

Adjunct Instructor Learning Through Implementing Research Based Curriculum

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Due to high demand, part-time adjunct instructors play an increasingly important role in introductory classes at many higher education institutions. As part of a project to support adjunct instructors teaching Precalculus, we are exploring the impact of course coordination and support on content knowledge and instructional practice of instructors.

Keywords: Teacher learning, adjunct instructors, Precalculus teaching

There is a need for research on retaining students in STEM disciplines (Carnevale, Smith & Melton, 2011; Hurtado, Eagan, & Chang, 2010). Students' classroom experiences influence their decisions to pursue STEM degrees, especially initial experiences in introductory math courses (Hutcheson, Pampaka, & Williams 2011; Pampaka, Williams, Hutcheson, Davis & Wake, 2012). Thus, improving instruction quality may influence their decision to stay in STEM fields (Ellis, Kelton & Rasmussen, 2014). At our institution, Precalculus sections are taught by adjunct instructors. This proposal presents ongoing data analysis from a project focusing on promoting adjunct instructors' learning through course coordination and job supports. Specifically, this analysis aims to answer the following research question: In what ways does implementing a research based Precalculus curriculum impact adjunct instructors' mathematical content knowledge and instructional practice?

To explore the impact on instructor content knowledge, we use Shulman's (1987) conception of content knowledge. According to Shulman, there are three facets of content knowledge: structures of subject matter (rules, procedures, definitions, and axioms), principles of conceptual organization (conceptual web of content), and principles of inquiry (mathematical habits of mind (Cuoco, Goldenberg, & Mark, 1996)). These three facets of content knowledge allow teachers to develop a broad understanding of their field by grasping the main concepts, gaining expertise, and learning modes of analysis that take the field forward (Shulman, 1987). We are analyzing transcripts from pre and post semester interviews with adjunct instructors teaching our newly implemented research-based Precalculus curriculum. Each member of our research group reads the transcripts, identifying segments of talk focused on mathematical content, and categorizing each segment as one of the three facets of content knowledge, while allowing for segments to be placed in the intersection of one or more category. As we continue this work, we are thinking about how to incorporate other measures of instructor content knowledge, including pre and post knowledge assessments as well as interviews from more recent semesters.

To explore the impact on instructional practice, we use Teucher, Moore, and Carlson's (2015) construct of decentering introduced by Piaget (1955) as a way "to characterize the actions of an observer attempting to understand how an individual's perspective differs from her or his own" (Teucher, Moore, & Carlson, 2015, p. 5). We are analyzing transcripts from classroom observations from the first semester of implementation to explore how our instructors may, or may not, be employing decentering practices. As we continue this work, we will explore how the decentering practices of our instructors relate to course coordination and supports.