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**Mathematics professors' evaluation of students' proofs: a complex teaching practice.**

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Summary: This article reports on an exploratory study of mathematics professors' proof evaluation practices and the characteristics they value in good proof writing. Four mathematicians were interviewed twice. In the first interview, they evaluated and scored six proofs of elementary theorems written by undergraduate students in a discrete mathematics or geometry course, assigned each proof a score out of 10 points, and responded to questions about the characteristics they value in a well-written proof and how they communicate these characteristics to students. In the second interview, they reevaluated three of the earlier proofs after reading the marks and comments written by the other professors, and evaluated and scored a seventh proof. The results reveal that proof grading is a complex teaching practice requiring difficult judgments about the seriousness of errors and the student's cognition that led to errors or other flaws. For five of the seven proofs the scores varied by at least 3 points, and the article discusses reasons for this variation. These professors agreed that the most important characteristics of a well-written proof are logical correctness, clarity, fluency, and demonstration of understanding of the proof. Although the professors differed in the attention they gave to fluency issues, such as mathematical notation, layout, grammar, and punctuation, they agreed in giving these characteristics little weight in the overall score.

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*Keywords:* undergraduate mathematics; proof evaluation; proof grading; proof writing; teaching proof; mathematics professors; practice of mathematicians

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