THE THINKING PROCESSES OF MATHEMATICS PROBLEM SOLVING OF FORM FOUR SECONDARY SCHOOL STUDENTS

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Head

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Dear Associate Professor,

FINAL RESEARCH REPORT "THE THINKING PROCESSES OF MATHEMATICS PROBLEM SOLVING OF FORM FOUR SECONDARY SCHOOL STUDENTS"

With reference to the above matter, enclosed herewith are three (3) copies of the final research report entitled "The Thinking Processes Of Mathematics Problem Solving of Form Four Secondary School Students" by the research team from UiTM Kampus Samarahan for your action.

Thank you.

Yours sincerely,

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Leader

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ABSTRACT

This report presents the findings of a research project, which examined the ability of Form Four students solving mathematics problems of different levels of difficulty proposed by Polya (1981), the problem solving skills employed by Form Four students and the metacognitive decisions of Form Four students while solving mathematics problems.

The research consisted of two parts. Part I was predominantly quantitative and Part II was qualitative. 137 mathematics teachers and 412 Form Four students from the Sri Aman Division for the year 2002 participated in Part I of this research. On top of answering mathematics problems from the four levels of difficulty prepared by the researchers, the students had to complete three sets of questionnaires. The participating teachers needed to complete one set of questionnaire. Part II of this research involved 18 Form Four students identified by the researchers. The answering sessions of these students were video taped separately. Interviews with the students were conducted and audio taped. The data collected was analyzed to answer the objectives of this research.

The data was analyzed using SPSS version 11.0. Statistical methods such as frequency, percentage, mean, inferential tests, correlation, factor analysis and regression analysis were used to narrate the findings for the first two objectives. Scheonfeld's (1983) episode-parsing framework was adapted to identify executive decisions for the third objective.

CHAPTER 1

INTRODUCTION

1.0 Introduction

Why do people do mathematics? It is paradoxical in that it is both a means to achieve goals and an activity in its own right. In 'developed' countries, almost everybody knows that it is an important body of language. There are a great number of professions such as engineering, medicine, accountancy and so on that cannot be exercised without some knowledge of mathematics. But there are some who still consider mathematicians to be custodians of a fund of formulas and the work of mathematicians as limited to passing on the legacy of past centuries. Others believe that

> *'Mathematics is a subject reserved for the elite, who should study symbolic aspects of number and space, preferably from a textbook in order to later serve the needs of industry and technology.' (Dengate & Lerman, 1995, p. 28)*

What should schools offer to their students? Cockroft (1982) points out that mathematics consists of three important elements. These are: facts and skills, conceptual structures, and general strategies and appreciation. Teaching mathematics must bring about a balance in learning among the three elements. Since the 1990s, there have been at least five common elements in the goals of mathematics education of many countries such as United States, New Zealand and Malaysia, these are: