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## Abstract

The theory-practice divide in teacher education is commonly viewed as there are two separate entities – theory and practice. However, in practice-based research approaches, theory is commonly integrated with existing practical knowledge with the aim to deepen teachers' knowledge about practice or to create new knowledge. In this study, we examine 30 pre-service teachers taking part in a 5-week course in a teacher education program in Sweden, in which an action-research approach termed Learning study was used to deepen the pre-service teachers' thinking and reasoning about mathematics teaching in order to develop primary student learning. Variation theory was used as a tool to support the pre-service teachers' reflections on how different ways of structuring the mathematical content are related to student learning outcomes. This research aims to illustrate how the integration of theory and teaching experiences from the 5-week mathematics education course supported pre-service teachers' generation of knowledge about teaching and learning mathematics. In this study, we regard mathematical tasks created by the pre-service teachers and used in the lessons as generated knowledge about the practice of teaching. Data were collected during the course and consist of written reports about task refinements in the pre-service teachers' lessons. We identified five different ways of re-designing the tasks: expanding tasks, making tasks more explicit, making tasks less explicit, bringing metaphors and representations to the foreground, and creating new tasks.

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Anna-Lena Ekdahl is a lecturer at the School of Education and Communication at Jönköping University. She has a great deal of experience conducting courses in Primary Teacher Education, particular in teaching and learning mathematics in primary years. She is involved in several development projects characterized by practice-oriented research questions.