TEACHERS’ PERCEPTION IN TEACHING MATHEMATICS AND SCIENCE IN BAHASA MELAYU

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A project report submitted in partial fulfilment of the requirements for the award of the degree of Master of Education (Curriculum and Instruction)

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Dedication

To my beloved husband Brett,
My lovely children Selena Frederica and Adrian Frederic,
Family members and friends
ACKNOWLEDGEMENT

All praise and glory to God, with His grace and mercy I am able to complete this master project. I thank God for His blessing and favour.

At the same time this piece of work would not become possible without the contributions from many people and organizations. I would like to acknowledge each and every person who has contributed their effort in this study by whatever means directly or indirectly. Firstly, I would like to acknowledge my supervisor, Prof Dr. Zaitun Binti Sidin for her kind assistance and advice, beneficial criticisms and observations throughout this master project.

A special thank goes to my beloved husband Brett Chandra, my lovely children Selena and Adrian for loving and supporting me. Not to forget, my appreciation goes to my mother, mother in-law, my sibling and other family member for their prayer, support as well as encouragement which is the greatest motivation for me to successfully finish the project.

I would also like to thank the respondents of this study that help me by filling up the questionnaire, special thanks to all of you. Your kind and generous help will always be in my mind. For the rest of the persons who I didn’t mention here, who have participated in various ways to ensure my research succeeded, thank you to all of you.
The aim of this research is to investigate teachers’ perception on teaching Mathematics and Science in Bahasa Melayu after having teaching both these subjects in English for eight (8) years in zone Skudai. 65 Mathematics and Science teachers in six different schools in the area of Skudai were selected as respondents of this research. The objectives of this study have been narrowed down to investigate the three aspects, namely, perceptions of the teachers using Bahasa Melayu as the medium of instruction, problems encountered by teachers in using Bahasa Melayu to teach Mathematics and Science as well as teachers’ perception about the change in policy to teach Mathematics and Science in Bahasa Melayu. The data were obtained by using a set of questionnaire of 33 items, divided into two parts. The data from the questionnaires were analyzed into percentages, means, frequencies and ANOVA. The findings of this study revealed that the Mathematics and Science teachers showed moderate perception towards the teaching of these subjects in Bahasa Melayu with the mean value obtained is 3.45. Even though they are confident to teach in Bahasa Melayu, nevertheless they also have problems when using Bahasa Melayu as medium of instruction for teaching Mathematics and Science whereas the mean value obtained is 3.34. However, the highest mean value is obtained on teachers’ perception about the change in the policy that is 3.65. Overall mean value revealed teachers’ perception in this study is moderate.
Kajian ini bertujuan untuk mengkaji persepsi guru-guru terhadap pengajaran Matematik dan Sains dalam Bahasa Melayu selepas lapan tahun mengajar kedua-dua matapelajaran dalam bahasa Inggeris di zon Skudai. Seramai 65 orang guru-guru Matematik dan Sains dari enam buah sekolah di zon Skudai telah dipilih sebagai responden kajian ini. Objektif kajian ini telah dikhususkan untuk mengkaji tiga aspek iaitu persepsi guru-guru menggunakan Bahasa Melayu sebagai bahasa penghantar, masalah yang dihadapi oleh guru-guru dalam menggunakan Bahasa Melayu untuk mengajar Matematik dan Sains dan persepsi guru-guru mengenai perubahan dalam polisi untuk mengajar Matematik dan Sains di dalam Bahasa Melayu. Data telah dikumpulkan dengan menggunakan satu set soal selidik yang mengandungi 33 item dan dibahagikan kepada dua bahagian. Data yang dikumpulkan kemudiannya dianalisis ke dalam bentuk peratusan, min, frekuensi dan ANOVA. Kajian ini mendapati responden menunjukkan persepsi yang sederhana terhadap pengajaran Matematik dan Sains dalam Bahasa Melayu dimana nilai min adalah 3.45. Walaupun mereka mempunyai keyakinan untuk mengajar dalam Bahasa Melayu, namun mereka juga menghadapi masalah dalam penggunaan Bahasa Melayu sebagai bahasa penghantar dengan nilai min yang di perolehi adalah 3.34. Walaubagaimanapun, min tertinggi diperolehi dalam persepsi guru-guru mengenai perubahan dalam polisi untuk mengajar Matematik dan Sains di dalam Bahasa Melayu adalah 3.65. Min keseluruhan menunjukkan persepsi guru-guru dalam kajian ini adalah sederhana.
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LIST OF ABBREVIATIONS

BISP Bayaran Insentif Subjek Pendidikan
CALP Cognitive academic language proficiency
ELTC English Language Training Centre English Language Training Centre
ERPD Educational Planning & Research Division
ETeMS English for the Teaching of Mathematics and Science
IT Information Technology
KBSM Kurikulum Bersepadu Sekolah Menengah
KBSR Kurikulum Bersepadu Sekolah Rendah
LCD Light
MBMIMBI Strategi Memartabatkan Bahasa Melayu, dan Strategi Memantapkan Penguasaan Bahasa Inggeris
MOE Ministry of Education
PAGE Parent Action Group for Education Malaysia
PMR Penilaian Menengah Rendah
PPD District Education Department
PPSMI Pengajaran dan Pembelajaran Sains dan Matematik dalam Bahasa Inggeris
SPM Sijil Menengah Malaysia
SPSS Statistical Package for Social Science
TED Teaching Education Division
TIMSS Trends in International Mathematics and Science Study
UPSR Ujian Penilaian Sekolah Rendah
UTM Universiti Teknologi Malaysia
CHAPTER ONE

INTRODUCTION

1.0 Introduction

The Ministry of Education, Malaysia implemented a policy to teach Mathematics and Science in English effectively in 2003 for both levels of schooling, primary and secondary national schools. This policy is known as ‘Pengajaran dan Pembelajaran Sains dan Matematik dalam Bahasa Inggeris’ (PPSMI).

According to Ambigapathy Pandian & Revathi Ramiah (2003), the purpose of introducing English as the medium of teaching Mathematics and Science in national schools is to ensure that Malaysians are able to keep abreast with scientific and technological developments that are mostly recorded in the English language. At
the same time, this move is envisaged to provide opportunities for students to use the English Language and thereby increase their proficiency in the language (Ministry of Education, 2002). However, after implementing the teaching of Mathematics and Science in English for eight years, the government announced that the teaching of both these subjects will revert to Bahasa Melayu due to the poor results of the students. Deputy Prime Ministry of Malaysia, Tan Sri Muhyiddin Yasin said that in 2008 only 82.5 percent students scored grade A, B, and C for subject Science in Ujian Penilaian Sekolah Rendah (UPSR) compared to 85.1 percent in 2007. He added that the change will take effects from year 2012 onwards (www.pmo.gov.my).

This revision of policy has produced many reactions among different group in society. An important group which directly feels the impact of the change in policy is teachers. As such, this study is conducted to obtain information and feedbacks from the secondary Mathematics and Science teachers. This study will investigate their perceptions of the change in policy and the problems they may face in using Bahasa Melayu as the medium of instruction for teaching Mathematics and Science after all these years of training and courses they had gone through in order to teach in English.
1.1 Background of The Study

Teaching of Mathematics and Science in English (PPSMI), is a policy which changes the medium of instruction for these two subjects from Bahasa Melayu to English. The PPSMI was the outcome of a decision of the Malaysian government policy done by the Special Meeting of the Municipal of Ministry (Mesyuarat Khas Jemaah Menteri) on 19 July 2002. The implementation of PPSMI in national schools was done in stages, beginning in the year 2003 school session, and the pioneers of this program were all Primary One, Form One as well Form Six students. PPSMI was fully implemented at all levels of schooling by the year 2007.

The rational for the change in the medium of instruction from the Bahasa Melayu to English Language for teaching Science and Mathematics was because of the government’s concern regarding manpower development. This is to achieve the developed country status or to realize Vision 2020. Based on this concern, the young generation need to be equipped from early stages of schooling with skills to compete in the era of globalization. Globalization is era without boundary in economic world (Mohd. Sahandri Gani Hamzah & Saifuddin Kumar Abdullah, 2009). It was believed that mastery of English is regarded as an important mechanism for direct acquisition of knowledge in the field of science and technology (Ainan, 2003). Shahrir (2006) pointed out that with the implementation of teaching Mathematics and Science subjects in English the Ministry of Education (MOE) in Malaysia foresees that students will have a better edge in job markets, and be better prepared to meet the challenges of globalization (Shahrir Pawanchik, 2006).
To facilitate the change in the medium of instruction, the English Language Training Centre (ELTC) was given the responsibility for developing and conducting an English Language enhancement program known as English for the Teaching of Mathematics and Science (ETeMS). ETeMS is a program of training provided for teachers to develop linguistic skills necessary for teaching Mathematics and Science in English, (Ministry of Education cited in Ong & Tan, 2008). In this ETeMS program, 240 hours of instruction was delivered through face-to-face interaction and self-instructional packages. The programme was conducted in 2 phases. Each phase comprises 90 hours of face-to-face interaction and 30 hours worth of self-instructional materials. Phase 1 was delivered through 5 modules distributed over a period of 5 weeks and each module required 2 days of face-to-face interaction (www.tutor.com/etems/).

Apart from ETeMS, teachers were also supported by a "buddy system" whereby teachers can get further help from identified resource persons in their schools. Mathematics and Science teachers could seek help from English teachers in the same schools to help them with language.

The government had also allocated a total amount of RM 5 billion for the implementation of the policy for a period of seven years from 2002 to 2008 (Budget 2003, 2002). At the same time, teachers teaching both subjects were also provided with laptops, LCD projectors and software to aid the teaching of Mathematics and Science in English. Moreover teachers were also trained on how to use the software Compact Disk (CD) in Mathematics and Science with a computer and LCD projector. Teachers were trained to deliver the modules given by MOE with the use of LCD for the students to visualize and learn the subject of mathematics and science. PPSMI teachers were also given monetary incentives under Education Subjects Incentive Payment (Bayaran Insentif Subjek Pendidikan, BISP). The rates
for BISP education services officers who taught Science and Mathematics subjects in English were; five percent (5%) of basic salary for Graduate Education Services Officers, and ten percent (10%) of basic salary for Graduate Diploma Education Services Officers (Ministry of Education Circular Letter No. 3 year 2003).

Teachers were required to teach Mathematics and Science for 200 minutes per week or 5 periods per week. A period in Malaysian secondary schools is 40 minutes. The examinations for both these subjects were conducted in bilingually. Students were given a choice to answer neither in English or Bahasa Melayu.

Mathematics is taught as a compulsory subject from pre-school to upper secondary level. Students also must pass this subject in all Malaysian major public examinations, namely UPSR, PMR, and SPM. For each public examination, the standardized mathematics paper and pencil test is always composed of two papers: Paper I consist of multiple choice questions while Paper II is made up of structured questions.

However, the government has now decided to abolish the teaching of Mathematics and Science in English due to some problems faced by the teachers and students in this country. Deputy Prime Ministry of Malaysia, Tan Sri Muhyiddin Yasin pointed out in his speech that students are still struggling to communicate in English after six years of PPSMI implementation. Teachers are also having difficulties in mastering the English language which made the teaching of both subjects in English difficult for teachers (www.pmo.gov.my). According to a study conducted by Aziz bin Nordin (2006) in Johor, only 9.4% students of 279
respondents scored A grade in UPSR examination while most of them (40%) scored C group. The study also showed that students’ competencies in English were at low levels as only 6.5% of the respondents from this study agreed that they could speak English very well and fluently while the majority of respondents disagreed. Another study conducted by Mohd. Sahandri Gani Hamzah & Saifuddin Kumar Abdullah (2009) revealed that PPSMI teachers have average competencies only in English.

As some studies showed both Mathematics and Science teachers as well as students are not proficient in English language, the implementation of PPSMI had also created an anxiety among parents and educators on the quality of Mathematics and Science education in Malaysia. This is because Mathematics and Science are core subjects in primary schools as well in secondary schools. Students going for tertiary education need to have good grades in these subjects. Both these subjects are required for entering universities or colleges.

The above discussion focused on the problems which surfaced with the implementation of PPSMI. Although there were many groups in the society who were in favour of the implementation of PPSMI, the government nevertheless decided to terminate PPSMI in 2012.
1.2 Statement of The Problem

The PPSMI had been implemented for eight years. In 2010, the government decided to change the policy. Many parties however felt that it is important to learn Mathematics and Science in English. Studies by academicians, Pandian, Ong and Tan showed that teachers perceived the importance of learning and teaching both subjects in English although they themselves were not proficient in the language.

Malaysian government however, decided to revert the teaching of Mathematics and Science in Bahasa Melayu beginning year 2012. Thus teachers are now expected to teach Mathematics and Science in Bahasa Melayu again. How would this change of policy affect the teachers? Will the change in the policy of teaching Mathematics and Science in Bahasa Melayu affect the teachers’ performance? Teachers may have difficulty to perform and to teach in Bahasa Melayu for Mathematics and Science, after all the courses and training in English they had gone through. Teachers may find it difficult to find materials and teaching aids in Bahasa Melayu after seven years policy in English. Teachers need to prepare notes and teaching aids in Bahasa Melayu, whereby resources are limited specially materials from internet where most of the materials are available in English.

Teachers are the main implementers and advocate of change (Tan & Chan, 2003) and they play major role in shaping education, even though in some cases teachers are not directly involved in making or changing any policy regarding education. Hence this study attempts to focus on the teachers’ perception toward the
teaching of Mathematics and Science in Bahasa Melayu especially for those who are teaching in national secondary schools in Johor Bahru.

1.3 Objectives of The Study

This study is conducted to analyse the situation following the change in policy in Johor Bahru. Specifically, this study attempts to study teachers’ perception towards the change of policy to teach and learn Mathematics and Science in Bahasa Melayu. The purpose of this study is to investigate:

1.3.1 The perceptions of the teachers in using Bahasa Melayu as the medium of instruction for teaching Mathematics and Science at the secondary school level.

1.3.2 The problems encountered in using Bahasa Melayu to teach Mathematics and Science as perceived by the teachers.
1.3.3 Teachers’ perception about the change in policy to teach Mathematics and Science in Bahasa Melayu.

1.4 Research Questions

Aligned with the above research objectives, the research questions are as follow:

1.4.1 What is the perceptions of teachers with regard to the use of the Bahasa Melayu as medium of instruction for the teaching of Mathematics and Science in secondary schools?

1.4.2 What are the problems encountered in using Bahasa Melayu to teach Mathematics and Science as perceived by teachers?

1.4.3 What are the teachers’ perception about the change in policy to teach Mathematics and Science in Bahasa Melayu?
1.5 Importance of The Study

This study is conducted in order to obtain information about teachers’ perception regarding the new policy announced by government. Therefore it is important to note the unique perception of teachers in teaching these subjects in Bahasa Melayu after undergone all the courses and training in English.

It is hoped that the data will provide some insight about teachers’ perception in teaching Mathematics and Science in Bahasa Melayu after eight years of implementation of teaching Mathematics and Science in English. It is beneficial not only to the teachers, school, Ministry of Education but also to the administration and country too.

1.5.1 Teachers

The results of the study will serve as guide and reference for teachers to understand the change in government policy. Teachers can prepare themselves accordingly. At same time it can help teachers to find better and effective ways in teaching Mathematics and Science in Bahasa Melayu.
1.5.2 Students

By studying the results of the study, students can cooperate with teachers to study Mathematics and Science in Bahasa Melayu. Students will be able to understand the benefits or advantages in new policy.

1.5.3 Administrators

By studying the results of the study, school administrators will be able understand the progress and on-going of process of implementation in new policy. Administration can find ways to help the teachers to cope with new policy of teaching Mathematics and Science in Bahasa Melayu to achieve better result in any school examinations. This study can provide necessary help to assist students in coping with changes in the medium of instruction for Mathematics and Science.
1.5.4 Ministry of Education

This study will act as reference and guidelines to Education Department to develop suitable courses and programs in future for Mathematics and Science teaching teachers to increase their understanding in teaching these subjects. This study will be guide for Ministry of Education to prepare and equip teachers teaching Mathematics and Science with proper training.

1.6 Scope of The Study

This research is only conducted among teachers in 6 government or national schools around Skudai only. Among all the teachers, only teachers teaching Mathematics and Science were chosen as subjects field for the research, as this is a small scale study.
1.7  Operational Term

1.7.1  Change

Change is act of making a variety, or may be substituted for another. In this study, change refers to change in the medium of instruction in teaching Mathematics and Science. The change happen when government decided to change the teaching of the Mathematics and Science from English to Bahasa Melayu.

1.7.2  Learning

According [http://www.learnersdictionary.com](http://www.learnersdictionary.com) learning means the activity or process of gaining knowledge or skill by studying, practicing, being taught, or experiencing something and knowledge or skill gained from learning

1.7.3  Policy

According [www.thefreedictionary.com](http://www.thefreedictionary.com), policy refers to a plan or course of action, as of a government, political party, or business, intended to influence and determine decisions, actions, and other matters. However in this research, policy refers to policy of teaching Mathematics and Science in Bahasa Melayu.
1.7.4 Perception

Teachers’ ability to see and understand the change in government policy for reversing the teaching of Mathematics and Science to Malay.

1.7.5 Problem

Problem is something difficult to deal with or solve. In this study, problem refers to problems teachers are in teaching Mathematics and Science in Bahasa Melayu.
1.8 Conclusion

This chapter explains the objectives of this study, there is a need to conduct this study to have better understanding of teachers’ perceptions about change in new policy. Teachers play an important role in determining a successful implementation of education policy. Therefore, any changes in policy that occurred need the support of teachers. Teachers must be prepared with any changes to carry out their responsibility successfully. The abolishment of PPSMI need support from every party, even some who are against the abolishment.
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