Pre-service Elementary Teachers’ Beliefs about Mathematics and Related Ideas

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Research Apprenticeship Report Abstract

The study of teachers’ beliefs about teaching and learning has become an important area of research. This is so because researchers contend that teachers’ beliefs about teaching and learning greatly influence their instructional practice (Cooney, 1985; Dougherty, 1990; Thompson, 1984). Following the reform movement that began in the late 1980s, a number of universities developed mathematics courses for pre-service elementary teachers that emphasize a problem-solving approach and cooperative learning. Some researchers examining students who are taking or have taken these courses have reported significant shifts in these pre-service elementary teachers’ thinking about mathematics, mathematics learning, and teaching. No researchers have compared pre-service elementary teachers who have taken these courses with others who have not taken these courses as they interact in a common classroom. The purpose of this study is to bridge this gap.

In this study I used Cobb, Wood and Yackel’s (1990) view of a dialectic relationship between belief and practice, along with Thompson’s (1992) view of belief systems as “dynamic in nature, undergoing change and restructuring as individuals evaluate their beliefs against their experience (p. 130). To examine pre-service elementary teachers’ beliefs, I found four students currently in a mathematics methods course who had taken one or two reform-based mathematics courses prior to the methods course and four students who had taken two traditional mathematics courses. I did a quantitative study of their beliefs using the Fennema-Sherman questionnaire, analyzed reflective writings and journal entries throughout the methods course, observed in the methods class, and interviewed the students. I analyzed this data using qualitative methods for coding and analyzing the data.

I found some differences between the two groups of pre-service teachers but also many similarities. The biggest difference was that the pre-service teachers who had taken the reform mathematics classes had a model they could recall whey they read or discussed the kind of
teaching the National Council of Teachers of Mathematics (NCTM) is promoting. On the other hand, those pre-service teachers who did not take reform mathematics classes were at a loss when they wanted to implement lessons that were in line with the NCTM Standards.