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Mathematical practices and mathematical modes of enquiry: same or different?

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Summary: Background: In this paper, I share a case study of a teacher's work on mathematics tasks in the context of a 'mathematics for teaching' course aiming to develop mathematical content understandings and mathematical practices among primary teachers in one South African province. The course was developed in a national context of concerns about the nature and levels of primary teachers' mathematical knowledge. Theories viewing mathematical practices as fundamental, contrasted with those that view mathematical practices and mathematical content in more separate and 'to be integrated' ways, are used to frame the analysis and critically reflect on the findings. Results: Data from this teacher's pre-test and selected course assessments and interactions suggest that while he was able to develop some aspects of the mathematical practices described in the literature, his overall orientation remained attuned to memorization and recall. Findings also pointed to an ongoing reliance on external validation of the 'correctness' of his answers. Conclusions: The data suggest that the presence of elements of mathematical practices cannot be viewed as equivalent to the presence of mathematical modes of enquiry. The analysis presented in this paper suggests that while elements of mathematical practices can be developed, moving towards an encompassing orientation to mathematical modes of enquiry may require more central focus on problem-solving approaches to achieve a change in orientation.

Classification: D39 D40 C70

Keywords: mathematical practices; mathematical modes of enquiry; primary mathematics

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