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Student Perspectives and Roles in an Inquiry Mathematics Classroom

A thesis presented in partial fulfilment of the requirements for the degree of Master of Education at Massey University, Palmerston North, New Zealand

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ABSTRACT

This study examines the perspectives and roles of students aged 9-10 years old learning mathematics in an inquiry classroom. It builds on previous work which has advocated students learning mathematics through collaborative interaction as opposed to passive transmission of knowledge and skills. In this study the students’ beliefs about what they consider to be important in learning mathematics is compared to the ways in which they engage in mathematics activity. The varying roles students assume while learning mathematics and how this affects their agency are considered.

This investigation is situated in an inquiry classroom. A sociocultural perspective provides the framework for the classroom context. Relevant literature is examined to provide a rationale for how students engaged in mathematical reasoning within this environment. The pedagogic approach of the teacher in developing effective student participation in mathematical reasoning by facilitating the even distribution of authority in the classroom is offered as an alternate to customary practice. Active student engagement in mathematical discussion and debate are all viewed as highly important for the enhancement of mathematical understanding.

A qualitative research approach was implemented. The case study supported a classroom based investigation. Data were collected through individual interviews, participant and video-recorded observations and classroom artefacts. To develop the findings as one classroom case study, on-going and retrospective analyses of data were made.

Significant changes were revealed in the relationship between the students’ espoused beliefs about learning mathematics and their enacted beliefs. The investigation illustrated that students were able to develop positive positional identities through active engagement in mathematical reasoning. The interaction patterns created in the classroom explicitly affected the construction of mathematical knowledge. From these findings insights are made into the type of environment which supports enhanced mathematics learning.
I would like to acknowledge and thank the many people who made this study possible. Most importantly I wish to thank the teacher who so willingly gave of himself and his time. His personal belief in this study and collaborative spirit contributed greatly to this project and was a source of strength for me. I would also like to thank the students in his classroom for their enthusiasm and keen participation in the mathematics learning.

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