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b) Kertas kerja seminar

Zamimi Awang. (1994). *Micro Accounting System for Medical Care Service Programme*, Paper presented at the Malaysian Ministry of Health Micro Accounting System Course (October), Kuala Lumpur, mimeo.

c) Buku

Bailey, K.N. (1978). *Methods of Social Research*, New York: The Free Press.

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Fees Act 1951. (Revised 1973). Act 209, Laws of Malaysia.

e) Bab di dalam buku

Doh, J.C. (1981). 'Budgeting as an instrument of development: the Malaysian experience', in A. Premchand and J.Burkhead (eds.), *Comparative International Budgeting and Finance*, New Brunswick, New Jersey: Transaction Books.

f) Buku laporan

Department of Statistics Malaysia. (1991). *Yearbook of Statistics, 1990*, Kuala Lumpur.

g) Laman Web

Office of the Prime Minister of Malaysia, <http://www.pmo.gov.my/website/webdb.nsf/Eng+Main+Frameset?OpenFrameSet>. 8th April, 2004.

ATTITUDES OF FORM TWO STUDENTS TOWARDS LEARNING SCIENCE IN ENGLISH: A CASE STUDY OF SCHOOLS IN KOTA SAMARAHAN

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Abstract

This paper presents the findings of a research project which examined the attitudes of Form Two students toward learning science in English. The research was both qualitative and quantitative and involved a total of 320 students from all the secondary schools in Kota Samarahan. The 3 objectives of this study were to determine the students' attitudes towards the English language, to determine the students' attitudes towards learning science in English and to determine if there was any significant relationship between attitudes towards the English language and attitudes towards learning science in English. The students had to complete one set of questionnaires which consisted of 40 items using a 5- point Likert Scale type. The data was analysed using SPSS version 12.0. There were 3 main findings of this study. Firstly, the findings showed that students with a good attitude toward English also had a positive attitude toward learning science in English. Secondly, female students had a more positive attitude towards learning science in English compared to the male students. Thirdly, there was no significant difference in the attitudes of the Malay and non- Malay students towards learning science in English.

1.0 INTRODUCTION

The reintroduction of teaching science in English in Malaysia is still in its infancy as the move to teach science and mathematics in English was made in 2003. The success of this particular move has yet to be established since the first batch of primary school children will only sit for their Ujian Penilaian Sekolah Rendah (UPSR) in 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.

According to an article published in New Sunday Times dated 22 June 2003, it is stated that pupils' performance in science and mathematics has improved significantly since the Government has taken the bold decision to teach the two subjects in English. Even though positive feedback towards the policy has been received by the Education Ministry, the study was confined to schools in the Klang Valley only. In areas such as Kota Samarahan, where English is quite a foreign language, the sudden switch may 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, research in this field in Malaysia is also very thin on the ground. English is not a language which can be mastered merely after a few weeks of teacher training, and to expect low English proficiency teachers to use it as their medium of instruction in teaching science for instance, may bring about more challenges than ever before.

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, learning science in English is interesting. However their attitudes may become very positive if they were to realise the importance of learning science in English.

2.0 LITERATURE REVIEW

2.1 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 concept 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, the concept of attitude is therefore based on Kenyon’s definition because the students’ behaviours are analysed based on intensity of feelings towards learning science in English.

2.2 Attitude towards the Study of Science in English

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

The large volume of research available has investigated the factors that contributed to students' attitude towards the study of science. A 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 significant 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 attitudes of 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).

From the brief literature review, it is therefore obvious that science is not a very easy subject for many students and those who are unable to understand and express themselves in English may find learning science in English even more challenging.

3.0 RESEARCH QUESTIONS

By means of an exploratory empirical investigation, this study aimed to provide answers to the following questions:

- I. What are the students' attitudes towards the English language?
- II. What are the students' attitudes towards learning science in English
- III. Is there any significant relationship between the students' attitudes towards the English language and their attitudes towards learning Science in English?

4.0 RESEARCH METHODOLOGY

This research involved the Form Two students in Kota Samarahan District for the year 2004. The researchers examined the attitudes 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 below:

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 questionnaires which comprised 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 questionnaires utilised a 5-point Likert-type scale.

5.0. 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), who stated: "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 better than 0.5 and reliable for the study.

6.0 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 describe the profile of the samples of the study.

6.1 Research Question 1: What are the students' attitudes towards the English Language in general based on the following dimensions:

- a. Association with English Language Dimension
- b. Language-Related Dimension
- c. Job/Future Study-Related Dimension
- d. Cultural-Ethnicity Dimension

In answering the first research question, descriptive statistics such as frequency counts and means were used to describe the learners' attitude towards each dimension in the Attitude towards the English Language Section. A T-test at a significance 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. The results are given in Section 7 below.

6.2 Research Question 2: What are the students' attitudes towards learning science in English based on the following dimensions:

- a. Association with Science Dimension
- b. Science-Related Dimension
- c. Job/ Future Study-Related Dimension
- d. Cultural-Ethnicity Dimension

In answering the second research question, descriptive statistics such as frequency counts and means were also used to describe the learners' attitudes towards each dimension in the Attitude towards Learning Science in English Section. A T-test at a significance 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. The results are given in Section 7 below.

6.3 Research Question 3: Is there any significant relationship between attitudes towards the English Language and attitudes 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 a significance level of 0.01. The strength of the relationship between these two variables was determined by using the Davis's Index as shown below.

Table 2: Indicator: 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

7.0 DISCUSSION OF RESULTS

The questionnaires utilised a 5-point Likert-type scale. The students' responses were calculated based on frequency counts and on the maximum mean score of 5 for each dimension as shown below. Each dimension consists of 5 statements describing the students' feelings towards English and Science.

7.1 Research Question 1: Attitudes towards the English Language

Table 3: Attitudes towards English language: mean scores 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-Ethnicity Dimension	3.9881
	Overall attitude towards English Language	4.0305

Table 3 shows the mean score for each dimension. Based on the maximum mean score of 5, 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. The Job/ Future Study-Related Dimension has the highest mean (meaning that students viewed English as very important for their future careers and studies). The overall mean is 4.0305 which is also high. (Refer to the Appendix for details of each Dimension).

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

Each dimension consists of 5 statements describing the feelings of the male

and female students towards the English language. The maximum mean score is 5 based on the 5-point questionnaires. There were altogether 165 male and 165 female students involved in this study

Table 4: T-test for English language attitude scores 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	3.7224	0.5945	-2.435	*0.015
	Female	3.8813	0.5710		
Language Related Dimension	Male	4.0473	0.5441	-2.912	*0.004
	Female	4.2297	0.5765		
Job/Future Study Related Dimension	Male	4.1394	0.5394	-2.074	*0.039
	Female	4.2619	0.5160		
Cultural Dimension	Male	3.9188	0.5868	-2.273	*0.024
Overall Attitude Toward English Language	Female	4.0619	0.5367	-3.042	*0.003
	Male	3.9570	0.4482		
	Female	4.1087	0.4435		

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

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

Each dimension consists of 5 statements describing the feelings of the Malay and non- Malay students towards the English language. The maximum mean score is 5 based on the 5-point Likert Scale. There were altogether 209 Malay and 116 non- Malay students involved in this study.

Table 5: T-test for English language attitude scores in different dimensions by race

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

Table 5 above shows that the mean scores for the Malay students were lower for all dimensions and also for the overall attitude score. However, the T-test showed that the difference was only significant for the English Language Dimension, Cultural Dimension and the Overall Attitude where $p = 0.017, 0.012$ and 0.020 respectively were all less than $\alpha = 0.05$.

Therefore, there were no significant difference in their attitudes 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.

7.4 Research Question 2: Attitudes Towards Learning Science in English

Table 6: Attitudes towards learning science in English: mean scores 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 towards science	3.9934

Table 6 shows the mean score for all the four Dimensions. The Job/Future Study Related Dimension has the highest score with mean score of 4.1056 followed by the Science Related Dimension (4.0369) then the Cultural Dimension (4.0113) and the 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, attitudes towards science are positive.

7.5 Science Attitude Score in Different Dimensions by Gender

Table 7: T-test for science attitude scores in different dimensions by gender

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

The mean score for male students was lower for all dimensions as well as the Overall Attitude score. However, the T-test showed that the difference was only significant for the 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 the Science Dimension and Cultural Dimension. We can conclude that female students have better attitudes towards science in general.

7.6 T- test for Science Attitude Scores in Different Dimensions by Race

Table 8: T-test for science attitude scores in different dimensions by race

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

Overall, the mean score for Malay students were lower than non-Malay students. But the T-test showed that the difference was only significant for the Science Dimension and Cultural Dimension where the values 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.

7.7 Research Question 3: Correlation between Students' Attitudes towards English and Learning Science in English

Table 9: Pearson correlation analysis between students' attitudes toward English and learning science in English by dimension

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

(** Correlation is significant at the 0.01 levels (2 tailed))

Table 9 above shows that there is a correlation between the attitudes toward English and attitudes 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 the 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 attitudes towards English also have good attitudes towards Science.

Thus, there are three main findings in this research project. Firstly, the students have a positive attitude towards the English language. The female students are more positive compared to the male students and there is no significant difference in attitudes towards the English language between Malay and non- Malay students. Secondly, there is also a positive attitude towards learning science in English. The female students are again more positive compared to the male students and there is also no significant difference in attitudes towards learning science in English between Malay and non-Malay students. Thirdly, the correlation analysis of the first and second research questions showed that those students who have positive attitudes towards English also have positive attitudes towards learning science in English. The overall correlations clearly showed that the Form Two Students in Kota Samarahan have positive attitudes towards learning science in English.

8.0 RECOMMENDATIONS AND LIMITATIONS

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 of 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 studies on students' attitudes toward learning science in English not be restricted to Form Two students only. Perhaps such a study can look at the attitudes of lower secondary school 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' attitudes 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 more accurate data to the findings. Since the present study is a preliminary one, the data was restricted to the all 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 students from other divisions in Sarawak.

9.0 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 opinions 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. A lot of training has being 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 preliminary study had 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 in English and Science in the *Ujian Penilaian Sekolah Rendah* Examination in 2001.

The main reason for this could be their awareness of 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.

10.0 BIBLIOGRAPHY

Babble, E.R. (1973). *Survey Research Methods*. California: Wadworth Publishing Company, Belmonte.

Dhinsa, H.S. and Chung, G. (1999). 'Attitudes and achievements of Brunei science students'. *International Journal of Science Education*, 23.

_____ (2003). 'Attitudes and achievements of Brunei science students'. *International Journal of Science Education*, 25 (8), pp. 907-1079.

Kenyon, G.S. (1968a). 'A conceptual model for characterizing physical activity'. *Research Quarterly for Exercise and Sport*, Vol.39, pp.39-109.

Krejcie, R.V. & Morgan, D.W. (1970). *Educational and Psychological Measurement*, Vol. 39, pp. 607- 610.

Hendley, L. Parkinson, M. Stables, G. & Tanner, P. (1995). 'Welsh students attitudes towards learning core subjects'. *Journal of Education Psychology*, 56 pp. 32-47.

Hendley, L., Parkinson, M, and Stables, G. (1996). 'Attitudes towards science and technology among Welsh students'. *British Journal of Educational Psychology*, 37, pp 119-132.

Middleton, J. & Spanias, P. (1990). 'Motivation for achievement in mathematics: findings, generalization and criticisms of the research'. *Journal for Research in Mathematics Education*, 30(1), pp. 65-89.

Schwegert, W.A. (1994). *Research Methods & Statistics for Psychology*. California: Brooks/Cole Publishing Company.

Sorge, C. , Newson, H. & Hagerty, J. (2000). 'Fun is not enough: Attitudes of Hispanic middle school students toward science and scientists'. *Hispanic Journal of Behavioural Science*, 22(2), pp. 332-345.

Thomas, K. (1971). *Attitudes and Behaviour in Penguin Psychology Readings*. Baltimore: Penguin Books.

"Maths and Science taught in English reveal better scores", *New Sunday Times*, 22 June 2003:1

APPENDIX A: Association with the English Language Dimension

Table 10 Association with the English Language Dimension

No.	Questions	Strongly Disagree	Disagree	Un-decided	Agree	Strongly Agree	Total (%)
1	English is the language I like most at school.	4.1	6.9	8.1	57.5	23.4	100
2	I can understand listening to discussions in English.	2.2	10.6	10.6	63.1	13.4	100
3	Study will be more interesting with English.	5.0	6.6	11.3	50.6	26.6	100
4	I believe I can think in English.	1.6	5.6	23.8	54.4	14.7	100
5	I think I can communicate in English.	1.6	5.0	24.4	56.9	12.2	100

Language- Related Dimension

Table 11 : Language Related Dimension

No.	Questions	Strongly Disagree	Disagree	Un-decided	Agree	Strongly Agree	Total (%)
6	English language is not so difficult to understand.	1.6	7.5	18.1	58.4	14.4	100
7	I think English is a very interesting language.	0.6	4.7	9.4	57.2	28.1	100
8	I think learning English is challenging.	1.9	3.1	7.2	51.9	35.9	100
9	I find learning English is useful.	0.6	1.9	11.6	40.3	45.6	100
10	I think my English will improve if I use it more often.	0.9	1.3	5.3	43.4	49.1	100

Job/ Future Study- Related Dimension

Table 12: Job/Future Study Related Dimension

No.	Questions	Strongly Disagree	Disagree	Un-decided	Agree	Strongly Agree	Total (%)
11	If I want to be successful professionally, I will need English.	0.6	0.6	6.9	42.8	49.1	100
12	I will need English even after completing school..	0.3	2.5	10.9	55.3	30.9	100
13	I shall get a job easily if my English is good.	0.3	2.5	8.4	43.1	45.6	100
14	If I wish to continue my education to a higher level then it would be better for me to master English.	0.6	0.6	5.0	47.2	46.6	100
15	I feel success is not difficult to achieve in learning English even at higher levels.	2.2	4.4	23.4	54.7	15.3	100

Cultural Dimension

Table 13: Cultural Dimension

No.	Questions	Strongly Disagree	Disagree	Un-decided	Agree	Strongly Agree	Total (%)
16	I would like my family members and friends to speak in English.	1.6	5.9	14.7	58.8	19.1	100
17	Malaysian television should show more English educational programmes.	0.9	5.3	13.4	61.6	18.8	100
18	My knowledge of English enables me to understand novels, magazines and other literature in English.	1.6	3.4	14.1	54.1	26.9	100
19	It is necessary that all Malaysian students should learn English no matter what type of school they attend. E.g. Islamic religious, Chinese or Tamil schools.	0.9	0.9	6.9	47.5	43.8	100
20	I find myself progressing everyday in my English.	0.6	4.1	27.5	49.4	18.4	100

APPENDIX B: Attitude towards Science Dimension

Table 14: Science Dimension

No.	Questions	Strongly Disagree	Disagree	Un-decided	Agree	Strongly Agree	Total (%)
1	Science is the subject I like most at school because it is taught in English	3.1	10.6	15.6	47.5	23.1	100
2	I can understand Science in English	3.8	11.9	12.8	47.2	24.4	100
3	I look forward to study more Science in English in future	0.0	4.7	10.0	56.3	29.1	100
4	I like to read books on Science written in English	0.6	10.9	21.3	56.9	10.3	100
5	I like the way Science is taught using English	0.6	7.5	17.8	58.8	15.3	100

Science- Related Dimension

Table 15: Science-Related Dimension

No.	Questions	Strongly Disagree	Disagree	Un-decided	Agree	Strongly Agree	Total (%)
6	I think Science in English is not so difficult to understand.	0.6	10.9	21.9	56.6	10.0	100
7	I think learning Science in English is very interesting.	0.9	4.7	16.6	58.8	19.1	100
8	I think learning Science in English is challenging.	0.3	1.9	4.7	52.8	40.3	100
9	I find learning Science in English is useful.	0.3	1.6	6.9	58.4	32.8	100
10	I think my English will improve by learning Science in English.	0.3	2.2	14.1	53.1	30.3	100

Job/ Future Study-Related Dimension

Table 16: Job/Future Study Related Dimension

No.	Questions	Strongly Disagree	Disagree	Un-decided	Agree	Strongly Agree	Total (%)
11	If I wish to continue studying Science at University level it would be good if I were exposed to learning Science in English now.	0.0	0.9	8.4	51.3	39.4	100
12	I shall need the knowledge of Science learnt in English even after completing school.	0.3	2.5	14.7	55.0	27.5	100
13	I shall get a job related to Science easily if I were to study Science in English.	0.6	1.3	11.6	60.9	25.6	100
14	I feel success is not difficult to achieve in learning Science in English at whatever levels.	0.3	1.6	18.1	57.8	22.2	100
15	My knowledge of Science in English will enable me to understand the world better from different perspectives.	0.0	1.6	13.4	61.3	23.8	100

Cultural Dimension

Table 17: Cultural Dimension

No.	Questions	Strongly Disagree	Disagree	Un-decided	Agree	Strongly Agree	Total (%)
16	I would like my family to learn about Science in English.	0.0	3.1	14.7	57.2	25.0	100
17	It is useful for all Malaysians students of all races to learn Science in English.	1.6	1.3	8.4	50.6	38.1	100
18	I believe that I have the potential to learn Science in English even though my native language is not English.	0.3	0.9	13.7	60.0	25.0	100
19	I imagine myself speaking fluently in English during Science lessons.	0.6	4.7	22.8	56.6	15.3	100
20	I find myself progressing everyday in learning Science in English.	1.3	2.5	21.9	55.9	18.4	100