

# Mathematicians' Pedagogical Thoughts and Practices in Proof Presentation

Melissa Mills

Oklahoma State University

## **Abstract:**

Little is known about how mathematicians present proofs in undergraduate courses. This descriptive study uses ethnographic methods to explore proof presentations at a large comprehensive research university in the Midwest. We will investigate three research questions: What pedagogical moves do mathematics faculty members make when presenting proofs in a traditional undergraduate classroom? What do mathematics faculty members contemplate as they plan lectures that include proof presentations? To what degree and in what ways do faculty members engage students when presenting proofs? To pursue these questions, four faculty members who were teaching proof-based mathematics courses were interviewed and 6-7 observations of each classroom were conducted throughout the course of the semester. The data were analyzed to identify some of the pedagogical content tools that were used, to develop an observation instrument, and to understand how mathematicians think about the pedagogy of proof presentation.

**Keywords:** proof presentation, pedagogical content tools, teaching proof, ethnographic methods