

Relationship between teacher's attitudes and beliefs about learning and teaching

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This study is to take a closer look at the relationship that exists between the teacher's attitudes and beliefs about learning and teaching mathematics in the elementary classroom. Part 2 of this proposal addresses specifically looking at setting up a quantitative research design to explore anxiety and belief scores of elementary mathematics teachers concerning gender, number of years in education, and grade level taught. Below will describe the quantitative research method that will be utilized during this study, the sampling procedures, instrumentation that will be used, procedures for collecting and analyzing the data, and possible limitations of the study.

Research Questions

1. What relationship exists between the teacher's attitudes and beliefs about learning and teaching mathematics in the elementary classroom?
2. What difference exists among the anxiety and beliefs scores of elementary mathematics teachers concerning gender, the number of years in education, and grade level taught?

Quantitative Design and Procedures

This study will use quantitative research methods to identify differences that exist among the mathematics anxiety and mathematical beliefs scores of elementary mathematics teachers concerning gender, number of years in education, and grade level taught. Correlational analysis will be the method of research chosen over the other research design methods available.

Quantitative designs describe, test, and explain, whereas qualitative methods explore and understand (Creswell, 2003). The correlational study <https://assignbuster.com/relationship-between-teachers-attitudes-and-beliefs-about-learning-and-teaching-mathematics-in-the-elementary-classroom/>

explores variables in their original settings and does not involve researcher-imposed practices. Early research implies that self-report questionnaires give a moderately accurate portrayal of instructional practices within the classroom (Ross et al., 2003).

Sampling Procedures and Rationale

This study will use nonrandom sampling based on the factor that all subjects do not have the same random chance of being selected. A random sampling of an entire population is time-consuming and costly. The participants will all be elementary mathematics teachers of varying campuses that the researcher will choose the specific campuses to use. The instruments utilized within the study will not be available to the entire district's teaching population. Three elementary campuses that will include varying levels of experience among teachers and represent a balanced population of new teachers and experienced teachers will be utilized as the individual subjects. The researcher will also attempt to find campuses that have student teachers among the population to include several preservice teachers.

The participants will include 54 teachers in grades kindergarten through fifth grade from those three different elementary schools. During a faculty meeting, the data collection instruments will be administered at the participants' respective schools.

Data Collection Plan

The instruments that will be given to participants in the study will be: The Mathematics Anxiety Rating Scale: Short Version (Suinn & Winston, 2003), <https://assignbuster.com/relationship-between-teachers-attitudes-and-beliefs-about-learning-and-teaching-mathematics-in-the-elementary-classroom/>

the Teacher Beliefs Survey (Beswick, 2005), and the Self-Report Survey: Elementary Teachers Commitment to Mathematics Education Reform (Ross et al., 2003). In order to administer these self-reported surveys to participants, survey monkey will be the data collection software utilized. Data will be entered into the Statistical Package for Social Sciences (SPSS) for data analysis once surveys have been completed. Demographic data and mean scores from all survey instruments will be included in the analysis. During research that encompasses surveys, demographic data becomes significant in executing connections crosswise and inferring conclusions (Connolly, 2007). After the data from a survey is collected, the data will be separated into different combinations that represent the demographic information in which the sub-groups can be interpreted (Tolmie, Muijs, & McAteer (2011). The three instruments that will be used throughout this study were selected based on the extensive use that has been seen throughout research conducted in education research. The Mathematics Anxiety Rating Scale is one of the most commonly used tools in taking a look at the anxiety that exists with mathematic content (Capraro, Capraro, & Henson, 2001). This self-reported Likert scale survey rating the level of anxiety was developed in 1972. The survey includes 98 items intended to describe the participant's anxiety related to mathematical content (Richardson & Suinn, 1972). This study will use a condensed form of the initial survey tool developed by Suinn and Winston (2003), the Mathematics Anxiety Rating Scale: Short Version (MARS-SV). The survey is a 30 item survey based on a 5-point Likert scale, where one signifies "not at all" and five signifies "very much."

The Teacher Beliefs Survey, Beswick (2005), is a survey tool that includes 26 items that will ask participants to describe their ideas regarding mathematics. Similar to the MARS-SV, the Teacher Beliefs Survey is a 5-point Likert scale, where one denotes “ Strongly Disagree,” and five denotes “ Strongly Agree.” The items included in the Teacher Beliefs Survey are sorted into two subparts: problem-solving and traditional views about the content of mathematics. The problem-solving and traditional beliefs about mathematics are two components of how Ernest (1989b) described the opinion of teachers related to mathematics. The mean results for the survey subscale averages will be used to determine the familiarization of the teacher towards problem-solving and traditional mathematical content outlooks for the design of this research. The teaching mathematics problem-solving view involves a student-centered approach to concrete learning mathematics.

The Self-Report Survey: Elementary Teachers Commitment to Mathematics Education Reform (Ross et al., 2003) will be the tool selected to evaluate elementary teachers ' educational methods. This survey tool will set out to measure the extent that elementary teachers include ideas related to the mathematics reform movement of concrete teaching within their instructional practice within the classroom. Ross et al. (2003) developed a structured overview of ideas centered around the National Council of Teaching Mathematics (NCTM) principles and numerous research studies. This overview included nine dimensions of mathematical reform-based instructional practices, including developing complex thinking, authentic learning experiences in the classroom, promoting interaction between students, and implementation of evaluation strategies within the classroom

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that were aligned and appropriate. The study includes 20 Likert items from “ Strongly Agree” to “ Strongly Disagree” with a 5-point scale. Seven of the items included within the survey were intentionally worded negatively to prevent any biased in the responses.

Data Analysis Plan

Methods for quantitative data analysis include descriptive statistics, correlation assessment, and analysis of multiple regression. Explaining the study questions will require the performance of correlation analyzes that will define important (or not) relationships between the constructs. Multiple regression will additionally be utilized to examine the connections between the factors taught in the research: anxiety in mathematics, mathematical views, gender, years of experience and grade level (as independent variables) and educational methods (as dependent variable). This structure can confirm a collection of independent variables defines an important level connection with the difference in a dependent variable and builds the comparative predictive significance of the autonomous factors (Creswell, 2003; Hoy, 2010). Multiple regression shares every associated conjecture such as relationship linearity, homoscedasticity, interval information, lack of outliers, and information whose range is not truncated (Tolmie, Muijs, & McAteer, 2011).

Acknowledgment of Possible Problems

In every research method chosen for a study have limitations and possible problems that need to be acknowledged during the data collection and

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analysis stages (Creswell, 2003). One possible problem to acknowledge during this study might include that the participants selected for the sampling are comprised of teachers in the same district system. Another limitation to consider might include the idea that participants might select answers in the survey that are theoretically appropriate rather than what is actually observed within the classroom, and the surveys will be taken online by each participant.

Since the participants are all from the same school district system, the results of the study might not be generalizable unless varying demographics are taken into account. The participants selected for the survey will also have the option to complete these tools at a voluntary level. Since this is truly a voluntary method, the non-random sort of choice of respondents may restrict representation to participants with a reduced level of mathematics anxiety and a greater degree of connection of convictions with reform-based mathematics methods. The study suggests that mathematically anxious basic educators tend to prevent mathematics (Hembree, 1990). This anxiety-based practice of avoiding mathematics could extend to any mathematical activity, including the selected survey instruments that ask them to define mathematical content-centered anxieties and beliefs.

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