

Exploring Pre-service Elementary Teacher's Relationships with Mathematics via Creative Writing and Survey

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Thirty-two pre-service elementary teachers completed a survey regarding their beliefs and attitudes regarding learning and teaching mathematics and two creative writing tasks. In the writing tasks, participants described their relationship with personified mathematics and introduced personified mathematics to their future students. By interpreting the survey and writings, different aspect of attitudes towards mathematics were discovered.

Keywords: Affect, pre-service teachers, creative writing

Pre-service teachers' relationship with mathematics is important because it can affect how teachers introduce mathematics to their students (Swars, Daane & Giesen, 2006). Existing research has used conventional methods, such as surveys and interviews, to measure preservice and in-service teachers' attitude towards mathematics. (Brown, 2007; Raymond, 1997)

Zazkis (2015) used an unconventional method to assess preservice teachers' relationship with mathematics. Zazkis assessed pre-service teachers' attitudes towards mathematics via creative writing task in which they described their relationship with mathematics as though mathematics were a person. Then, he used conceptual blending to interpret participants' human description of mathematics, personification, by mapping their descriptions to corresponding mathematical character.

In this study, we will investigate whether interpreting personification writing tasks using conceptual blending yields the same results as conventional surveys about mathematics attitudes. Thirty-two pre-service teachers completed a 14 question survey assessing their beliefs and attitude regarding learning mathematics. The survey questions were modified from Mathematics Anxiety Rating Scale-abbreviated version (Alexander & Martray, 1989) and Mathematics Teaching Efficacy Belief Instrument (Enochs & Riggs, 2002). They also completed two creative writing tasks. The first one was the same as Zazkis' task, and in the second one, they introduced mathematics to their future students through personifying mathematics.

For one survey item, 68% of participants agreed that "teacher's own feeling about mathematics is related how well a teacher can teach mathematics to students". For example, Alex (pseudonym), who agreed with the statement wrote "sometimes math is a crazy monster that seems to try to make my life so much harder than it needs to be" on task 1 and on task 2 wrote "Math can be scary sometimes because we don't always understand what it is trying to show us" which indicate warning of math to students based on Alex's experience with mathematics.

On the same survey item, Casey selected that "teacher's own feeling about mathematics is independent of a teacher's practice". However, Casey wrote "I found myself face to face with someone(math) I hoped never to see again..." on task 1 and wrote "just remember, he(math) is really never going to be easy to talk to, so always prepare to think when you are around him" on task 2. These responses reflect Casey's relationship with mathematics affecting Casey's portrayal of mathematics to future students, and are contrary to what Casey selected on the survey. Therefore, two writing tasks can offer different view of participants' relationship of math and how it could affect their future teaching.

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