Exploring Perspectives About Mathematics Within the Cultural Context of a College Algebra Class at a Community College

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December 1995

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Dissertation Abstract

The value of examining perspectives about the nature of mathematics as a subject and about being a learner and doer of mathematics has been of interest to many researchers in the field of mathematics education (e.g., McLeod, 1991; Schoenfeld, 1989; Stage & Kloosterman, 1991). Although many researchers have focused their attention on developing scales and studies that relate to the affective domain of mathematics education at various levels, little effort has been invested in attempting to examine and understand the qualities of students’ perspectives on what it is like to be enrolled in a particular mathematics course or how these perspectives and attitudes are formed. McLeod (1991) defined the word attitude as “affective responses that involve positive or negative feelings of moderate intensity and reasonable stability” (p. 68).

In this study, I aimed at (a) determining students’ perspectives about mathematics and about themselves as learners and doers of mathematics, (b) how these perspectives developed in relation to students’ social and cultural backgrounds, and (c) how they continued to develop and change in relation to the social context of the classroom. I also aimed at understanding how the teacher uses the classroom context and the context of algebra problems to address various issues that students perceived to be influential during their study of algebra.

Data collection involved participant observation, and student and teacher interviews. Six algebra students of differing ethnic backgrounds and genders, and their teacher, were selected from two different sections of the same mathematics course as focus students in this study. These students were interviewed to understand better their (a) cultural and social background, (b) their previous and present encounters with mathematics as a subject and their understanding of the rigors and demands of studying mathematics, (c) their perspectives about the social context of the classroom, and (d) their perceptions of their college algebra teacher. The teacher emerged
as a main participant in this study because students looked up to her as a mentor whose partnership and teaching methods included the connection between students’ issues and teaching mathematics politically. The teacher’s political outlook on students’ issues connected her to students’ needs as she was determined to help students negotiate more realistic meanings for the learning of algebra.

My study recommends that unless teachers become aware and act upon [take into account at every phase of their pedagogy] the personal, social, cultural, family, and institutional issues that exist among their students, what happens in the algebra classroom can be of little or no significance to students, particularly those who believe that mathematics is a restricted domain of knowledge that does not pertain to people in all situations and cultures.