

## Pre-Service Teachers' Views Toward Mathematics Anxiety

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### Abstract

This paper examines the views of pre-service teachers with regard to the dominated factors of mathematics anxiety. There were a total of 50 pre-service teachers consisting of; 25 pre-service elementary school teachers, and 25 pre-service secondary mathematics teachers involved in this study. Questionnaires are used as data collection tools to see what the participants think about the dominated factors of mathematics anxiety. The notion of “obstacles to teaching” is used as a framework to analyze the collected data. The analysis is carried out on the basis of three main categories to which teachers attribute views of mathematics anxiety; epistemological causes, psychological causes, and pedagogical causes. The data analysis reveals that pre-service teachers’ views toward mathematics anxiety tend to related factor, namely psychological causes.

**Keywords:** mathematics anxiety, pre-service teachers, teachers’ views

#### I. Introduction

##### a. Background

There is a directly proportional relationship between global competition and human resources. That is, the more complex and global competition will demand improvements in the quality of human resources as well. Emergence of technology and technological innovation as evidence that countries are competing globally. Of course, these innovations came from a good education. Look at the fact that all developed countries can thrive because they are very aware of the concern for quality education. Therefore, I think we all agree if placed education as determinants of the level of quality human resources.

Teachers and how teachers teach in mathematics began to receive special attention, especially the last two decades. Attitudes of teachers (Phlippou & Christou, 1998), beliefs (Stipek, Givvin, Salmon, & MacGyvers, 2001), the ability of the material (Lichevski & Vinner, 1998), knowledge of pedagogy (An, Kulm, & Wu, 2004) and knowledge of pedagogy technology (Niess et al., 2009) all of which are aspects of research in teacher education. Competence of these areas affect students in learning mathematics. Related to this research, proved empirically that

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the content knowledge, pedagogical, and their belief in mathematics has a strong influence on (Ball, Thames, & Phelps, 2008; Verschaffel, Greer, & Torbeyns, 2006; Askew, Brown, Rhodes, William, & Johnson, 1997; Lamb Brown, Askew, Lamb & Booker, 2004; McClain & Bowers, 2000).

Anxiety is often grown on prospective teachers and teachers in teaching mathematics. The anxiety that occurs in teachers and teacher candidates will have an effect on students, can even be contagious to student self. Belief Ohma (in Wahyudin 2010), anxiety is a psychological and physiological state characterized by the components of the somatic, emotional, and behavioral. These components combine to create an uneasy feeling that usually related with anxiety, worry, or fear. Anxiety is a generalized condition of feelings that can often arise in the absence of stimulus triggers were identified. Therefore, be distinguished from fear anxiety, which arises in the presence of threat observed. In addition, the fear associated with specific behaviors and avoidance of self-escape, while the anxiety caused by threats that are considered uncontrollable or unavoidable.

Anxiety reasonable man would not interfere with everyday life, and will encourage individual to be more careful in dealing with threatening situations (Bernstein, 1994). Freud (1954) looked at anxiety caused by situations that threaten to cause impotence in individual. Anxiety at a certain level can be considered as part of a normal response to cope with daily problems, but when anxiety developed into a highly redundant, then the anxiety will be included in the classification of anxiety disorders. Similar way, Whitehead (1985) looked at anxiety as an individual experience arising from dealing with conflict, tension, threat of failure, or a feeling of not safe. Shulman (1986) reveals the importance of teachers in dealing with students and that is why teachers are considered central would be an easy matter/difficult for student. Therefore, researchers interested in conducting research with the title "Pre-Service Teachers' Views Toward Mathematics Anxiety".

#### b. Formulation of The Problem

This study will look at and analyze the prospective teachers of mathematics anxiety. The invention will be guided by following the following questions as the formulation of research problems:

1. How do prospective teachers of mathematics anxiety?

2. How does the influence of psychological factors, epistemological, and pedagogical of prospective teachers of mathematics anxiety?
3. Which factors have the greatest influence on prospective teachers' mathematics anxiety?
4. How is the relationship between the dominant factor of prospective teachers of mathematics anxiety?
5. How is the relationship between the two dominant factors?
6. How is the relationship between the two dominant factors of prospective teachers' mathematics anxiety?

c. Goal of The Research

Based on the formulation of the problem the purpose of this study are:

1. To analyze the prospective teachers' mathematics anxiety.
2. To find the cause of the dominant factors of anxiety mathematically in a potential teacher.
3. To determine the relationship between the dominant factor to anxiety mathematical prospective teachers

d. Benefit of The Research

The result of this study is expected to benefit and input means for researchers and prospective teachers. Benefits and input include:

1. For Researchers  
To provide information about anxiety prospective teachers in teaching mathematics and factors that influence it.
2. For Prospective Teachers  
Giving insight and preventive measures to prospective teachers to teach with a maximum of knowing what factors are influencing anxiety in teaching.

II. Research Method

a. Design

The research method used in this study was mixed method research using exploratory, which aims to find a picture of anxiety prospective teachers in teaching mathematics and factors that influence it, followed by a statistical test to strengthen the research results. Use of these research methods because research is intended to describe

and analyze phenomena, events, social activities, attitudes, beliefs, perceptions, thoughts of people individually or in groups. Some descriptions are used to discover the principles and explanations that lead to the inference (Udin. Saud S., 2007: 85).

Data obtained in this study is the data in the form of descriptions, explanations of the time greeting or word of the subject or object of research, as a opinion Sugiyono (2007:98). "Data obtained by the method of qualitative data is descriptive data primarily in the form of greeting at the time of writing explanations or the object itself". This qualitative study uses qualitative research non-interactive or analytical research, this study examined data based on analysis of documents obtained directly or indirectly from the observations.

In this study conducted a qualitative study using case study research design, because this study focused on a phenomenon that is selected and want to be understood in depth, regardless of other phenomena. One phenomenon in the form of an overview of anxiety prospective teachers in teaching mathematics and factors that influence it.

#### b. Material/Subject of The Research

Research subjects in this study were 50 prospective teachers. Where 25 prospective teachers for secondary schools, namely University of Education student of mathematics education in Indonesia who have experienced teaching (PPL) and 25 prospective teachers for primary schools, namely University of Education Indonesia PGSD student who also has experience teaching (PPL).

#### c. Instrument

Instrument or data collection tool used in this study are:

##### 1. Questionnaire Mathematics Anxiety Rating Scale (MAS-R)

This questionnaire is used, to supplement data on an idea of the anxiety of teachers and prospective teachers in teaching mathematics.

This questionnaire using Likert scale (Sugiyono, 2010).

##### 2. Questionnaire

This questionnaire is used, to complete data on factors that influence the anxiety of teachers and prospective teachers in teaching mathematics.

This questionnaire consists of three components, namely the epistemological aspect, pedagogical aspects, and psychological aspects (Erhan Bingobali, et al, 2011),

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d. Data Analysis Technique

Analysis of the data used in this study is to use domain analysis, taxonomic analysis, and analysis of components, and continued with the Pearson correlation coefficient.

e. Related of The Research

According to Peker (2009) that the prospective primary school teachers have higher anxiety level than the prospective secondary school teachers. According to the level of anxiety from primary to secondary school level has decreased. This is due to the prospective elementary school teachers must teach by making concrete material in which they are consistent with the theory of cognition Piaget, where elementary school children still think concretely. And when at the University of prospective elementary school teachers are getting a lot of abstract mathematics materials. So conflicted. Unlike his case with prospective secondary school teachers, learning on campus with the material being taught in secondary schools is quite correlated. Or in other words for high school students toward abstract thinking halted so that the level of anxiety prospective secondary teachers at school is lower than the prospective elementary school teachers.

### III. Result and Discussion of The Research

#### a. Result

There is differences between pre-service teachers levels of anxiety elementary and secondary school teachers. Level of anxiety pre-service secondary teachers is quite low. But the dominant factors related to anxiety is psychology, the correlation between them is 0,551. And the second factors related to mathematics anxiety is paedagogis 0,1723. And The correlation between two dominant factors is 0,376. Its the biggest correlation among others. Level of anxiety pre-service elementary school teachers is quite high. And the dominant factors related to mathematics anxiety is psychology and paedagogics.

#### b. Discussion

According to the result, we can conclude that level of anxiety pre service elementary school teachers is higher than pre-service secondary teachers. It may be caused of secondary school teachers focused on studying mathematic and

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application but elementary school teachers not only study mathematica but the lesson in elementary school.

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