Faculty of Cognitive Sciences and Human Development

CAUSES OF MATHEMATICS ANXIETY AMONG SECONDARY SCHOOL STUDENTS

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Bachelor of Education (Honours) Mathematics 2009
Statement of Originality

The work described in this Final Year Project, entitled “Causes of Mathematics Anxiety Among Secondary School Students” is to the best of the author’s knowledge that of the author except where due reference is made.

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CAUSES OF MATHEMATICS ANXIETY AMONG SECONDARY SCHOOL STUDENTS

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This research investigated the causes of mathematics anxiety among secondary school students. It also determined the differences in student’s mathematics anxiety based on gender. One hundred and seventeen secondary school students from Form 2 and 4 students from four different schools around Kuching districts were the sample for this study. The questionnaire was used to investigate the causes of mathematics anxiety among students. Pearson-product moment correlations were used to measure the relationships between the student’s mathematics anxiety and the grade or subject level at which the anxiety started, student’s mathematics anxiety and student’s perceptions of the value that society places on mathematics and mathematics anxiety and the perceived usefulness of certain teaching method in the alleviation of or in the contribution to mathematics anxiety. While independent t-test was used to determine differences in student’s mathematics anxiety based on gender. The results showed the correlation between student’s mathematics anxiety and student’s perceptions of the value that society placed on mathematics. The results of this study had also indicated possible correlation between student’s mathematics anxiety and teaching method. Furthermore, it was found that there were no differences in student’s mathematics anxiety based on gender. This study also showed that a teacher had the greatest influence on student’s mathematics anxiety. Lastly, the results showed that there was a correlation between student’s perceived mathematics anxiety level and MARS mathematics anxiety rating scale. In relation to grade level at which mathematics anxiety started, student’s mathematics anxiety was found to be not correlated.
ABSTRAK

PUNCA KEBIMBANGAN TERHADAP MATEMATIK DIKALANGAN PELAJAR SEKOLAH MENENGAH

Siti Royhanah Binti Khalid

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CAUSES OF MATHEMATICS ANXIETY AMONG SECONDARY SCHOOL STUDENTS

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This project is submitted in partial fulfilment of the requirements for the degree of Bachelor of Education (Mathematics) with Honours

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This project entitled “Causes of mathematics anxiety among secondary school students” was prepared by Siti Royhanah Khalid and submitted to the Faculty of Cognitive Sciences and Human Development in partial fulfilment of the requirements for a Bachelor of Education (Mathematics) with Honours.
CHAPTER ONE
INTRODUCTION

1.0 Introduction

The main aim for this study was to find the causes that could trigger mathematics anxiety in students. This chapter discusses background of the study, statement of the problem, research objectives, research hypotheses and research framework of the study. The chapter also presents the significance of the study, limitation of the study and definition of important terms used in the study.
1.1 Background of the study

Mathematics is an important school subject because it is associated with future academic and/or career opportunities. Agwagah and Usman (2003) relates the importance of mathematics to the scientific, industrial, technology and social progress of a society. It is a science that studies numbers, shapes, objects and their properties which are needed as basic requirement for all sciences (Akinsola, Tella, & Tella, 2007).

However, many school students have trouble learning mathematics. Some are visual learners and find it difficult to grasp mathematics concepts when they are presented verbally or numerically. Others have limited proficiency in English and do not understand the new words and phrases that describe a mathematics idea (Piotrowski, Bagui & Hemasinha, 1998).

Despite its importance, in daily life and for career and academic choices, mathematics is often viewed as a difficult subject. Such perception is in part, due to the nature of mathematics. However, it also has to do with preconceived notions about mathematics and the anxiety individuals have for mathematics. A remarkable body of research has been accumulated on mathematics anxiety since the 1960s (Sahin, 2008).

The origins of negative beliefs and anxiety about mathematics can be classified into three categories which are environmental, intellectual, and personality factors (Trujillo & Hadfield, 1999). Environmental factors include negative experiences in the classroom, parental pressure, insensitive teachers, mathematics being taught in a traditional manner as rigid sets of rules and non-participatory classrooms (Trujillo & Hadfield, 1999). Intellectual factors include being taught with mismatched learning styles, student attitude and lack of persistence, self-doubt, lack
of confidence in mathematical ability and lack of perceived usefulness of mathematics (Trujillo & Hadfield, 1999). Personality factors include unwillingness to ask questions due to shyness, low self-esteem and for females viewing mathematics as a male domain (Trujillo & Hadfield, 1999; Levine, 1996).

From this it can then be seen that the origins of negative beliefs and anxiety about mathematics are as diverse as are the individuals experiencing mathematics anxiety. For some people mathematics anxiety is related to poor teaching, or humiliation and or belittlement whilst others may have learnt mathematics anxiety from the mathematics anxious teachers, parents, siblings or peers, or who may link their anxiety to numbers or only to some operations (Uusimaki & Nason, 2004). Research studies have found that mathematics anxiety surfaces most dramatically when the subject either is or is perceived to be under evaluation (Tooke & Lindstrom, 1998).

Cornell (1999) listed a number of pedagogical practices that contributed to this phenomenon. These included the assumption on the part of many mathematics teachers that mathematical processes and procedures were inherently simple and self-explanatory, the use of the unique vocabulary of mathematics without sufficient explanation of the meaning of the terminology being used, an overuse of ‘skill and drill’ exercises which contributed to frustration and anxiety, the sequential nature of mathematics instruction which made keeping pace with instruction difficult if a student did not immediately grasp the procedures or concepts being taught at a specific point in time, an overemphasis on rote memory and the fact that mathematics tended to be taught in isolation, with little connection to the ‘real world’ (Brady & Bowd, 2005).

Stevenson and Stigler (1992, cited in Morgan, 2003) contend that while teachers are not solely responsible for student’s self-perceptions, society tends to