

AWARENESS OF BUILDING UP NEGATIVE KNOWLEDGE – A VIGNETTE-BASED STUDY ON PRE-SERVICE TEACHERS’ REACTIONS TO MISTAKES

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Mistakes in the mathematics classroom are opportunities for learning – in particular for building up negative knowledge (Oser & Spychiger, 2005) – which can (in short words) be described as knowledge regarding the boundaries of the “correct”, examining what is incorrect and (possibly) why. Such negative knowledge is also helpful on a metacognitive level (Mevarech et al., 2018) for learners monitoring their mathematical thinking and activities. With negative knowledge, learners may be more successful in detecting corresponding mistakes in the future. When teachers react to students’ mistakes, they should hence be aware of the learners’ development of negative knowledge – beyond emphasising the corresponding “positive” knowledge, i.e. the knowledge needed to “do it correctly”. However, relatively little is known about pre-service mathematics teachers’ awareness (Kuntze & Friesen, 2018) of building up negative knowledge. Corresponding to this research need, this study explores whether pre-service mathematics teachers can draw on an awareness of building up negative knowledge when they are asked about reactions to a mistake shown in a vignette on a fraction calculation situation. Results from this study with 37 pre-service teachers indicate that although PTs could identify the mistake shown in the vignette, such awareness needs to be supported, with specific vignette-based learning opportunities.

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