

ATTITUDES AND MINDSETS OF PRESERVICE TEACHERS IN MATHEMATICS EDUCATION

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ABSTRACT

This research study focused on understanding the impact preservice teachers' attitudes and mindsets had on their approach to learning mathematics and how this influenced their potential as mathematics teachers. Many students entering primary teacher education courses do so with negative attitudes towards learning mathematics and a belief that a person's intelligence is fixed and cannot be changed.

The study took place within a semester-long, first-year mathematics education unit, which utilised a social constructivist, problem-based learning (PBL) approach, as part of a Bachelor of Education (Primary), four-year university course. The lecturer's goals of the unit were, first, for students to experience a student-centred learning environment that focussed on developing content and procedural knowledge, and the pedagogies associated with teaching mathematics. Secondly, engage students in shifting their disposition towards a positive and open attitude towards learning mathematics along with a growth mindset.

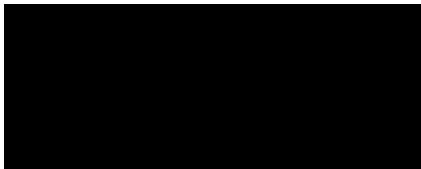
Research evidence was collected at the beginning and end of the semester-long teaching period through a combination of quantitative and qualitative instruments. Based on initial survey results collected during a pre-study phase, clusters were formed from different combinations of attitude and mindset. These clusters then served as case studies for further investigation, which sought to understand more deeply (a) their views of learning and teaching mathematics, (b) their responses to student-centred learning and (c) changes to their dispositions towards mathematics that may have occurred over the duration of the unit. The

qualitative research data was gathered through methods such as interviews, task observations and questionnaires.

The findings suggested that both attitude and mindset intertwine in a complex manner to influence a preservice teachers' views of learning and teaching mathematics, and that these views are related to their past experiences as learners. The study also found that many participants felt the student-centred experiences were a meaningful approach to engaging learners and as a means to influence and change dispositions and mindsets. It was clear that students with fixed mindsets were more reluctant to accept a student-centred approach to learning and teaching mathematics. By comparison, students with a growth mindset were more reflective and open to student-centred approaches, such as developing student autonomy and recognising the teacher as facilitator. The findings also indicated that it is possible to influence student dispositions to learning, and consequently, their teaching of mathematics. It appears vital that mathematics teacher educators provide support to assist preservice teachers' development of their dispositions, mindsets and adoption of student-centre practices in mathematics.

CERTIFICATION OF DISSERTATION

I certify that the substance of this thesis has not already been submitted for any degree and is not currently being submitted for any other degree or qualification.



30 June 2016

Signature of Candidate

Date

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