

# Exploring Elementary Preservice Teachers' Use of Children's Literature in a Mathematics Methods Course

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## Introduction

- Preservice elementary math teachers have high levels of mathematical anxieties and low self-efficacy when it comes to the teaching and learning of mathematics
- Many PSTs feel positively toward children's literature (Jett, 2018; Purdum-Cassidy et al., 2015).
- Children's literature has been found to have a positive effect on elementary students' mathematical performance (Heuvel-Panhuizen et al., 2016)
- While there have been many studies detailing the benefits of integrating children's literature into mathematics classrooms and mathematics methods courses, most do not look at the effect on preservice teachers' efficacy beliefs.

## Research Questions

RQ1

- How do preservice elementary mathematics teachers describe their experiences using children's literature in an elementary mathematics methods course?

RQ2

- Does the integration of children's literature in an elementary mathematics methods course influence preservice teachers' mathematics teaching efficacy beliefs?

## Relevant Literature

- Elementary teachers with high levels of mathematics anxiety often pass their anxieties onto their students by modeling unease and insecurities (Gonzales-DeHass et al., 2017).
- Methods courses have been proven to be a key factor in helping preservice teachers build efficacy beliefs (Giles et al., 2016). Efficacy beliefs, one of the strongest predictors of mathematics anxiety in both teachers and students, can be boosted through positive classroom experiences (Gonzales De-Hass et al., 2017).
- As early as 1989, NCTM encouraged educators to incorporate children's literature into their mathematics lessons which propelled public interest in the concept (NCTM, 1989).
- Research has shown that the integration of children's literature into an elementary mathematics class has a positive influence on elementary students' mathematical self-efficacy as well as mathematical performance (Cotti & Schiro, 2004, Flevares & Schiff, 2014; Heuvel-Panhuizen et al., 2016).

## Theoretical Framework

- Vygotsky's sociocultural perspective of education
  - students establish cultural mathematics practices by discussing ideas and reasonings with peers.
- Constructivism
  - preservice teachers are introduced and exposed to a constructivist view of mathematics education and are encouraged to explore multiple methods problem solving

## Research Methodology

Children's literature will be incorporated into the Elementary Mathematics Methods Course by:

1. Direct instruction with mini lessons by the instructor including hands on activities.
2. Small group explorations, class discussions, and individual exploration of picture books.
3. Student-generated problem-solving lessons including picture books.

*RQ1: How do preservice elementary mathematics teachers describe their experiences using children's literature in an elementary mathematics methods course?*

- PST reflection at the end of the semester
- Semi-structured focus groups
- Student work samples including problem-solving lesson plans and lesson plan reflections will also be analyzed.

*RQ2: Does the integration of children's literature in an elementary mathematics methods course influence preservice teachers' mathematics teaching efficacy beliefs?*

- PSTs will complete the Mathematics Teaching Efficacy Belief Instrument (MTEBI) at the beginning and end of the 12-week mathematics methods course.

## Significance of Study

- Positively impacting the efficacy beliefs of preservice math teachers will help bridge the gap between anxious PSTs and confident classroom teachers.
- Teachers with math anxiety often pass anxieties onto their students.
- Direct correlation between teacher self-efficacy and student achievement

## Anticipated Results

- I anticipate that the addition of children's literature will have a positive effect on preservice teachers' efficacy beliefs.
- Preservice teachers will feel more comfortable teaching mathematics lessons using a picture book, something they have positive

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