Attitude of Form Two Students Toward Learning Science in English: A Case Study of Schools in Kota Samarahan

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ABSTRACT

This report presents the findings of a research project which examined the attitude of Form Two students toward learning Science in English. The research was both qualitative and quantitative which involved a total of 320 students from all the secondary schools in Kota Samarahan. The students had top complete one set of questionnaire which consisted of 40 items using the Likert scale. The data was analysed using SPSS version 12.0. Descriptive statistics was used to described the profile of the samples. In answering the first and second research questions, descriptive statistics such as frequency count and mean were used to describe the learners' attitude. The T-test was carried out to determine whether there was any significant difference in attitude towards learning English and Science in English by gender and race. In answering the third research question, correlation analysis was performed to determine any significant relationship between their attitude toward English and learning Science in English The strength of the two relationships between the two variables was determined by using the Davis's Index. The students attitude was analysed through four different dimensions. Pearson correlation Analysis of the relationship between attitude toward English and learning Science in English showed that students with good attitude toward English also have a positive attitude toward learning Science in English.

INTRODUCTION

The reintroduction to teach Science in English in Malaysia is still in its infancy stage as the move to teach Science and Mathematics in English was done in the year 2003. The success of this particular move has yet to be seen since the first batch of primary school children will only sit for their Ujian Penilaian Sekolah Rendah (UPSR) in the year 2008 and the first batch in secondary schools will be sitting for the Penilaian Menengah Rendah (PMR) in 2005. Until then, success in using English to teach Science and Mathematics can only be determined through those students' monthly tests and tests. According ton an article published in New Sunday Times dated 22 June 2003, it is stated that pupils' performance in Science and Mathematics have improved significantly after the Government has taken the bold decision to teach the two subjects in English. Even though positive feedbacks towards the policy have been received by the Education Ministry yet the study was confined to schools in the Klang Valley only. In areas such as Kota Samarahan, where English language is quite a foreign language the sudden switch may take bring some changes in classroom learning.

As the move to use English as a medium of instruction to teach Science is still a very new concept after so many years, research in this field in Malaysia is also very small.English is

not a language which can be mastered merely after a few weeks of teachers training and to expect the low English proficiency teachers to use it as their medium of instruction in teaching Science for instance, may cause more harm than good. On top of that we cannot deny that Science, Mathematics and English are difficult subjects for many students especially in the rural areas. Thus the sudden change in the medium of instruction may affect the attitude of students. The hypothesis is that some of these students who are already weak in English may find learning difficult whereas to the rest where the English Language does not cause a barrier, then learning Science in English is interesting . However their attitude may be very positive if they realised the importance of learning Science in English.

OBJECTIVES OF THE STUDY

The main goal of the study is to investigate the attitude of Form Two students in Kota Samarahan District towards learning Science in English. The main goal is further divided into 3 objectives:

i. To determine the students' attitude towards the English Language in general
ii. To determine the students' attitude towards learning Science in English
iii. To determine if there is any significant relationship between attitude towards the English language and attitude towards learning Science in English

LITERATURE REVIEW

Definition of terms

Kenyon (1968a) defined attitude as " a latent or non- observable complex but relatively stable behavioural disposition reflecting both direction and intensity of feeling towards a particular object whether it be abstract or concrete". This definition assumed that attitude is a complex word having both direction and intensity.

Thomas (1971) perceived attitude as "a complex of feelings, desires, fears, convictions, prejudices or other tendencies that have given a set of readiness to act because of varied experience". This definition revealed that experience is a factor in attitude formation. For the purpose of the present study on attitude of Form Two students towards learning science in English is therefore based on Kenyon's definition.

Attitude towards the study of Science in English

According to Middleton and Spanias (1999), new studies strongly indicate that teachers' attitudes and actions influence students' sense of their abilities in Maths and Science. Sorge, Newton, & Hagerty (2000) in their study of Hispanic Science students said that being able to see real life models of people practicing Science changed students' attitude and beliefs about their own abilities as well as their interest in science.

A large volume of research available has investigated the factors that contributed to students' attitude towards the study of Science. Namely few factors that contributed to Science are for instance gender differences, students' English proficiency level and environmental factors.

Studies conducted in Brunei Darulssalam and Malaysia reported no significance differences in attitude of male and female students towards Science in lower and upper secondary

classes. It is reported from studies done in Brunei that attitude of the upper secondary male and female chemistry students were comparable (Dhinsa and Chung (1999). Later in their recent study on Bruneian students, Dhinsa and Chung (2003) reported that there were no gender differences in attitudes towards and achievement in Science of students in coeducational schools.

Another factor that attributes to the students attitudes towards science is their level of English proficiency. The students' proficiency of the English Language is not of a standard required to understand spoken and written English in their Science classes. It is believed that students' difficulty in understanding and expressing themselves in English contributes to their low achievement in Science (Dhinsa and Chung, 2003).

Moreover Science is regarded as a less popular subject among students. A study in Welsh schools obtained from a Likert questionnaire shows that, out of the four core subjects: Science, English, Mathematics and Technology - Science is the least popular (Hendley, Parkinson, Stables and Tanner, 1995). This view is confirmed by a smaller scale qualitative study based on interviews with 190 students who responded that, " Science is the subject that they like least," (Hendley, Parkinson and Stables,1996).

PROBLEM STATEMENT

By means of an exploratory empirical investigation, this study aims at seeking information to provide answers to the following questions:

i. What are the learners' attitude towards the English Language?
ii. What are the learners' attitude towards learning Science in English?
iii. Is there any significant relationship between the learners' attitude towards the English Language and their attitude towards learning Science in English?

RESEARCH METHODOLOGY

This research involved the Form Two students in Kota Samarahan District for the year 2004. The researchers examined the attitude of these students towards the English Language and its impact on their attitude towards learning Science in English.

There were altogether 2,030 students studying in Form Two in Kota Samarahan district in 2004. according to Krejcie & Morgan (1970), the minimum sample required for such a population size is 320 students. The sample size for each school was determined by random sampling from the name lists obtained from the six respective schools. As shown in the Table 1.

Table 1 : Distribution of Form Two Students in Kota Samarahan District:

No.	Name of School	Number of students	Number of students selected
1.	SMK Sungai Tapang	375	60
2.	SMK Wira Penrissen	260	41
3.	SMK Asajaya	495	77
4.	SMK Semera	315	50
5.	SMK Kota Samarahan	245	40
6.	SMK Muara Tuang	340	52
	Total	2030	320

The 320 students were mixed in terms of levels of proficiency and academic achievements. This means that the subjects were students with the lowest as well as the highest levels of English Language proficiency and in their knowledge of Science in terms of UPSR (Ujian Penilaian Sekolah Rendah) grades.

For this research the instrument consisted of one set of questionnaire which comprised of 40 questions. The questionnaire was constructed to measure the attitude of the 320 students towards the English language and its relationship towards learning Science in English. The questionnaire was based on a 5- point Likert Scale type.

PILOT STUDY

A pilot test was given to 40 students of SMK Penrissen, Kuching. The samples met the same criteria for selection and in similar setting as used in the major study. The emphasis on a common setting similar to the final setting was made by Babble (1973: 112), " The pilot study sample should be directed at a representative sample of the target population." The results gave an alpha value of 0.8542. indicating that the questionnaire was reliable for the study.

DATA ANALYSIS

The data obtained from the questionnaire was analysed by using the Statistical package for Social Science (SPSS) version 12.0. Descriptive statistics were used to described the profile of the samples of the study.

Research Question 1: What are the learners' attitude towards the English Language in general?

In answering the first research question, descriptive statistics such as frequency count and mean were used to describe the learners' attitude towards each dimension in the Attitude towards the English Language Section. T-test at a significant level of 0.05 was carried out to determine whether there was any significant difference in their attitude towards English language by gender and race.

Research Question 2: What are the learners' attitude towards learning Science in English?

In answering the second research question, descriptive statistics such as frequency count and mean were also used to describe the learners' attitude towards each dimension in Attitude towards learning science in English Section. T-test at a significant level of 0.05 was carried out to determine whether there was any significant difference in their attitude towards learning Science by gender and race.

Research Question 3: Is there any significant relationship between attitude towards the English Language and attitude towards learning Science in English?

In answering the third research question, correlation analysis was performed to determine any significant relationship between the attitude towards English language and learning Science in English at significant level of 0.01. the strength of the relationship between these two variables was determined by using the Davis,s Index as shown below. The discussion was descriptive in nature.

Table 2: Davis's Index Table

Coefficient of Correlation (r)	Relationship Explanation
0.70 or more	Very strong
0.50 to 0.69	Strong
0.30 to 0.49	Moderate
0.10 to 0.29	Weak
0.01 to 0.09	Ignore

DISCUSSION OF RESULTS

Research Question 1: Attitude towards English Language

Table 3: Attitude towards English Language: Mean Score by Dimension

No	Dimension	Mean
1.	English Language Dimension	3.7994
2.	Language- Related Dimension	4.1356
3.	Job/Future Study- Related Dimension	4.1987
4.	Cultural Dimension	3.9881
	Overall attitude towards English Language	**4.0305**

Table 3 shows the mean score for each dimension > Based on the mean score calculated, it can be concluded that the general attitude towards English is good with mean scores of 3.7994, 4.1356, 4.1987 and 3.9881 respectively. Job/ Future Study – Related Dimension has the highest mean (meaning that students viewed English as very important for their future careers and study). The overall mean is 4.0305 which is also high.

T-test for English Language Attitude Score in Different Dimensions by Gender

Table 4: T-test for English Language Attitude Score in Different Dimensions By Gender

Dimension	Gender	Mean Score	Standard Deviation	T-test for Equality of Means	
				T	Sig. (2-tailed)
English Language Dimension	Male Female	3.7224 3.8813	0.5945 0.5710	-2.435	*0.015
Language Related Dimension	Male Female	4.0473 4.2297	0.5441 0.5765	-2.912	*0.004
Job/Future Study Related Dimension	Male Female	4.1394 4.2619	0.5394 0.5160	-2.074	*0.039
Cultural Dimension	Male Female	3.9188 4.0619	0.5868 0.5367	-2.273	*0.024
Overall Attitude Toward English Language	Male Female	3.9570 4.1087	0.4482 0.4435	-3.042	*0.003

Table 4 above shows the mean scores of the male students lower than the female score. T-test showed that the p values (p = 0.015, 0.004, 0.039, 0.024, and 0.003) were all less than α = 0.05. This indicated that there was a significant difference in the attitude towards English by gender for all dimensions and also for the overall attitude. We can conclude that female students have better attitude towards English in all dimension.

T-test for English Language Attitude Score in Different Dimensions by Race

Table 5 : T-test for English Language Attitude Score in Different Dimensions By Race

Dimension	Gender	Mean Score	Standard Deviation	T-test for Equality of Means	
				T	Sig.(2-tailed)
English Language Dimension	Malay Non-Malay	3.7402 3.9034	0.583 0.5841	-2.406	*0.017
Language Related Dimension	Malay Non-Malay	4.1059 4.1879	0.5840 0.5329	-1.246	0.214
Job/Future Study Related Dimension	Malay Non-Malay	4.1706 4.2483	0.5439 0.5057	-1.259	0.209
Cultural Dimension	Malay Non-Malay	3.9284 4.0931	0.5496 0.5835	-2.519	*0.012
Overall Attitude Toward English Language	Malay Non-Malay	3.9863 4.1082	0.4436 0.4571	-2.337	*0.020

Table 5 above shows that the mean score for the Malay students were lower for all dimensions and also for the overall attitude score. However, T-test showed that the difference was only significant for English Language Dimension, Cultural and the Overall where p = 0.017, 0.012 and 0.020 respectively were all less than $\alpha = 0.05$. There were no significant difference in their attitude towards English in Language Related Dimension and Job/Future Study Dimension between the Malay and non- Malay students even though the scores were lower for the Malay students.

Research Question 2: Attitude Towards Learning Science in English

Table 6: Attitude Towards Learning Science in English: Mean Score by Dimension

No.	Dimension	Mean
1	Science Dimension	3.8181
2	Science Related Dimension	4.0369
3	Job/Future Study Related Dimension	4.1056
4	Cultural Dimension	4.0113
	Overall Attitude Toward Science	**3.9934**

Table 6 shows the mean score for all the four Dimensions. Job/Future Study Related Dimension has the highest score with mean score of 4.1056 followed by Science Related Dimension (4.0369) then Cultural Dimension (4.0113) and Science Dimension (3.8181). It indicated that students viewed Science as most important for Job/Future Study. The overall mean was 3.9934, which is also high. It can be concluded that in general, attitude towards Science is good.

T- test for Science Attitude Score in Different Dimensions by Gender

Table 7: T-test for Science Attitude Score in Different Dimensions By Gender

Dimension	Gender	Mean Score	Standard Deviation	T-test for Equality of Means	
				T	Sig.(2-tailed)
Science Dimension	Male Female	3.7855 3.8529	0.6091 0.5551	-1.033	0.302
Science Related Dimension	Male Female	3.9600 4.1187	0.5886 0.5013	-2.589	*0.010
Job/Future Study Related Dimension	Male Female	4.0473 4.1677	0.5160 0.4875	-2.144	*0.033
Cultural Dimension	Male Female	3.9661 4.0597	0.5612 0.4720	-1.608	0.109
Overall Attitude Toward Science	Male Female	3.9397 4.0510	0.4928 0.4118	-2.180	*0.030

The mean score for male students were lower for all Dimensions as well as Overall attitude score. However, T-test showed that the difference was only significant for Science–Related Dimension, Job/Future Study Related Dimension and Overall attitude where p = 0.010, 0.033 and 0.030 respectively were all less than $\alpha = 0.05$. There was no significant difference in the

mean score for Science Dimension and Cultural Dimension. We can conclude that female students have better attitude towards Science in general.

T- test for Science Attitude Score in Different Dimensions by Race

Table 8: T-test for Science Attitude Score in Different Dimensions By Race

Dimension	Gender	Mean Score	Standard Deviation	T-test for Equality of Means	
				T	Sig.(2-tailed)
Science Dimension	Malay	3.7657	0.5485		
	Non-Malay	3.9103	0.6326	-2.143	*0.033
Science Related Dimension	Malay	4.0167	0.5447		
	Non-Malay	4.0724	0.5678	-0.867	0.387
Job/Future Study Related Dimension	Malay	4.0882	0.4523		
	Non-Malay	4.1362	0.5878	-0.816	0.415
Cultural Dimension	Malay	3.9517	0.5218		
	Non-Malay	4.1155	0.5061	-2.726	*0.007
Overall Attitude Toward Science	Malay	3.9562	0.4307		
	Non-Malay	4.0586	0.4981	-1.929	0.055

Overall, the mean score for Malay students were lower than non- Malay students. But T-test showed that the difference was only significant for Science Dimension and Cultural Dimension where the value of $p = 0.033$ and 0.007 respectively were less than $\alpha = 0.05$. There was no significant difference in the overall attitude towards Science between the Malay and Non-Malay students.

Research Question 3: Correlation between Students' attitude towards English and learning Science in English

Table 9: Pearson Correlation Analysis Between Students' Attitude Toward English Language and Learning Science in English by Dimension

	English					
Science		ELD	LRD	J/FSRD	CD	Overall
	SD	0.443**				
	SRD		0.652**			
	J/FSRD			0.622**		
	CD				0.714**	
	Overall					0.793**

** $p < .01$ (2 tailed)

Table 9 above shows that there is a correlation between the attitude toward English and attitude toward learning Science in English. The value of r for SD and ELD was 0.443 and according to Davis's Index table, the correlation is moderate. The value of r for LRD and SRD was 0.652, which indicates strong correlation. There was also a strong correlation between Job /Future Study Related Dimension (English) and Job /Future Study Related Dimension (Science). For Culture Dimension and overall attitude, the values of r were 0.714

and 0.793 respectively. According to Davis's Index table, the correlation is very strong. It means that those students with good attitude towards English also have good attitude towards Science.

RECOMMENDATIONS

It is inevitable that the data collection method should also include classroom observation and interviews with both teachers and students in order to have a more accurate analysis on the students' attitude towards learning science in English. In this study the focus was on the students' responses towards studying Science in English. Perhaps it may be useful to get some feedback from the Science teachers and school administrators to support the students' data.

It is also necessary that future study on students' attitude toward learning Science in English be not restricted to Form Two students only. Perhaps such a study can look at the attitudes of lower secondary schools students towards studying Science in English. In this way, the study would not be confined to a group of students only and more information can be obtained about students' attitude from different levels in the lower secondary schools.

Future research should also be both qualitative and quantitative and conducted on a bigger scale. This will give a more accurate data on the findings. Since the present study is a pilot study, the data was restricted to the six secondary schools in Kota Samarahan District in the Samarahan Division

It would be interesting also if a similar study in the same area were to be conducted to compare the present findings with the students in other Divisions in Sarawak.

CONCLUSION

The teaching of Mathematics and Science for Primary One, Form One and Lower Six in Malaysian government and government-aided schools started in January 2003.There are a lot of mixed opinion from the general public, parents and even teachers about the sudden implementation of this policy. Many people are sceptical about its success citing reasons such as poor English language proficiency of teachers for these subjects and the lack of interests of students towards learning English. Much training are conducted by the English Language Training Centre (ELTC) to prepare Science and Mathematics teachers to teach in the medium of English.

The Form Two students in this pilot study have completed almost one and a half years of studying Science in English at the time when the data was collected. The results of the findings clearly shows that they have a very positive attitude towards learning Science in English even though some of them did not perform well for English and Science in the *Ujian Penilaian Sekolah Rendah* Examination in 2001.The main reason for this could be their awareness towards the importance of English and that to be successful in their future career and higher study they need not only to know Science but to understand it in English as well. Therefore, it is apt to say that the Malaysian Education System has made a bold and successful step in implementing the policy of teaching Science in English without causing any impediment to the students' progress.

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