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Developing understanding of mathematical modeling in secondary teacher preparation.

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Summary: This study examines the evolution of 11 prospective teachers' understanding of mathematical modeling through the implementation of a modeling module within a curriculum course in a secondary teacher preparation program. While the prospective teachers had not previously taken a course on mathematical modeling, they will be expected to include modeling as part of the school curriculum under current state standards. The module consisted of readings, analysis of the Common Core State Standards, carefully designed modeling activities, individual and group work, discussion, presentations, and reflections. The results show that while most prospective teachers had misconceived definitions of mathematical modeling prior to the module, they developed the correct understanding of modeling as an iterative process involving making assumptions and validating conclusions connected to everyday situations. The study reveals how the prospective teachers translated the modeling cycle into practice in the context of a carefully designed open-ended problem and the strong connections between modeling activities and promoting mathematical practices.

Classification: M19 D39

Keywords: mathematical modeling; secondary mathematics; secondary mathematics pre-service teacher education

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