

UNIVERSITI TEKNOLOGI MARA

**AN ANALYSIS OF SECONDARY
SCHOOL STUDENTS' LEARNING
OF ALGEBRA**

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Research Project submitted in partial fulfillment
of the requirements for the degree of
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AUTHOR'S DECLARATION

I declare that the work in this dissertation was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This dissertation has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

The purpose of this study is to examine the relationship between the understanding of algebra and the attitude in learning algebra among secondary school students. Specifically, this study is aimed to (1) determine the students' achievements of mean scores in the algebraic test, (2) determine the students' attitude towards learning algebra, (3) investigate the correlation among the different algebraic concepts (fractions and decimals, proportions and ratios, simultaneous equations, graph, algebra skill) as tested in the algebraic test, (4) investigate the relationship between the students' attitude towards learning algebra and their scores in the algebraic test, and (5) investigate strategies used by students in solving algebraic questions. The research design employed in this study is descriptive-correlational. There were two instruments used in this study, namely (1) algebraic test and (2) attitude questionnaire. In this study, qualitative analysis based on the existing data is utilised in order to analyse Form 3 and Form 4 students' strategies in answering algebraic questions. The methods used in selecting the students were based on two stages of cluster sampling. In the first stage, schools in a district of Perak State were categorised as clusters. They were randomly selected. A total of 13 secondary schools were selected. As for the second stage, 306 upper secondary school students were randomly chosen from the 13 schools. The quantitative analysis indicated that (1) The students have high level of understanding for the algebraic test (2) The students have high level of attitude towards learning algebra (3) There is a significant relationship between concept of simultaneous equation and concept of algebra skill as tested in algebraic test (4) There is a significant low positive relationship between students' attitude towards learning algebra and their scores in algebraic test; and (5) The students have applied deductive reasoning in their strategies to solve the algebraic questions that they could relate to the strategies based on their prior knowledge in mathematics. The findings also revealed students are indeed, in need of knowledge in fundamental mathematical concepts. Basically, the lack of students' understanding in algebra has caused the low standard of performance among Malaysian secondary students in algebra and the lack of improvement over the past years. Nevertheless, the Form 4 students have showed alternative solutions for a few difficult questions in this study. This study suggests that the students should be given autonomy in learning which they could practise in order to promote the growth of their self-efficacy and eventually their own attitude towards learning algebra. There is also a need to boost the mastery of algebra skills among students in class in order to produce better mathematical achievers in the education system.

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