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Undergraduates' Example-Related Activity in Proving Conjectures. Preliminary report.

An overreliance on example-based reasoning has typically been viewed as a stumbling block for students when learning to prove. In this study, we investigate the mathematically productive ways in which undergraduates may use examples while proving conjectures. We interviewed ten undergraduates as they engaged in tasks requiring the proof or disproof of conjectures. In this preliminary report, we discuss three ways that the undergraduates used examples while trying to develop a proof: using examples to ascertain the correctness of an algebraic representation, using examples to try to illuminate the next step in a proof, and using examples to explain their reasoning for the general case. (Received September 16, 2014)