The use of examples during a transition-to-proof course

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Abstract: Many students struggle during the transition-to-proof phase of their undergraduate programs. Some research indicates that examples of mathematical definitions and statements can often provide significant insight to students when solving the many types of tasks assigned in transition-to-proof courses. Additionally, little is known about the instruction provided to students about this strategy. This study extends research on the ways that undergraduate students use examples in their transition-to-proof course and the instruction given on the strategy of example use on proof-related tasks. Data was collected from the instructor and a sample of students via observations and interviews to investigate the connections between the teaching and learning of examples in this proof writing course. The results show that the students can often state the circumstances in which an example could provide insight during proof writing, but struggle to during the implementation of the strategies.

Sarah Hanusch is a doctoral candidate in the Mathematics Education program at Texas State University. She earned a B.S. in Mathematics from St. Edward's University and a M.A. in Mathematics from the University of Texas at Austin. Sarah's research interests include how we students at all levels how to reason and prove, and how undergraduate students learn to write and read proofs.