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How prospective teachers conceptualized mathematics: implications for teaching.

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Summary: What is mathematics? The difficulty of having a precise, universal definition of mathematics has led prospective teachers to define the term in ways that make sense to them. This paper is part of a larger research project conducted in 2000 in an Ontarian university, Canada. The objectives were to identify and discuss conceptualizations of mathematics that prospective teachers brought to their preparation program and to explore the implications of such conceptualizations in terms of teaching and learning. It was believed that both the identification tools and understandings of prospective teachers' conceptualizations of mathematics were significant for designing an effective pedagogy in accordance with mathematics reform-based perspectives. The research sample consisted of ten prospective teachers enrolled in a one-year bachelor of education program at an Ontarian university. The research used mathematics autobiographies of the respondents and semi-structured interviews of them as sources of data. Guided by the theory of personal construct for analysis of the data, the results showed that the respondents conceptualized mathematics in terms of metaphor, metonymy and combination of the two. The conclusion explores implications of such conceptualizations for mathematics teaching, learning and assessment.

Classification: C29 D20

Keywords: teacher education; pre-service teachers; research; interviews; conceptualization; conceptions of mathematics; teacher attitudes; beliefs; teachers' math autobiographies; metaphoric conceptions; metonymic conceptions; implications for teaching; implications for learning; implications for assessment
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