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Developing robust forms of pre-service teachers' pedagogical content knowledge through culturally responsive mathematics teaching analysis.

Math. Teach. Educ. Dev. 14, No. 2, 113-136 (2012).

Summary: This study documents and describes efforts to develop robust forms of pre-service teachers' pedagogical content knowledge through a culturally responsive mathematics teaching approach. Embedded in a university K-8 mathematics methods course emphasising the connections among mathematics, children's mathematical thinking, and children's cultural/linguistic funds of knowledge, pre-service teachers ($N = 40$) were given an assignment to analyse their own mathematics lessons utilizing a rubric tool with categories about children's mathematical thinking, academic language supports, cultural funds of knowledge, and critical math/social justice. Utilizing a mixed methods approach to analyse the pre-service teachers' (PST) work, we found the highest average self-ratings across the categories associated with children's mathematical thinking and high variability in the categories related to language, culture, and social justice. To understand the variation within the latter three categories we qualitatively analysed PST written reflections. We found strong PST receptivity to supporting academic language for second language learners and integrating cultural funds of knowledge into mathematics lessons, and mixed receptivity to integrating social justice into mathematics lessons. However, a more nuanced analysis of teacher resistance revealed challenges with pedagogy rather than ideology. Implications for mathematics teacher education and strengthening pedagogical content knowledge of pre-service teachers are discussed.

Classification: D39 C50 C60 C30

Keywords: preservice teachers; pedagogical content knowledge; culturally relevant education; cultural relevance; methods courses; social justice; language usage; teaching methods; mathematics skills; second language learners; learner engagement; classroom communication; knowledge level; student needs

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