

**THE EFFECT OF FORM ONE STUDENTS OF S.M.K. MUARA TUANG ENGLISH
LANGUAGE ABILITIES ON THEIR ACHIEVEMENT IN MATHEMATICS**

By

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Abstract

The Effect of Form One Students of S.M.K.Muara Tuang English Language Abilities on Their Achievement in Mathematics

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This research aims to investigate the relationship between Form One students' English language abilities on their achievement in Mathematics. It also aims to investigate the students' and teachers' opinions on the effect of students' English language abilities on their achievement in Mathematics.

The respondents involved in the research were fifty-six Form One students and three Form One Mathematics teachers of Sekolah Menengah Kebangsaan Muara Tuang, Kota Samarahan, Sarawak.

Achievement tests, questionnaires and semi-structured interviews were used to obtain data from the respondents involved.

The findings revealed that there was a positive correlation between students' English language ability and their achievement in Mathematics. Students with high English language proficiency obtained excellent achievement in Mathematics, students with intermediate English language proficiency obtained fair achievement in Mathematics and students with low English language proficiency obtained weak or very weak achievement in Mathematics. Furthermore, the students and teachers perceived that there was an effect of students' English language abilities on their achievement in Mathematics.

Abstrak

Kesan Kemahiran Bahasa Inggeris Pelajar-Pelajar Tingkatan Satu S.M.K.

Muara Tuang ke atas Pencapaian Matematik Mereka

Fairunizah bt Akbar Malik

Kajian ini bertujuan untuk menyiasat perkaitan di antara kemahiran bahasa Inggeris pelajar-pelajar Tingkatan Satu ke atas pencapaian mereka di dalam matapelajaran Matematik. Penyelidikan ini juga bertujuan untuk mengetahui pendapat pelajar-pelajar dan guru-guru mengenai kesan kemahiran bahasa Inggeris pelajar-pelajar ke atas pencapaian Matematik mereka.

Responden-responden yang terlibat di dalam kajian ini ialah lima puluh enam pelajar Tingkatan Satu dan tiga orang guru Matematik Tingkatan Satu dari Sekolah Menengah Kebangsaan Muara Tuang, Kota Samarahan, Sarawak.

Tiga jenis pengkaedahan telah digunakan untuk memperolehi data ke atas responden iaitu ujian pencapaian, borang soal-selidik dan juga temuduga.

Dapatan kajian telah menunjukkan bahawa terdapat korrelasi positif di antara kemahiran bahasa Inggeris pelajar-pelajar ke atas pencapaian Matematik mereka. Pelajar-pelajar yang mempunyai kemahiran bahasa Inggeris yang tinggi memperolehi pencapaian yang cemerlang di dalam Matematik, pelajar-pelajar yang mempunyai kemahiran bahasa Inggeris yang sederhana memperolehi pencapaian yang memuaskan di dalam Matematik dan pelajar-pelajar yang mempunyai kemahiran bahasa Inggeris yang lemah memperolehi pencapaian yang lemah atau sangat lemah di dalam Matematik. Selain dari itu, pelajar-pelajar dan guru-guru berpendapat bahawa kemahiran bahasa Inggeris pelajar-pelajar mempunyai kesan terhadap pencapaian Matematik mereka.

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LIST OF ABBREVIATIONS

CALP	Cognitive Academic Language Proficiency
EPRD	Educational Planning and Research Division
LEP	Limited English Proficiency
NEAT	National Elementary Achievement Test
NSAT	National Secondary Achievement Test
SMK	Sekolah Menengah Kebangsaan
UPSR	Ujian Pencapaian Sekolah Rendah

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the study

The aspiration to make Malaysia a leading industrial nation in the future to a great extent depends on the ability of its education system to develop the capability in Mathematics, Science and technology among its younger citizens and undoubtedly English is the medium for Malaysians to keep in touch with the vast development in the areas mentioned above. (Dato' Seri Dr. Mahathir Mohamad, Utusan Malaysia, June 15,2002.) According to statistics from the Dewan Bahasa dan Pustaka (2000), over the past thirty years, only eight hundred to a thousand academic and professional books were published in Bahasa Melayu. Moreover, from the year 1970 to 1989, there were only four hundred and sixty two books published on the subject of humanistic and social sciences and two hundred and eighty books on Science, Mathematics and technology. Even more disappointing, nearly sixty percent of these books are no longer available now in the market.

Currently, with the rapid development of technology those who need immediate references to the Science, Mathematics and technology fields would look for other alternatives by referring to academic books and other references available in English including websites on the Internet. Therefore, students with better English language proficiency will be able to access information from these various sources.

Since the English language is an important medium of communication in Science, technology, international trade and commerce (Sukatan Pelajaran Sekolah Menengah-

Bahasa Inggeris, 1988: pg.1), the Malaysian government has decided to teach Mathematics and Science subjects in English. The objectives of this change in the language policy from Bahasa Malaysia to English as medium of instruction in teaching of Mathematics and Science to English is to provide students with the opportunity to improve on their mastery of the language in the fields in order to gain knowledge

Therefore, the decision to teach Mathematics and Science in English by the Malaysian cabinet starting January 2003 is seen as an encouraging first step by the government to promote academic and professional excellence in Mathematics, Science and Technology. In view of this, students in primary one, secondary one and lower six will not just learn English as a subject but also used it as a medium in learning Mathematics and Science.

Furthermore, the teaching and learning of Mathematics and Science in English will provide the students with skills enabling them to obtain information from various sources concerning Science and Mathematics that would be beneficial to them. Students with the advantage in English may be able to demonstrate their understanding, exchange or share ideas and help them to succeed in Mathematics and Science.

With regard to this, this research will investigate whether there is a relationship between students' achievement in Mathematics and their language ability as second language learners of English after ten months of instruction in English. Moreover, this research will also

analyse students' and teachers' opinions on the effect of English language ability on the students' achievement in Mathematics.

1.1.1 Bilingual Education And Its Development In Malaysia

Bilingual education in Malaysia has a long historical perspective. Ozog (1993) stated that after the Japanese occupation in 1945, the British introduced some form of bilingual education. This situation resulted in the commissioned of reports in the education system. The Barnes Report suggested bilingual education in English and Malay while the Fenn Wu Report recommended the use of students' mother tongue in primary education and English in their secondary education.

On the other hand, the use of language as a means for national unity was later addressed in the Razak Report in 1956. The report promoted the Malay language as medium of instruction in primary schools. However, the use of Chinese and Tamil were allowed in the National-Type schools while English was to be used as medium in secondary schools (Ongkili, 1985 as quoted in Ozog, 1993).

After the racial riot in 1969, the government made Bahasa Malaysia the only medium of instruction in schools and English remained only as one of the subjects taught in schools. Therefore, the education system in Malaysia had shifted to being monolingual in terms of medium of instruction.

However, the change in status of English in the schools system did not suggest the end of bilingualism in Malaysia. After thirty years, the Malaysian government realises the importance to enhance the proficiency of English especially in the education system. Rafie Mahat (2002), stressed that there is a need for Malaysians to be proficient and achieve a high level of competency in the English language. He also stated that mastery of English among its citizens is important to enable Malaysia to become a more competitive nation in the future and thus, leading to the decision to introduce bilingual education at the beginning of 2003. However, this decision received some resistance from certain parties.

The Chairman Of Gabungan Majlis Guru Besar Malaysia, Sanip Sunardi (2002) as quoted by Salina Ibrahim (2002) urged the government to view this matter seriously as the drastic transition from Bahasa Malaysia to English will caused the lack of interest among students especially the Malays in learning Mathematics and Science. He stated that students who were weak in both of the subjects would have difficulties in understanding the content as they were not proficient in English.

The president of Sarawak Teachers' Union, William Ghani Bina (2002) as quoted by Salina Ibrahim (2002) stressed that the government should take into consideration the practicality of implementing the teaching of Mathematics and Science in English. He stated that most of the schools in Sarawak were located in the rural areas and lack of trained teachers in these fields.

The secretary of the Chinese School Teachers' Association (Jiong Zhong), Tan Poh Boo (2002) believed that:

“Based on the report by the Education Ministry, the Chinese schools performances for the Science and Mathematics subjects are between eighty (80) to ninety (90) percent every year and meanwhile the percentage for English language is around sixty (60) percent. Therefore, if it is changed to another language, we are afraid that there will be a drastic decrease in the students' performances.”

(cited in Zulkifli Jalil et.al, July 30, 2002, Utusan Malaysia)

Therefore, the change from Bahasa Malaysia to English as medium of instruction in teaching Mathematics and Science was seen as a drastic decision. With regards to the situation, this study will investigate the effect of students' English language ability on their achievement in Mathematics due to the language transition. However, this study will only be focusing on students' achievement in Mathematics.

1.2 Statement of Problem

Over the past thirty years, Bahasa Melayu has been used as the medium of instruction for subjects such as Mathematics in Malaysian schools. Students from primary one to Form Six learn these subjects in Bahasa Melayu. However, the implementation of teaching and learning of Mathematics in English by the government in January 2003, could initiate problems pertaining students achievements in Mathematics (Shaharir Mohamad Zain, 2002). Even when it was taught in Bahasa Malaysia, students' achievements in Mathematics are still at the low level (Sharifah Maimunah Syed Zain, 2002).

1.3 Research Objectives

The objectives of this research is to investigate:

- i) The relationship between the students' English language ability and their achievements in Mathematics.
- ii) Whether the students perceive that their English language ability has any effect on their achievement in Mathematics.
- iii) Whether the teachers perceive that the students' English language ability has any effect on their achievement in Mathematics.

1.4 Research Hypothesis

The hypothesis is that there is a relationship between students' English language ability and their achievement in Mathematics.

1.5 Research Questions

- i) Is there a relationship between the students' English language abilities and their achievement in Mathematics?
- ii) Do the students perceive that their English language ability have an effect on their achievement in Mathematics?
- iii) Do the teachers of Mathematics perceive that students' English language ability have an effect on their achievement in Mathematics?

1.6 Significance of the research

This research will help teachers to monitor students' progress and plan remedial programs for weaker students to improve on their achievement in Mathematics. Moreover, this research will help to create awareness for teachers who teach low English proficiency students on the use of simplified language as the medium of instructions for Mathematics. This will allow students the opportunity to cope with both the instruction and subject content.

1.7 Limitations of the research

The research has some limitations as it will only focus on students' language ability and will not be focusing on other variables such as students' interest in the subject, differences in gender, races, motivation, learning strategies and also types of schools (urban or rural).

Moreover, this research will be conducted in a specified school on specific group of form one students. Therefore, the data and outcome of the research cannot be generalized to all form one students in Sarawak or any other parts of Malaysia.

1.8 Definition of Terms

Language ability. Language ability refers to language proficiency in (English) as opposed to academic achievement. (Bachman, L. F., 1997, UCLA). For the purpose of this study, language ability refers to the knowledge of functions, register, formal code and the capability to apply this knowledge in the usage of the language in learning the content of form one Mathematics syllabus.

Achievement. Achievement is accomplishment in specific content area. In the research, achievement refers to form one students' performance in the content area of form one Mathematics subject taught in English.

Teaching and learning. According to Woolfolk (2001) learning is a process through which experience causes permanent change in knowledge or behaviour and teaching means giving systematic instructions for mastery of basic skills, facts, and information. In the research, teaching and learning refers to the process of obtaining knowledge and information through systematic instructions in English for the Mathematics subject.

Mathematics is one of the subjects in the Malaysian lower secondary academic curriculum which is taught and learn in English in secondary schools in Malaysia beginning of the year 2003 education system. It comprises modern Mathematics.

CHAPTER TWO

2.0 REVIEW OF LITERATURE

2.1 Introduction

This chapter begins with the concept of bilingualism in education and its effect on the language proficiency in the learning of Mathematics. This is followed by an overview of the research that has been carried out pertaining to the teaching and learning of Mathematics in English.

2.2 Theory Of Bilingual Education

The theory of bilingual education deals with the theoretical considerations to clarify bilingualism in education. “Bilingualism refers to the ability to communicate in two languages or the ability to communicate in two languages but with the possibility of greater skills in one language” (Rampton, 1990:27).

In bilingual education Cummins (1982), speaks of the language for academic success as Cognitive Academic Language Proficiency (CALP). This type of proficiency is associated with cognitive skills and understanding of knowledge and being conveyed from the students’ first language to second language. Bilingual students would be able to apply the knowledge of their first language into their learning of the second language (Baetens, 1993). This can be seen as an advantage for bilingual students compared to monolingual students.

Moreover, Cummins & Swain (1986), stated that bilingual education promote the academic achievement of students with Limited English Proficiency (LEP) in which these students will be

able to develop both academic and language skills. Furthermore, Swain (1987:61) also stated “bilingual education leads to enhanced cognitive development, high level achievement in content learning, high levels proficiency in second language skills...” This statement suggested that bilingual students were able to perform well in their studies.

In addition, bilingual education provides students with knowledge and literacy. The knowledge that students gain in their first language helps them make the second language they hear and read more comprehensible while literacy developed in the primary language transfer to the second language (Krashen ,1996 as quoted in Hussong & Ryan, 2002). This situation, according to Hussong & Ryan (2002), enables students to keep hold of the content of subject matter that they have learnt in their first language and allow them to understand the information obtained of the same content in the second language.

Furthermore, Steeves and Tomey (1998) explains that there are three kinds of language proficiency, which allow learner to fully integrate knowledge in learning. First, is the individual’s own language. Second, is the language of the instructor, or standard variety and in this situation is English and third is the language of the subject matter for example in Mathematics such as the use of signs, symbols and terms to express understanding of mathematical ideas. These three types of language proficiency are important in learning to help learners to progress in their cognitive developmental process. In learning Mathematics, these stages of cognitive development are essential as the Mathematical concepts introduced move from concrete to abstract (Steeves & Tomey, 1998). For these reason, the development of both language and content of the subject matter is important in learning.

2.2.1 Bilingual Policy In Education: Case Studies

Most Asian countries such as Indonesia and China have a national language that serves as a medium of instruction while English is taught as a school subject. However, English has an important role in education, Science, Mathematics, international trade and commerce, politics and also is the main language used in technology (Ng Seok Moi, 2000). Most of the Asian countries, including Taiwan and Indonesia are exploring possibilities to introduce English at an earlier stage in their education system.

The education systems in Asia such as in Singapore, Brunei and the Philippines are among the nations that have implemented bilingual policy in their education system. In Singapore, English has been taught nationally as medium of instruction since 1987 and in Brunei, the Philippines and India, it is a language of instruction in some subject areas (Pakir,1993).

In the Philippines, according to Gonzalez (1998), bilingual education of the Filipino language and English has been accepted and findings indicated that there was no relationship between years of implementation and student's achievement.

In Brunei, the bilingual system of education was first introduced in 1985. One of the main aims of this system is to enable the young generation to achieve a high degree of proficiency in both the Malay and English languages. After eighteen years of implementation, it has allowed Bruneians to gain quick and easy access to information on developments in science and technology, gain access to the fields of communication and mass media, expand area of international diplomacy and

opportunities for commerce and future development of Brunei Darussalam (as cited in Awang Matain Bakar, 1994).

In Malaysia, English has been the second language for many years and only recently that the government announced its decision to use English in the teaching and learning of Mathematics and Science. The rationale is to provide opportunity for students to enhance their mastery of scientific English.

2.3 The Effect Of Language Proficiency In Learning Mathematics

According to Derewianka (1990), language is important in a learning process and through language people are able to communicate and understand each other. According to Bachman (1997), language proficiency is the knowledge of functions, content register and formal code with the capability to apply the knowledge of language use in a subject matter.

In Malaysia, the teaching and learning of mathematics in English had raised some issues pertaining students' language proficiency in learning the subject. The proposal by the Educational Ministry on the implementation of teaching and learning of Mathematics and Science in English highlighted that among the problems that students will face include their language proficiency in understanding difficult concepts for it will affect their achievement in these subjects (as cited in anon., 2003).

In addition, according to Secada & Carey (1990:5), “in classes of mixed language proficiency levels, the academic engagement of all students is particularly problematic.” The consideration of students with Limited English Proficiency (LEP) is important as teachers of LEP students may find their students struggling with new vocabulary in the learning of Mathematics. In this situation, such practice is potentially distressing, in conditions of both Mathematics learning and language development.

Furthermore, Christian (2001:601), described that, “the acquisition of literacy competence as well as subject matter learning is a critical factor in academic success and these processes need to be better understood when second language is occurring at the same time.”

Moreover, according to Allen (1988), language proficiency also permits learner to comprehend the knowledge and concepts taught. Based on this notion, students’ language proficiency is essential in learning of Mathematics. According to Chiam Heng Keng (2002), “A more effective means (to increase students’ proficiency in English) is for students to use English as a tool for learning.”

Allen (1988) stated that language is the key to the learning of Mathematics. Furthermore, he also mentioned that in learning of Mathematics, students will need to do problem solving and this type of mathematical problem involves reading and understanding of the questions to enable correct interpretation. Besides that, Allen also explained that students’ understanding of the language is an important factor in learning Mathematics. Here, language is essential in learning and should be