

962-S1-1202

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*Connecting beliefs and teaching practices: Case studies of teaching assistants in collegiate reform  
calculus courses.*

Calculus reform calls for increased emphasis on conceptual understanding and communication of mathematics. To be successful, reform requires teaching practices such as eliciting students' explanations and probing their understandings. Existing research indicates that beliefs influence teaching practices in general ways, but we lack an understanding of how beliefs shape specific decisions teachers make while interacting with students. In this study, I used fine-grained analysis of beliefs and teaching practices to understand specific decisions made by teachers. I examined how graduate student teaching assistants' (TAs') beliefs about teaching, learning, students, and mathematics shaped their moment-to-moment interactions with calculus students as they implemented reform-oriented discussion sections for the first time. TAs' interactions with students were to focus on sense-making and conceptual understanding. I used classroom videotape and interview transcripts to analyze how TAs' beliefs shaped their decisions about asking questions and probing for understanding. TAs differed in the degree to which they emphasized sense-making and conceptual understanding of mathematical ideas. These differences could be traced to differences in the beliefs each TA held. (Received October 02, 2000)