

A Proposed Framework for Tracking Professional Development Through GTA's

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There are several different models of graduate teaching assistant programs in mathematics departments across the nation (Ellis, 2015). One particular public university has recently reformatted their calculus program toward a peer-mentor model and this is the first year of implementation. In the peer-mentor model, there is a lead TA who serves as a support for the other TAs in the program. Because of this, the professional development in which the TAs are engaged is formally directed by both faculty and a peer. We are interested in discussing a framework known as the Vygotsky Space as a methodology for tracking the appropriation and sharing of pedagogical practices among those responsible for calculus instruction.

Key words: Vygotsky Space, professional development, Graduate teaching assistants

Across the nation, mathematics departments have begun to change the way they structure the teaching and support in their calculus sequence. Several different models that utilize graduate student mathematics teaching assistants have been identified, including the peer-mentor model, the apprenticeship model, and the coordinated-innovation model (Ellis, 2015). Of particular interest to us is the peer-mentor model in which, in addition to faculty support, there is a lead TA who observes and provides additional support to the other TAs. However, there has been little research into how the professional development in which the TAs are engaged is appropriated and shared among those responsible for instruction in the Calculus sequence. More specifically, how does the instructional practice of the TAs shift and what might provide support for those shifts, such as pressing for justification and providing multiple solutions to problems? What role does the lead TA play as both a learner and as one who provides support for the changes? This poster will report on a promising framework for understanding the ways in which the practices are appropriated and transformed by the graduate teaching assistants in a peer-mentor model.

The Setting

The 2015-16 academic year is the first year the peer-mentor model has been implemented at the large public southwestern university under investigation. In addition to a restructuring of the graduate student TA model, the breakout sections for the first two semesters of college calculus were restructured to include both an active learning problem-solving section, as well as a more traditional homework section. So as to support the TAs in leading more student-centered learning sessions, the TAs engaged in professional development for nearly two full days before the semester began and two half days during the first semester. Additionally, the TAs met weekly with the coordinator of their calculus course to discuss the past week and the week to come. Finally, the lead TA observed the teaching of their fellow TAs three times throughout the semester and gave each one of them feedback. Figure 1 provides a diagram of the various meetings throughout the first semester. The blue represents the weekly meetings, the yellow represents the professional development, and the green circles represent the observations conducted by the lead TA.

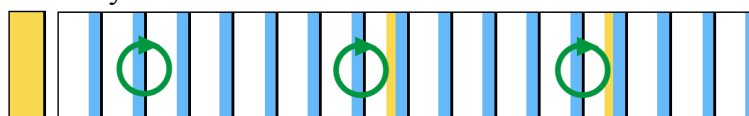


Figure 1: Diagram of Meetings

Thus there are formal opportunities for support in formal faculty-led professional development and informal opportunities in the debriefing meetings the lead TAs have with the other TAs after observing their classes and weekly meetings with the faculty coordinators. Through the various meetings, and through the classroom observations, there are opportunities for a researcher to observe the various ways in which the instructional practices are appropriated, transformed, and utilized by each of the TAs.

Tracking the Professional Development

We conjecture that the Vygotsky Space may be a useful framework for tracking the appropriation of the professional development (both formal and informal). The framework was meant to explain development in general (Harré, 1983) but it is also believed it could be used to investigate the ways in which the individual creates their own psychological world under particular “conversational forms and strategies from that discourse” (p. 245, Harré et al., as cited in McVee, Gavelek, & Dunsmore, 2007). In this framework, Harré (1983) identified two dimensions: the individual-social (collective) and the public-private. The superposition of these dimensions creates a two-dimensional space in which to describe the development of an individual over time as they move through the four quadrants.

For instance, the movement from the first quadrant to the second is known as appropriation. In this, the person is taking up the concepts that have been introduced and used in the public-social setting of the first quadrant. From there, the person moves towards the third quadrant, which is known as transformation. In this, the individual is taking the concept he or she has appropriated and is modifying it to fit their needs. When moving from the third quadrant to the fourth, the person is engaged in publication, which is when that person has made their meanings and strategies public for others to comment on. Finally, the movement

from the fourth quadrant to the first is known as conventionalization. In this, the “individuals’ public manifestations of thinking (i.e., their actions and their ideas) are incorporated as part of the community of discourse in which they participate” (Gavelek & Raphael, 1996, p. 188).

We will have preliminary analysis and judgment of the suitability of this framework. The data used for this preliminary analysis will be from field-notes taken during classroom observations and weekly meetings as well as recordings of the debriefing conducted by the lead

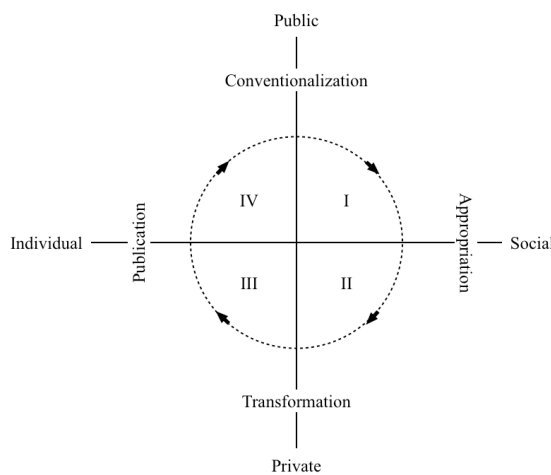


Figure 2: Vygotsky Space

TA after his third observation during the fall semester. The poster session will provide a space to discuss this methodology.

References

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