

1035-L1-1839

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*Undergraduate Mathematics Majors' and Prospective Mathematics Teachers' Conceptions of Proof after Lecture-Based and the Problem-Based Instruction.* Preliminary report.

This study investigates mathematics majors' and prospective mathematics teachers' conceptions of proof in lecture-based and problem-based undergraduate courses. A Mathematical Proof Survey (MPS) and researcher interviews were used to assess whether and how different instructions affect the perspectives of proof and pedagogical views held by undergraduates including teacher candidates enrolled in proof-based mathematics courses. Among 61 students who completed the survey, 6 secondary mathematics teacher candidates were interviewed over the semester. The results from MPS showed that the problem-based instruction was effective in enhancing the undergraduates' views of mathematical proof, although not to a degree that was significantly more effective than the lecture-based instruction. However, the students in the problem-based sections developed significantly more process-oriented pedagogical views of mathematical proof than did students in the lecture-based sections. Research interviews with mathematics teacher candidates provide insight into the results. We claim that experience with proof and instruction in such a problem-based course may provide opportunities for undergraduates and prospective mathematics teachers to develop more humanistic and process-oriented views of proof. (Received September 20, 2007)