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Concept maps to assess student teachers' understanding of mathematical proof.

Math. Educ. 12, No. 1, 49-68 (2009).

Summary: This study reports the analysis of concept maps dealing with “mathematical proof,” as generated by a group of student teachers. The researcher examined the type of concept map generated, the number of key terms utilized in the construction of the map, and the multiplicity of relationships indicated among those key terms/concepts. The conceptual understanding represented within the concept map was then mapped onto Balacheff’s taxonomy of proofs. The lack of sophistication in the concept maps produced may point towards limitations in student teachers’ understanding of mathematical proof. Since teacher’s conceptions of proof inevitably influences both the role and nature of the instruction of mathematical proof within a mathematics classroom, limited knowledge in this core area of mathematics may typically prompts feelings of uncertainty and a lack of confidence when it comes to teaching this concept.

Classification: B50 E59 D69

Keywords: research; preservice teacher education; student teachers; knowledge; understanding; proofs; proving; foundations of mathematics; subject content knowledge; conceptions; concept maps; tree maps; systems maps; spider maps; graphical representations; reasoning; justification; Balacheff’s taxonomy of proofs