
- Consequently, the lecture-based teaching culture is perpetuated, and undergraduate students do not receive the benefits of evidence-based teaching.

Research Questions

RQ1. How does the ELITE PD program support MGTAs to transform their teaching practices to be more engaged, inclusive, and equitable?

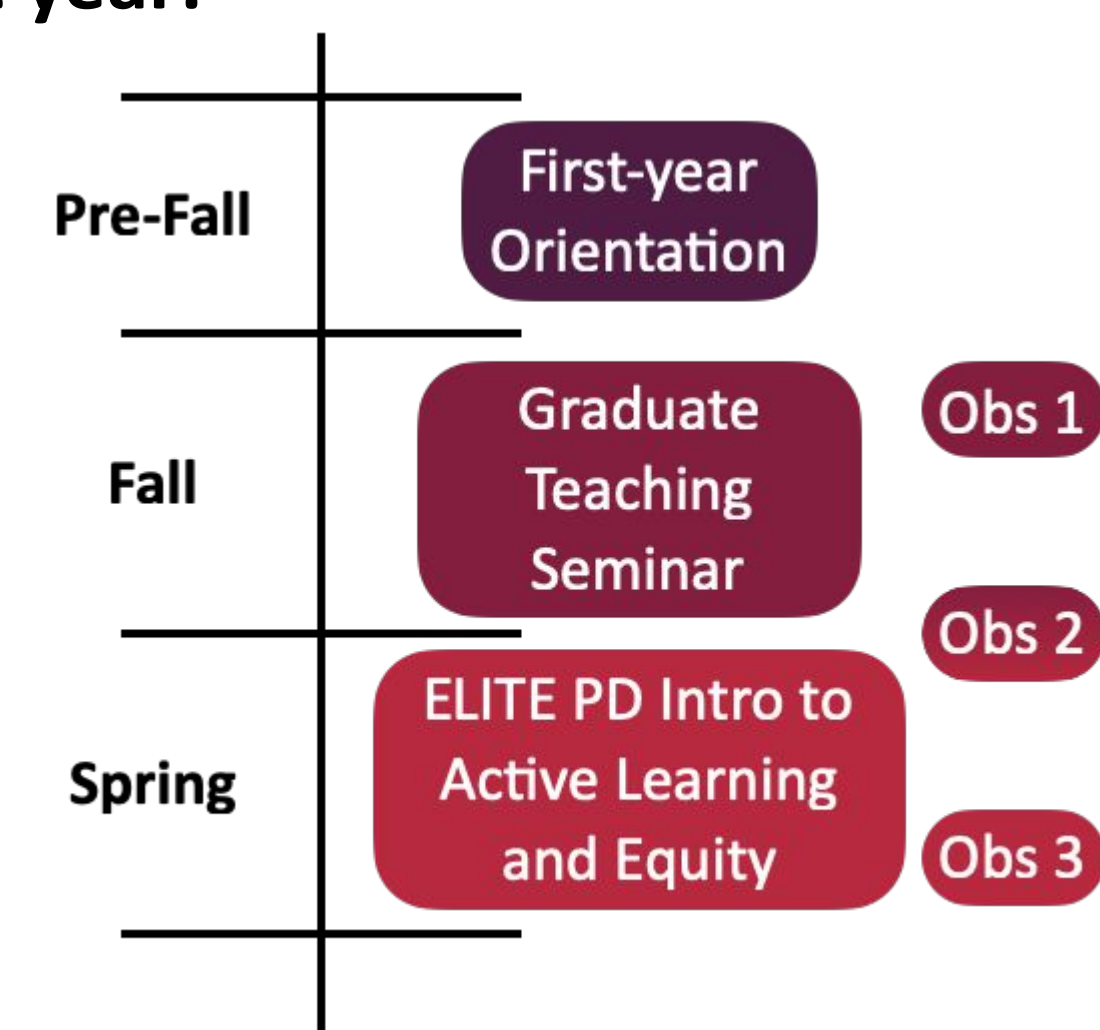
RQ2. What are undergraduate students' experiences and perceptions of MGTAs' teaching practices and how do these change over time?

RQ3. How do the teaching practices of MGTAs in the ELITE PD program compare to MGTAs who do not participate in the program, both within the same graduate program as well at different institutions?

RQ4. What identifiable aspects of individual, institutional, and departmental cultures inhibit or support sustainable change?

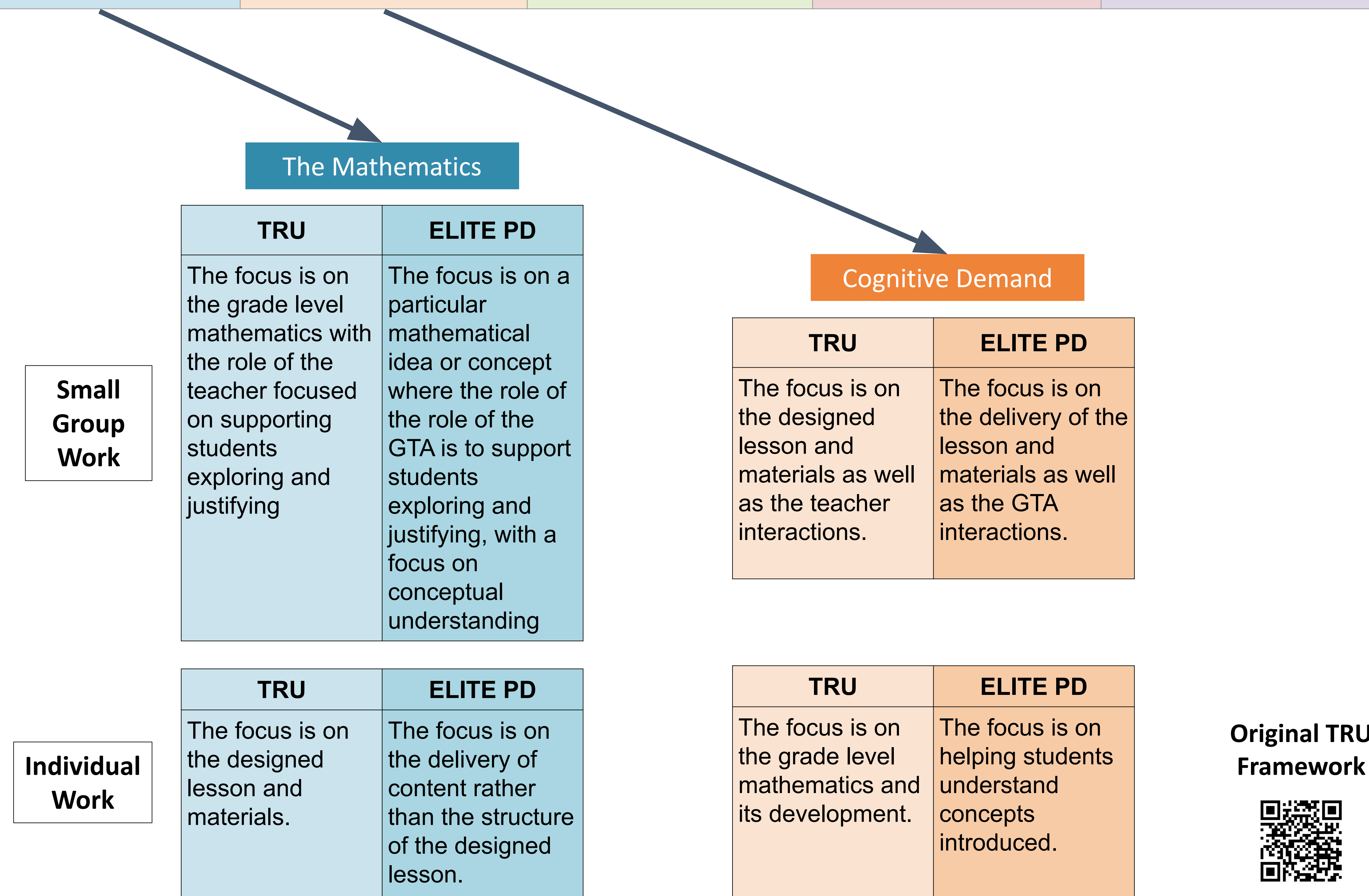
Data & Methods

Classroom observations of MGTAs' teaching in their first year:



Theoretical Framework: TRU

The Mathematics	Cognitive Demand	Access to Mathematical Content	Agency, Authority, and Identity	Uses of Assessment
The extent to which the mathematics discussed in the observed lesson is focused and coherent , and to which connections between procedures, concepts and contexts (when appropriate) are addressed and explained.	The extent to which classroom interactions create and maintain an environment of productive intellectual challenge that is conducive to students' mathematical development.	The extent to which classroom activity structures invite and support the active engagement of all of the students in the classroom with the core mathematics being addressed by the class.	The extent to which students have opportunities to conjecture, explain, make mathematical arguments, and build on one another's ideas , in ways that contribute to students' development of agency, authority, and their identities as doers of mathematics	The extent to which the teacher solicits student thinking and subsequent instruction response to those ideas, by building on productive beginnings or addressing emerging misunderstandings .



Discussion

Why TRU?

- Captures aspects of equity and inclusivity not captured by other instruments, as well as identity and agency
- Other instruments did not capture the mathematics and the content element, nor did it capture the interactions between students.

What is different?

- TRU
 - Created for use in K-12 classrooms under Common Core
 - Focus is on the materials themselves in addition to the implementation of them
 - Teachers have more control over the materials they use in the classroom
 - Teachers are the ones introducing the topics and reinforcing them
- ELITE PD
 - Courses are focused on building on past material
 - Focus is on the facilitation of engagement with the prepared materials rather than the materials themselves
 - MGTAs often do not have control over the materials/activities used in their classrooms
 - Often, MGTAs are not introducing the topic to the students for the first time; rather they are reinforcing it

Observation 1

- The first observation of each MGTA indicates where they are in their teaching.
- Initial results indicate that there is room for growth for the MGTAs
 - One particular area for growth is in their understanding of group work versus individual work

Future Work

- How do undergraduate student perceptions align with what the framework helps to capture?
 - If they do align, this is an opportunity to use these reports as a way to gauge what is happening in the classroom, which is more sustainable

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Our Team



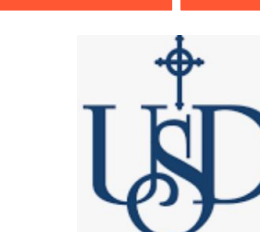
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