

Choices, Representations, and Strategies Used in Solving Problems by Elementary
Education Students in the First Math Content Course

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Abstract

The focus of this study is to identify strategies, models, and representations used in problem solving and problem development by pre-service elementary/middle school teachers during their first content mathematics course. Data collection included the analysis of written tasks on problem solving along with a case study of nine students' processing of problems using think aloud interviews. Initial assessment indicates that students have difficulty translating between representations, for example, between geometric representations of problems to algebraic forms, as well as explaining how these representations relate to one another. The use of focused written explanations integrating geometric representations was accomplished to improve abstract thinking. This curriculum intervention based on the visual approach makes use of "Proof without words" and models the teaching/learning strategy of concrete to pictorial to symbols. Preliminary results indicate the increased use of geometric diagrams to form generalizations.

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