

**LEARNING SCIENCE IN ENGLISH:
VOICE OF RURAL AND URBAN FIRST BATCH STUDENTS**

by

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LIST OF ABBREVIATIONS

AKASP	Awareness, Knowledge, Attitude, Skill and Practice
BISC	Basic interpersonal Communicative Skills
CALP	Cognitive Academic Language Proficiency
ELP	English Language Proficiency
ESL	English as a Second Language
EtEMS	English in the Teaching of Mathematics and Science
JSs	Junior Subjects
JS	Junior Students
JSP	Junior Students with Problems
JSWP	Junior Students without Problems
L	Lecturer
LEP	Low English Proficiency
MOE	Ministry of Education
NELB	Non-English-Language Background
SIs	Senior Informants
Ss	Senior Students
SsPs	Students-Participants

ABSTRACT

English has become as the important language particularly in field of Science and Technology whereby most of the references are written in English. Due to the present demands, in Malaysia, the policy of teaching Science and Mathematics in English (EtEMs) has been implemented in year 2003. Since the implementation, there are on going debates among the academicians, nationalists, politician, parents and others on the impact and the effectiveness of the implementation. The study employed quantitative survey research design, which aimed to investigate the first batch students who are currently in Form One 2009. These students have gone through six years learning Science in English. Five aspects of the students' views have been examined which had involved 300 participants from two rural schools and 300 participants from two urban schools. Results were analysed using SPSS V.14 and were described in both descriptive and inferential manners. The findings show that there are differences of the students' views in term of students' ability in English; challenges faced as well their language preference in learning Science. However, both urban and rural students are very well aware of the importance of learning Science in English.

ABSTRAK

Bahasa Inggeris telah menjadi bahasa penting terutamanya dalam bidang Sains dan Teknologi di mana kebanyakan rujukan ditulis dalam bahasa itu. Berdasarkan kehendak semasa, keperluan ini menjadi terdesak untuk dipenuhi. Oleh itu, di Malaysia, polisi pengajaran-pembelajaran Sains dan Matematik dalam Bahasa Inggeris (PPSMI) telah dilaksanakan pada tahun 2003. Sejak pelaksanaan, terdapat banyak percanggahan dikalangan ahli akademik, tokoh bangsa, ahli politik, ibubapa dan pelbagai terdapat keberkesanan polisi ini. Sehubungan itu, kajian ini bertujuan untuk mengenal pasti dan membandingkan pendapat pelajar Tingkatan Satu di mana dalam masa yang sama memberi jawapan kepada percanggahan pendapat terhadap pelaksanaan dasar ini. Lima aspek pandangan pelajar telah dikaji yang mana telah melibatkan 300 responden yang terdiri daripada pelajar di dua sekolah bandar dan 300 responden yang terdiri daripada pelajar di dua sekolah luar bandar. Semua data dikumpul menggunakan boring soal selidik dan ditaksirkan menggunakan SPSS V.14. Dapatan kajian mendapati, terdapat berbezaan pendapat pada kebolehan pelajar bahasa Inggeris, halangan yang dihadapi dan pilihan bahasa dalam mempelajari Sains. Walau bagaimanapun, masing-masing pelajar bandar dan luar bandar mempunyai tahap kesedaran yang begitu baik terhadap kepentingan pembelajaran Sains dalam bahasa Inggeris.

CHAPTER ONE

INTRODUCTION

1.0 Chapter Overview

This chapter starts by providing the background of the study. The background of the study summarises the issues of learning content subject matters in non-native language and also the transition or movement of language in learning subject matters from the students' mother tongue to the second language (L2). Then, the gaps of the previous studies are described by stating the aims of the present study and the research questions. The definition of terms used throughout the study also explained in both conceptual and operational meanings. Subsequently, the scope of study is briefly presented. The chapter ends with the review of Chapter One and the preview for Chapter Two.

1.1 Background of the Study

The use of English language is rapidly spreading throughout the world and reviews made from the previous studies have shown that it has become very noteworthy *lingua franca* compared to others (Johnson, 1987; Lo, 1991; Ihejieta, 1995; Swain, 1996; Halliday, 1998). It has undoubtedly become increasingly essential of us to compete locally and globally in the internet and globalization era. As a very significant global language, many countries have adopted English as their medium of instruction (MOI) in educating the younger generation. Considering English as one of language of power (Pennington, 1999; Din et al., 2003), children are exposed to the English as early as possible. The demand from the parents who always wanted English medium education (Tsui, 1999) and the commercial sectors where English competency is required (Weistein, 1994) have

forced policy makers to revise and re-evaluate the education policy to meet these needs. In most of the countries, the sudden or dramatic shift of the medium of instruction is made based on the political reason rather than educational grounds (Rollnick, 1998; Choong, 2004; Ong, 2006).

Reviews from related studies show that English is widely used as medium of instruction mostly in colonized countries such as Cameroon (Gfeller & Robinson, 1998), Philippines (Gonzalez & Sibayan, 1998; Met and Lorenz, 1997; Gonzales, 1999), India (King, 1997), Hong Kong (Tsui et al., 1999; Xanthou, 2000), Brunei (Rozaimah, 2005; Suffolk, 2005), Malaysia (Caeser, 2005; Samual, 2005; Maznah & Zurida, 2006; Ong, 2006; Aziz, 2006) and South Africa (Schwartz, 1987; Saville-Troike, 1991; Laplante, 1997; Fradd, 1998). The subject matters have been taught in non-native language by replacing their mother tongue or L1 for selected subject in schools. The use of English as the medium of instruction among the non-native speakers is to assist the speakers to be competent in the target language (Laplante, 1997; Fradd, 1998; Gonzalez & Sibayan, 1998; Pillay, 2003; Fong, 2004; Suan 2005) as well as to meet the demand from society (Weistein, 1994).

In the 21st century, English has emerged as one of the global language where many references are produced in English especially in field of Science and Technology. The huge use of the online materials as the main resource has made English become more significant in learning Science (Rollnick, 2000; March et al., 2000; Martin & Abdullah, 2003; Veloo & Ali Hamdani, 2004; Yoong, 2004). In addition, society has given more attention towards Science and Technology based subject rather than art based. Most courses in the university especially Science based courses are highly dependant on references or materials that are published in English language. Hence, it was felt that it was a good exposure for the students to be exposed to study subject matters in English as their preparation for the future study.

In Malaysia, the winds of change in the teaching and learning subject matters in English has reintroduced when the former Prime Minister, Tun Dr. Mahathir Mohammad suggested “English for Teaching of Mathematics and Science” (EteMS) in June 2002. Right after the announcement, the Ministry of Education (MoE) has decided to implement EteMS in all national schools for students in Standard One, Form One and Lower Six, year 2003 (Ong, 2004). The implementation of EteMS has led to mix reaction from public and private sector, including the policy makers, educators, teachers, students and parents. Many believe that our teachers and students are not ready and are not competent in this target language which is English.

However, Tun Dr. Mahathir Mohammad clearly states that;

“The change in medium of instruction for both subjects due to the new situation and needs caused by rapid advancement in technology, especially information technology”.

(New Strait Times, 29 January 2003, p. 3)

According to Emirates Professor Engku Aziz (New Straits Times, 10 August 2003), the shift in medium of instruction in Malaysia’s education policy was not a new history and it has been implemented before. He also added that the change made was due to the growing demand of the English language in the field of science and technology where the government’s decision is urgently made in order to maintain the country’s competitive edge in the global market.

However, the announcement of the implementation of EteMS on January 2003 has sparked off a heated debate in the newspapers, seminars even academic articles. Some of them saw this new policy could affect the status of Malay language as the National Language of Malaysia. After six years of the implementation of EteMs, the hot debates are still going on between groups of people who support and against the policy.

Previous study in this area have focused on the impacts of the implementation of learning Science and Mathematics in English by emphasizing the problems faced by the teachers and students in coping with the English medium of instruction (EMI) (Pillay, 2003; Pandian & Ramiah, 2004; Foong, 2004; How, 2005; Yoong, 2005; How et al., 2006, Aziz, 2006; Ong, 2006). Most of the previous study looked into the teachers' persecution, the readiness and teaching strategies towards the change of the medium of instruction. Only few studies addressed on the students' views in learning Science in English (Ceaser, 2005) and none of the previous study focused on students' language preference in learning Science by comparing both rural and urban first batch students.

As mentioned by Ceaser (2005), the 'reintroduction' of teaching Science in English in Malaysia is still in its infancy stage as the shift to teach Science and Mathematics in English was done in the year 2003. The outcomes of the implementation of EteMS can only be determined in year 2008 or earlier 2009 when the first batch Primary One students, 2003 have completed their six years primary schooling year. Therefore, this study can be one of the references for the Ministry of Education and policy makers on the actual views of first batch rural and urban students in learning Science in English.

1.2 The Present Study

The present study aims to address several gaps from the previous studies; mostly conducted at the earlier stage of the implementation of EtEMs. Based on reviews from the related studies, many studies have focused on the impact of EteMS on teachers and students. Besides, many studies have suggested the most appropriate teaching strategies to overcome students' difficulties in learning Science in L2.

Therefore, the present study attempts to determine and compare the views of first batch students who had completed six years experience of learning Science in English since Primary One, 2003 until Primary Six, 2008. In addition, the

present study also aims to provide feedback as a response to the hot debates whether the policy of teaching Science in English should be continued or should be revised or should be stopped. The present study also highlights the students' language preference in learning Science.

Last but not least, the present study also attempts to determine if there is any difference or similarity in the students' views of both urban and rural schools who have gone through six years of learning Science in English. The students are randomly selected based on the class's registration list.

1.2.1 Aims of the Study

Being as the first batch students who have gone through EtEMs' policy, the students who are currently in Form One, 2009 have gone through six years of learning Science in English since Primary One, 2003 until Primary Six, 2008. Therefore, the study aims to:

- a. determine and compare the first batch students' views of both rural and urban schools in learning Science in English; and
- b. determine if there is any difference or similarity in the first batch students' views of both urban and rural schools in learning Science.

In relation to this study, five aspects of students' views will be addressed as stated below:

1. Students' views on their personal English language ability.
2. Students' general views of learning Science in English.
3. Students' views on the awareness of the importance of learning Science in English.
4. Students' views on the challenges faced in learning Science in English.
5. Students' language preference in learning Science.

1.2.2 Research Questions

The following research questions are formulated to meet the research aims as mentioned above.

1. a) What are the rural first batch students' views on their personal ability in the English Language?
b) What are the urban first batch students' views on their personal ability in the English Language?
2. a) What are the rural first batch students' views of learning Science in English?
b) What are the urban first batch students' views of learning Science in English?
3. a) What are the rural first batch students' views on the awareness of the importance of learning Science in English?
b) What are the urban first batch students' views on the awareness of the importance of learning Science in English?
4. a) What are the challenges faced by the rural first batch students in learning Science in English?
b) What are the challenges faced by the urban first batch students in learning Science in English?
5. a) What is the language preference of rural first batch students in learning Science?
b) What is the language preference of urban first batch students in learning Science?
6. Is there is any difference between the rural and urban first batch student's views on learning Science in English?

1.3 Significance of the Study

The study is specifically focused on the first batch students who are currently in Form One 2009. The students have gone through six years of learning Science and Mathematics in English (EtEMs) since Primary One, 2003 until Primary Six, 2008. As the 'unique batch' (Berita Harian, 16 July 2008), these students have been exposed to the new Science *KBSR* syllabus where English as the medium of instruction.

After six years of learning Science in English, it is important to determine the actual views of the students who have completed the experimental stage of learning Science in English. These views can be used as guidance in determining the effectiveness of the implementation of EteMS that is expected to be reevaluated soon.

As mentioned earlier, most of the previous studies have emphasised on teachers', schools' administration, policy makers' views (Pillay, 2003; Fong, 2004; Kong, Low Chong & Mohanakrishnan, 2005) and many studies have pointed out the weaknesses and strengths of the implementation of EteMS (Yoong, 2005; Ong, 2006; Maznah & Zurida, 2006) since it was announced in 2003. Some studies (Pillay, 2003; Maznah & Zuraida, 2006) have identified the problems faced by secondary students and have proposed some teaching strategies to overcome the problems. In addition, the previous studies have been conducted at the earlier stage of the implementation of EtEMs (one or two years after the announcement in year 2003) where at that the students just started or exposed to the new policy. However, the present study addresses the first students who are currently in Form One 2009 and these students have completed their six years learning Science in English.

Among those studies, none of the study focused on the students' views who have learnt Science using new Science syllabus in English language. The students also have sat for *Ujian Penilaian Sekolah Rendah* (UPSR) 2008 in

English. In addition, none of the previous studies have specifically compared the views of the unique batch of students for both rural and urban areas in learning Science in English. Therefore, the present study intends to determine if there is any difference or similarity in the rural and urban first batch students' views in learning Science.

Besides, the study believes that through the identification of the students' views by comparing two different settings, it would be easier for teachers to understand and fulfill the students' needs. Hence, it will help teachers to find, choose and practice the appropriate strategies in teaching Science in English for both rural and urban schools.

Moreover, it is a hope that the findings of this study could contribute some valuable input on the implementation of ETeMS that is expected to be re-evaluated soon. As stated in News Strait Times (22 July 2007), Emirates Professor Engku Aziz suggested that in depth study should be done to ensure the implementation of ETeMS able to achieve the goals as stated. He also added, the academic-based research should cover both teachers' and students' views who are directly engaged with the policy. Thus, it is a hope that this study is able to contribute some beneficial input for future reference and research.

1.4 Definition of Key Terms

The followings are the definitions to some of the terms used in the present study. All terms will be defined in both conceptual and operational meanings.

1.4.1 First Batch

Clark (1997) defined first as the earliest or something coming before all others in time or order. He also referred first as “before doing something else specified or implied; for the first time” (p.17).

In the present study, first batch is referred to the first group of Form One 2009 students who have completed six years learning Science in English. The students have gone through new Science syllabus in English since Primary One 2003 until Primary Six 2008.

1.4.2. Voice

Several scholars inline with education defined voice as verbal or non-verbal actions in expressing feeling and making decision regarding the planning, implementation, and evaluation of their learning experiences (MacBeath, Myers, & Demetriou, 2001; Rudduck, Chaplain, & Wallace, 1996; Wasley, Hampel, & Clark, 1997; Wilson & Corbett, 2001).

In a study conducted by Ong (2006), voice is defined as one’s views, perceptions or belief upon a certain matter or subject. Based on both conceptual definitions, voice is defined as students’ views regarding their learning experience of learning Science in English throughout this study. In relation to this study, there are five aspects of students’ views will be determined as stated earlier.

1.4.3 Rural and Urban

According to a report prepared by Ministry of Education (MoE), 'Cohort 1998', rural and urban schools are classified based on the geographical or location where the schools are located. Based on the report, schools' surrounding, facilities, students' population, distance from the main city and students' socio-culture are also considered in grading the schools into A, B or C categories.

In the present study, rural and urban schools are classified based on the school's location either located at the main city and far away from the city. Based on the classification given by MoE (1998), two schools located at the main city are chosen as the urban schools. Basically, these urban schools are completely equipped with up-to-date learning and teaching facilities and have full access in order to create the conducive learning environment (such as computer labs with Internet connection, *EduWeb*, E-Library, etc.). Meanwhile, two schools located far from the main city have been selected as the rural schools. These schools are considered as the unprivileged schools due to the restrictions and limitations in teaching and learning facilities. Besides, the students and teachers also faced some difficulties in terms of accessing and using internet materials or do not have the ICT facilities at all.

1.4.4 Challenges

Challenges refer to something difficult; a thing hard to do or to understand; that which occasions labor or perplexity (confuse), and requires skill and perseverance to overcome, solve, or achieve; a hard enterprise; an obstacle; an impediment; as, the difficulties of a science; difficulties in theology (Marinez, 1983).

In this study, challenges refer to the difficulties faced by first batch students who are currently in Form One 2009 in coping and learning Science in English. The students faced difficulties in coping with English language in terms of four language skills (speaking, listening, reading and writing), grammatical rules and English vocabulary. In the same time, the students also struggled with Science subject matters taught in English (e.g: difficulties in understanding conceptual and scientific terms in English).

1.4.5 Preference

According to Collier (1992; 1995), preference refers to the right or chance to choose and make a decision based on one' belief upon a certain matter or subject. A decision is made after several aspects have been considered such as one' ability, (strengths and weaknesses), awareness and difficulties toward a certain issue discussed.

In relation to present study, preference refers to the choice of language made by the students in choosing their language preference in learning Science. Students are given several language choices such as Malay, English, Mandarin, bilingual (English and Malay) and others.

1.4.6 Awareness

As suggested by Baker (1997) and Thomas and Collier (1997), awareness refers to the state or level of consciousness where sense data can be confirmed by an observer. The awareness of one type of idea naturally fosters an awareness of another idea.

In this study, awareness refers to the students' level of consciousness in relation to the implementation of learning Science in English.

1.5 Scope of the Study

The scope of study is to determine views of English language learners in learning Science in English. It focuses only on the first batch students who have completed six years of learning Science in English. Besides, only two rural schools and two urban schools were participated with 600 participants in total. The study only involved few schools within a Division; therefore, the findings cannot be generalized as it only represented numbers of first batch students.

In the present study, it only focused on Science subject which has been taught and learnt in English started in 2003. This study excludes other subjects (such as Mathematics) taught and learnt in English even though it is compulsory among the first batch students who are currently in Form One 2009. However, the issues raised in the other subjects taught and learnt in L2 are reviewed in the following chapter.

As mentioned earlier, the present study aims to determine and compare the actual views of both rural and urban students in relation of the implementation of EtEMs since 2003. However, only five aspects of the students' views are examined as stated below; and other aspects of students' views are not include.

1. Students' views on their personal English language ability.
2. Students' general views of learning Science in English.
3. Students' views on the awareness of the importance of learning Science in English.
4. Students' views on the challenges faced in learning Science in English.
5. Students' language preference in learning Science.

Besides, the present study only examined students' views where others who directly involved with EtEMs (such as policy makers, teachers, parents, MoE, etc.) are not discuss in details.

1.6 Chapter Review

This chapter discussed the fundamental focus of the present study through the background of the study, introduction of the present study, the aims of the study and the research questions. This chapter also rationalizes the need of present study through the significance of the study. Definition of terms throughout the study is defined in both conceptual and operational meaning.

The next chapter, Chapter Two – Literature Review, presents the review of the literatures which are related to the present study.

CHAPTER TWO

LITERATURE REVIEW

2.0 Chapter Preview

This chapter presents the reviews of the previous studies conducted inline with the present study. It discusses related studies conducted in the relevant area. This includes the similarities and the differences to the present study. The overview discusses several subtopics: learning content subject in non-native language; learning contents subject in English; the shift of medium of instruction; learning Science in English, review of related studies and the overviews of the present study.

2.1 Learning Contents Subject in Non-native language

Language, either considered as one's mother tongue, second language or foreign language has long been used as a tool for expressing information and ideas. Jervis (2002) explains that teaching and learning are changing; it is being forced to change by the dominant globalizing forces of social change. Thus, the educational system should be prepared to fulfill the needs of the present environment.

Inevitably, the education and learning have great impact on individual's accomplishment of their personal prospective and employability. Siow (2003) points out that English is commonly used as medium of instruction in countries where it is treated as second or foreign language. Besides Malaysia, there are also countries who have switched from their first language (L1) to English as their medium of instruction for the selected subjects.