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TEACHERS PERSPECTIVE OF USING ENGLISH AS A MEDIUM OF INSTRUCTION IN MATHEMATICS AND SCIENCE SUBJECTS

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The policy of changing the medium of instruction in the teaching of mathematics and science from Bahasa Melayu to English is an important innovation affecting teachers of mathematics and science. It poses special challenges not only for teachers who have been trained in the Malay medium but also for those trained in English. This investigation seeks to find out the achievement of students in mathematic and science subjects after considering the impact of prominent independent variables such as, the school, class and home environment, the teaching methodology and the teachers' attitude. Analysis of the development in the state of Terengganu has been carried out by the distribution of questionnaires to teachers involved. Result of the correlation and multiple regressions indicated that all the three factors are significantly associated towards students' achievement. However, the teaching methodology indicated a low level of moderate correlation which is believed to be the immediate issue that needed to be addressed in the new system.

Key Words: teaching methodology, English language, teaching mathematics, teaching science, effective learning

INTRODUCTION

English is one of the most important languages which are being spoken globally. Advancing into the year 2002 represents a significant milestone in the development of education in Malaysia with reference to the implementation of the teaching of English in Science and Mathematics (Foong, 2001) in all levels;

from the primary school to the university (Abdullah, 2009). After several years of its implementation, issues and complaints about the proficiency of teachers received serious attention by the education ministry and by the general public. Statements made in the newspapers concerning teachers who are incompetent had demanded the Ministry to strategically initiate policies in bringing success to the implementation.

A comfortable and attractive classroom is an environment which will be able to stimulate learning (Ahrentzen & Evans, 1989). Smith and MacGregor (2009), stressed in the importance of restructuring the curriculum and promoting creative collaboration. In addition, the presentable physical environment will strengthen the role of promoting students' achievement (Holliman & Anderson, 1986). Walberg (1991) mentioned that a conducive environment is always vital and effective for learning. Other than that, Hathaway (1983) stressed that quality classroom lighting is conducive to a greater comfort and contentment.

In terms of teaching, teachers can create their own style and methods in order to deliver lessons to the students (Loucks-Horsley & Matsumoto, 1999). Karapetrovic and Rajamani (1998) discuss a tool to measure a change in the students' knowledge before and after an individual teaching delivery. The relevancy of materials and textbooks as an important resource for teachers in assisting students should be always monitored. These resources many times served as one of the main instruments for shaping knowledge, attitudes and principles among the learned group (Noreen, 2002). The emergence of the internet as a medium for teaching and learning discovered to be an important revolution in education.

The use of information and communication technology (ICT) inspired the educators to apply new technique in teaching and learning (Razak & Asmawi, 2004). Hargreaves and Cristou (2002) suggested that teaching methodology should be designed not only to validate the programs but to support learning by focusing on the teaching and learning process at the program level. In terms of attitude, to Greiml-Fuhrmann and Geyer (2003**)**, suggested that good teachers should give explanations. Based on the work by Winsted (2000) and Zeithaml, Parasuraman & Berry (1990), it was revealed that service providers will only be able to deliver service encounters that will satisfy customers if they know what their customers expect in general, and if they understand the critical employee behaviours and attitudes from a customer's point of view in particular.

Brown's (2004) mentioned, competent instructor are those who know their subject, are willing to answer questions, are approachable, and also have a sense of humour. Mansvelt, Suddaby, O'Hara & Gilbertet al (2009) added that understanding impacts and influences on individual uptake and experiences of

profession development provides insights into sorts of institutional practices and policies likely to improve quality in learning. Therefore, this investigation seeks to uncover to what extent the teaching methodology, attitude and environment significantly influence the performance of students after the implementation.

Purpose of Study

The main purpose of the study is to investigate teachers perspective toward the students' performance after the implementation of Mathematics and Science subjects in English for primary and secondary school. Specifically this paper will provide an insight towards understanding the strength between variables such as teaching, attitude and environment and which among them significantly associated towards the performance of student at school. Further the discussion of the paper aimed to investigate as to what extent the identifiable variables such as environment, teaching methodology, and attitude indicated the strength of their relationship on performance of students.

METHOD

From Figure 1 below which portrays the theoretical framework, it could be observed that the performance of students which is the variable of primary interest is subject to many elements that are found shaping the outcome of the performance. Thus, our independent variable which consists of environment, teaching methodology, and attitude will be hypothetically tested in the study. Environment consists of environment in classroom, school and students home can affect the students' performance. . Analysis concerning environment at their home is also believed to provide considerable effect to the success of the implementation. Among the dimension included in the study is to what extent does the family encourage their children to speak English at home or while they were together. Teachings also affect the performance of students. We can see from characteristic of teachers in term of experience and training, teachers teaching methodology, teaching facilities, and teaching materials such as books, CD Rom, Magazines and facilities. The concept on attitude includes dimensions on teachers as well as students studying at various schools. Performance of students believed to be affected based on the attitude of teachers were also explored. Among the dimensions included concerned on whether the teachers are strict in their duties or teachers always put extra effort to improve teaching presentation. Besides that, from students attitude we can see to what extent students attentively concentrate during class and whether they complete their homework as scheduled.

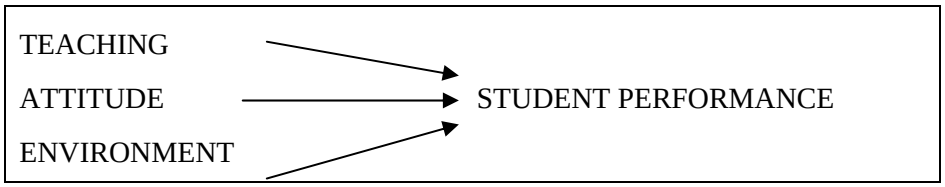

Figure 1. The Theoretical Framework

A population of a complete group of people for the study covered teachers who teach English, Mathematics and Science as a subject for primary and secondary school at Kuala Terengganu, Dungun, and Marang. The identification of a sample is generated from population frame listed by The Department of Education in The state of Terengganu for the year 2006. Based on the population almost 18,000 teachers (UPEN 2005) approximately 4,500 were involved in teaching mathematics, science, and English, a sample of 501 was drawn following the suggested table by Sudman (1976). For the purpose of satisfying the generalization among teachers for the whole state of Terengganu the study choose cluster sampling method for getting a relevant data. This method using a group that have heterogeneous members are first identified, then they were chosen at random based on the population list generated by the state Education Department.

The instrumentation by questionnaire is used in this study in order to collect the required data. Questions were divided into Structured Multichotomous and Likert Scales. The questions were divided into five sections Section A: demographic. Section B: measured Environment, Teaching, Attitude and Section C: Performance. Investigation was carried out using the stratified sampling method.] Other procedures adapted to further support the validity of our investigation were, conducting personal interview on several selected respondents to obtain information on the issues of interest. We also interviewed teachers who were conducting classes for English, Mathematics and Science subjects. The interviews were found to be useful in order to obtain more information regarding the performance of students in their school.

A theoretical framework was formulated and the following hypotheses were derived to address the research question:

Hypothesis 1: There is a significant relationship between environments with performance of students

Hypothesis 2: There is a significant relationship between teachings with performance of students

Hypothesis 3: There is a significant relationship between attitudes with performance of students

RESULT AND DISCUSSION

Reliability of the measurement

To ensure data for the study is reliable to be discussed, the reliability measures were conducted. Based on the suggestion by Nunally (1967), the coefficient of Alpha were found to be reliable and thus acceptable as indicated by the value of 0.884 for the performance and 0.815, 0.847, 0.783 for environment, teaching, and attitude respectively.

Frequencies

Table 1. Frequency for Demographic

Items	*Frequency*	*Percentage*
Gender		
• Female	357	*71.25%*
• Male	144	*28.75%*
Age		
• 20-25	64	*12.8%*
• 26-30	169	*33.7%*
• 31-35	90	*18 %*
• 36-40	70	*14%*
• 41-45	70	*14%*
• 46-50	26	*5.2%*
• 50 and above	12	*2.4%*
Status		
• Married	438	*87.4%*
• Single	60	*12 %*
• Others	3	*0.6%*
Teaching		
• Primary	278	*55.48%*
• Secondary	223	*44.51%*
Length		
• less than 2 years	97	*19.4%*
• 2-5 years	125	*25.0%*
• 6-10 years	105	*21.0%*
• 11-15 years	77	*15.4%*
• 16-20 years	51	*10.2%*
• More than 20 years	46	*9.2%*
Subjects		
• *Mathematics*	*214*	*42.7%*
• *Science*	*218*	*43.5%*
• *English*	*69*	*13.8%*

The composition of teachers demonstrated the increasing trend of more female is entering into the teaching profession. Our investigation revealed that most of the respondents were represented by more female rather than male counterparts. Teachers from the female group were represented by 357 representing 71.25% and those from the male group were 144 which made up 28.75% of the total sample (see Table 1). From these findings, the sample suggested that on the average most of the teachers that indulged in this research were from the female groups.

In most social science studies especially those in education, there were trends indicated the role of the new generation in undertaking the responsibilities for certain teaching discipline. Our survey strongly suggests the development. As for the age group of teachers, most of teachers were on the age bracket between 26 - 30 (169 teachers), 31-35 (90 teachers) followed by the age of 36 - 40 (70 teachers), 41- 45(70 teachers), and 20-25 (64 teachers) which respectively representing 33.7%, 18%, 16%, 16%, 12.8% and the other small percentage were from those at the age of more than 40. Moving symmetrically with the age group, in term of years of service most of the respondents were serving within 2-5 and 6-10 years of working in the sector which represented by 125 (25%) and 105 (21%). Interestingly to note that there were quite a big number of our respondents were very new with the teaching profession. There were 94 of them which is (19.4%) of the total sample investigated. Considering serving experience as an asset to the teaching profession respectively 15.4%, 10.2%, 9.2% are among those who had been working since 11-15 years, 16 to 20 years and more than 20 years.

The significant of teaching profession were usually reflected by most of those having their own family. Our finding displayed that 87.4 % of the teachers were married and a small percentage of them were still at their bachelorhood life. Our discussion believed that married teachers will provide more positive effect in building the performance of the students. We have the assumptions that this group of teachers despite of having their own commitment to their family would further strengthen their interest in shaping the positive values among the student. By having their own family not only promoting social stability but will generate other contingent effect on their focus, responsibility, attitude and performance for being a teacher toward building positive development among the students.

The teachers involved in our research were from the primary and secondary schools. Out of the groups, 55.4% were those from primary schools while 44.51% represented by those from the secondary schools. Out of those responsible teaching in both primary and secondary schools, 42.7%, 43.5%, and 13.8% involved in teaching Mathematics, Science and English respectively.

These figures further indicated that, the composition of teachers was assigned more towards the teaching Mathematics and Science has been reflected in the school curriculum.

Table 2. Frequency for Training Programme

Items	*Frequency*	Percentage
Training Programme		
• *None*	*69*	*13.8%*
• *Less than 5 times*	*257*	*51.3%*
• *5 – 10*	*137*	*27.3%*
• *More than 10 times*	*38*	*7.6%*

For the training program, a majority of the teachers has attended the training programmes and only 13.9% of the teachers have never attended any training programmes related to the subject taught (see Table 2). 51.3% has attended less then 5 training programmes, 21.3% has attended between 5-10 training programmes. There were also others who were given more then 10 times to attend a related training programme. This finding indicated that the issue of training is vital if the objectives of improving their skills are to be related with the performance of the students. More effective teaching initiative needed to be strategically planned and implemented so that the relevancy of education in shaping the performance of the students is to be realized towards strengthening the human capital of the nation.

Correlation Analysis

Table 3. Correlation Analysis between Environment, Teaching Methodology, and Attitude with the Performance

		Correlations			
		menenv	menteac	menattd	menperf
menenv	Pearson Correlation	1	.337**	.430	.396**
	Sig. (2-tailed)		.000	.000	.000
	N	501	501	501	501
menteac	Pearson Correlation	.337**	1	.674**	.312**
	Sig. (2-tailed)	.000		.000	.000
	N	501	501	501	501
menattd	Pearson Correlation	.430**	.674**	1	.429**
	Sig. (2-tailed)	.00	.000		.000
	N	501	501	501	501
menperf	Pearson Correlation	396**	.312	.429**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	501	501	501	501

**. Correlation is significant at the 0.01 level (2-tailed).

Our analysis indicated that the correlation between environment, teaching, and attitude towards performance were still important despite of the Pearson value (r) at 0.396, 0.312, and 0.429 (see Table 3). The value indicated that there is a weak correlation between teaching and the performance; low moderate correlation between environment and the performance, and low moderate correlation between attitudes as to the performance. However the entire construct found to be statistically significant at P value of 0.000 between all construct investigated.

The above correlation analysis demonstrated that all the three hypotheses formulated for the study were supported. The argument about the importance of teaching methodology, the attitude of the teachers in undertaking the responsibility of teaching students, and the nature of environment within the classroom as well as outside the classroom are among the necessary construct that needed attention towards enhancing the performance of the students. Even though our correlation for the survey conducted in the state of Terengganu indicated the value from low to moderate correlation, these does not mean that they failed to contribute towards the performance. The strategies now is for the authorities concerned to look for alternative, to rectify any mismatch between what had been done from the date of the introduction of the new curriculum.

According to Brophy (2004:28), one needs to be enthusiastic and sincere in contributing to a better students' performance. With proper rectification, better understanding of the development in the teaching profession, the intention of creating new knowledge frontier among the students will be a success.

CONCLUSION

The implementation of the teaching of Mathematics and Science in English has given rise to unprecedented issues. This study has looked into the impact of prominent independent variables such as, environment, teaching methodology and attitude. The environment as a construct was discovered to be significantly associated with the achievement of students at school. This study also found that, attitudes relate to the teachers' and students' attitude. Performance of students is also affected by the attitude of teachers. The correlation between teachings as a construct was not able to provide a strong impact on the performance of the student.

Finally, teachers should always be vigilant in controlling their classrooms and students as it is beneficial in helping to identify the reasons for the lack of progress. Through innovativeness and the creation of their personal style of teaching, interest could be generated through the feelings of comfortableness and cheerfulness in the classroom setting. Thus, the success of creativity and

innovation has been discovered to be working well if these strategies were to be attached with adequate teaching facilities.

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