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Exposure to the US News Media, Religion and the Malaysians' Students Attitudes Towards the United States

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ABSTRAK

Kajian ini bertujuan mengenal pasti pengaruh pendedahan kepada media Amerika dan agama ke atas sikap terhadap Amerika Syarikat dalam kalangan pelajar Malaysia. Seramai 133 pelajar lelaki dan 158 pelajar perempuan (181 Islam dan 105 bukan Islam) terlibat dengan memulangkan borang soal selidik tadbir sendiri yang diedarkan bagi mengukur sikap mereka terhadap Amerika Syarikat. Dapatan kajian memaparkan kecelaruan kecenderungan yang didapati majoriti tidak suka kepada nilai-nilai dan idea Amerika dan konsep demokrasi Amerika yang perlahan-lahan menular dalam kehidupan masyarakat Malaysia. Tetapi pada masa yang sama, mereka mengalu-alukan muzik dan filem Amerika, kemajuan saintik dan teknologi Amerika, dan etika kerja dalam kapitalisme Amerika. Tiada perbezan signifikan bagi kesemua item sikap di atas antara responden yang terdedah kepada CNN dan majalah Amerika berbanding yang tidak, kecuali sikap terhadap kemajuan saintifik dan teknologi Amerika Syarikat. Pengaruh agama didapati lebih ketara. Terdapat perbezaan signifikan antara responden Islam dan bukan Islam dalam sikap mereka terhadap nilai dan idea Amerika, muzik dan filem Amerika, dan kemajuan saintifik dan ternologi Amerika. Walau bagaimanapun, sikap terhadap cara mereka mengendalikan perniagaan dipuji kedua-dua kategori reponden. Pola dapatan kajian memberi makna bahawa pendedahan kepada media asing tidak semestinya petunjuk yang baik dalam menentukan orentasi terhadap budaya asing; sebaliknya faktor agama didapati lebih kuat mempengaruhi reaksi terhadap pengalaman pendedahan kepada budaya antarabangsa.

ABSTRACT

This study primarily seeks to determine the influence of exposure to US media and religion on Malaysian students' attitudes toward the United States of America. A total of 133 male and 158 female students (181 were Muslims and 105 non-Muslims) participated in a self-administered survey assessing their attitudes toward the US. The findings showed that ambivalent tendencies reflected in the majority of students' seeming dislike towards American idea and values, and 'concept of democracy' that are slowly seeping into the Malaysian way of life. On the other hand, the same respondents also welcomed American music and movies, its technological and scientific advancement, and the 'work ethics' that American capitalism claims to adhere. No significant difference was found on all four items on attitudes toward US between respondents who were exposed to CNN and US newsmagazine from those who were not exposed to these US media, except on attitudes towards US technological and scientific advancement. The influence of religion seems more prominent. Muslim and non-Muslim respondents significantly differed in their preference for American ideas and customs, music and movies, and technological as well as scientific progress. However, attitude towards the American way of doing business was well appreciated. The pattern of findings suggests that foreign media exposure is not necessarily a good measure of foreign cultural orientation, but religion seem to be a powerful factor of audience attitudinal reaction to international cultural exchange.

INTRODUCTION

Due to digital revolution and globalization, Malaysians today are more exposed to the American way of life and pop culture. More have come to learn about the United States of America's role in international affairs. While the growing influx of American cultural products has brought a greater opportunity for Malaysian youths to learn about the United States, the flow of US values and practices into the country is a contentious phenomenon. It is both a subject of admiration as well as resentment.

Malaysians have formed their perception of what America is and what it represents partly from their exposure to images of the US in the local media and in the US media and accordingly, have developed affinity or disdainful attitude towards the United States. While Malaysians can learn about the United States through international newsmagazines such as the *Times* and *Newsweek*, television is the most popular source of information where most of its programming is dominated by American programs. In addition of the availability of CNN in satellite television, recent estimate shows that about sixty percent of the programming in terrestrial televisions is imported, mostly from the US. Accordingly, it is presumed that television is the major source of stereotypes about America. Since many of the Malaysian youths have minimal contact with America and Americans, their perception of and attitudes toward the United States are assumed to be formed by exposure to portrayals about America in the mass media.

Although the United States is viewed highly because of it economic and technological progress, much of the American western cultural values are in contradiction with the Asian values. Many critics argued that exposure to US cultural products would weaken local culture and values, especially among the youths as they are heavy users of mass media. As such, a proliferation of US values, standards and popular culture could be perceived as interference in the philosophical, religious, or economic thinking of Malaysia societies; thus, could be one of the sources of resentment. Additionally, rising expectation generated by the US cultural products may not go well with Malaysian cultural values and aspirations. As a form of media imperialism, US cultural products may undermine local values within the social structure.

How do other cultures perceive the United States is a pertinent issue particularly with the "Americanization" of the global village and the new-found status of the United States as the sole superpower. While the US is respected for its economic and technological advancement, recent development in the war against terror led by the United States has spawned anti-American sentiment in many parts of the world. A recent global survey conducted by the Pew Research Center found that international sympathy for the United States, which rose in the aftermath of the Sept. 11, 2001 terrorist attack, has been replaced by an increasing resentment in the way America is prosecuting the war on terrorism (Thibault 2002). Brittan *et al.* (2003) have argued that the hatred or the anti-American sentiment did not only result from the clash of cultures or civilizations. But much of it has to do with American ethnocentric foreign policy. They pointed out four main sources of resentments, namely (i) the US proclivity to act unilaterally in international affairs, (ii) the style and tone of US foreign policy, (iii) opposition to particular US policies, and (iv) the way the US projects its overwhelming power. In some parts of the world, such as in Islamic countries, resentment towards the United States is reinforced by religious and ideological differences.

A love-hate relationship with America has existed even before the United States and its coalition partners invaded Iraq with the pretext that Iraq has weapon of mass destruction, and Saddam's repressive regime is a threat to the world security. While there is a wide admiration for American movies, music and technology, there is also a growing resentment towards the US in several countries which is attributed to its unilateralist policy (Thibault 2002). In light of this development, and given the fact that some Malaysian youths are exposed to US news media, particularly the CNN, and local television channels, the present study examined the influence of exposure to US news media on attitudes toward the United States as compared to those who were not exposed to US news media. More importantly, the role of religion is also considered in examining the effect of exposure to US news media on attitudes toward the United States. Hence, the specific objectives of the present analysis were (i) to determine whether there is a difference in attitude towards the United States between youths who are exposed to US news media and those who are not exposed, (ii) to determine whether there is a difference in attitude towards the United States between Muslim youths and non-Muslim youths, and (iii) to determine the influence of exposure to US news media on attitudes toward the US when religion is controlled for.

REVIEW OF LITERATURE

Based on the assumption that most people around the world develop their view of America from the media they are exposed to, the question of the effect of exposure to US media on non-America audiences has been a subject of inquiry. How others perceived the United States and the effect of exposure to American media on attitudes toward the United States have been studied since the sixties. While past studies have yielded important insights, many have failed to consider the role of religion in examining the effect of exposure to US news media on perception or attitudes toward United States. In other words, studies that determine the combined effect of exposure to US news media and religion on perception or attitudes toward the United States is clearly lacking.

The present study is not about the patterns of news coverage in the US news media, but about the consequences of exposure to images of United States in the US news media. Past studies have underscored the relevance of agenda-setting theory in explaining how the news media influence public opinion. As suggested by previous studies, (e.g. Wanta *et al.* 2004) news coverage did have an agenda-setting effect. The agenda-setting function of news media is expected as the news organizations usually subscribe to a particular ideology, which in turn shapes the nature and direction of coverage. Along this line, Bennets (1990), has observed that the nature of international coverage by news media is often consistent with the foreign policy of the nation. It has been reported that past research on international news coverage by U.S. network television news program revealed a lack of balance in the coverage. Kawatake (cited in Saito 1996) reported that news related to US in the US media has the following characteristics: (i) news about the dynamics of the business world in the US, (ii) news demonstrating America's political power, (iii) news depicting some aspects of the US as the "free" country, (iv), news dealing with trends in the US, (v) news showing social problems in the US, and (vi) news focusing on crises and conflicts in the coverage of foreign nations.

The images of United States portrayed in the US news media and local news media are assumed to have an influence on non-American audiences' perception and attitudes toward the United States. Salwen (1991), for instance, has pointed out that relentless promotion of Western ideas and concepts through exposure to Western media in foreign countries might affect recipients' lightly held beliefs and values such as perception and attitude towards other cultures. Dell'Orto *et al.* (2003), likewise, found that how news stories are framed has an effect on audience perception of foreign realities.

Most of the past studies on effects of media on perception and attitudes toward the United States were informed by social learning theory on stereotype formation and cultivation theory. The social learning theory emphasizes the importance of observing and modeling the behavior, attitudes, and emotional reaction of others in the formation of personal values, beliefs, and stereotypes. The mass media, particularly the television, are important sources of information and learning. Although stereotypes are generally learned from primary groups and peers, the mass media serves as an important agent, particularly in cross-cultural situations where direct personal experience is limited. For instance, in Thailand, Mexico, South Africa and Taiwan studies have found that American programs were major sources of social stereotypes about Americans (see Kalimapour 1999; Tan *et al.* 1986; Tan and Suarchavarat 1988). In their meta-analysis study, Emmers-sommers and Alen (1999) concluded that mass media are a significant source of learning and media can influence attitude, which in turn, may influence or shape behavior. Consistent with social learning theory, it is argued that frequent exposure to America news and entertainment programs might serve as important clues in the formation of perception and attitude towards America among foreign audiences.

Research on television effects has also examined how television contributes to perception of social reality. This line of research is often guided by cultivation theory. While many studies concerning cultivation theory focused on TV violence, the theory has also been applied to a wide variety of topics which included images or perception of America (see e.g, Kamalipour 1999; Saito 1996; Tan and Suarchavarat 1988). Cultivation theory postulates that the more time people spend watching television, the more likely it is that their conception of social reality will reflect what is seen on television. Accordingly, one probable effect of exposure to US cultural products, whether news or entertainment, could be to increase a person's favorability towards the country, in the way familiarity breeds positive feelings, as suggested by Synder *et al.* (1991). Synder *et al.* also pointed out that, while there were studies which found that liking the United States is positively related to exposure to foreign news via newspaper and watching TV entertainment series, familiarity through the media exposure may also breed contempt in other cases.

The findings on impact of exposure to American television on foreign audiences have been mixed. Ogan (1993), for instance, found that the consumption of foreign media products among Turkish respondents did not predict a favorable foreign cultural orientation or produce any clear pattern of positive description of the United States. Saito (1996) found that American program in Japanese television did not necessarily cultivate unfavorable images of the United States. Willnat *et al.* (1997), on the other hand, found that foreign TV consumption is related to negative stereotypical perceptions and feelings toward Americans. A meta-analysis of seventeen studies of the impact of American television on foreign audiences by Ware and Dupagne (1994) found small but statistically significant correlations between exposure to American entertainment programs and perception, attitude and behavior of foreign audiences.

In examining effects of exposure to US media on non-American perception of United States, it is important to note on the type of media and programs. Willnat *et al.* (1997) suggested that in studying media influence, researchers should separate the media that have different content and different audience. In light of this view, it is worthwhile to examine whether there is a difference in attitudes toward the United States among non-American audiences who were exposed to the CNN and US newsmagazine such as the *Times* and the *Newsweek* as compared to those who were not exposed. In a post September 11 era, it is important to examine this issue as news in CNN and US newsmagazine seem to be skewed towards the US's interest. Furthermore, recent research has observed an emerging CNN factor in the direction of US foreign policy by evoking responses in their audience through concentrated and emotionally-based coverage, which in turn applies pressure to governments to act in response to a particular problem (Hawkin 2002). On the contrary, news commentaries on the US unilateral policy in international affairs in the local media seemed negative and critical.

In addition to media use, religion could also be a factor in explaining for the variation in attitudes toward the United States among non-American audience. Religion is assumed to have a profound influence on audience perception and reaction to what they experience in life, including those what they learn from the media. A majority of the Malaysians are Muslim in which their values are in sharp contradiction with the western values. But this argument has not been adequately and empirically examined. In one study of religion and media, Golan (2001) found that on moral issues, religiosity is positively associated with perceived media impact on others. But on non-moral issues, religiosity is not associated with perceived media impact on self and others.

Based on the above discussion, this study tested the following two research hypotheses and addresses one research question:

H1: There is a significant difference in attitudes toward the United States between youths who are exposed to US news media from those who are not exposed to US news media.

H2: There is a significant difference in attitudes toward the United States between Muslim youth and non-Muslim youths.

RQ: What is the role of exposure to the CNN on attitudes toward the United States when religion is taken into account?

METHODOLOGY

The data reported here is part of a large survey data on media and war. The data were collected one week before the start of the Iraq War on March 19, 2003. A total of 295 undergraduate students completed a self-administered questionnaire survey on a voluntary basis between March 10 and 14, 2003. The group-administered survey contained questions including students' media exposure and attitudes toward the United States. Respondents were also asked to provide detail on gender, age, ethnic, religious affiliation and their interest in politics. The questionnaire was distributed to students enrolled in communication, language, and human resource development classes at a public university in Selangor, Malaysia. It took about 10-15 minute to complete the said questionnaire.

Exposure to US news media, as a variable, was measured by asking students to indicate how often (regularly, sometimes, hardly ever, or never) they used the CNN and US news magazine. The regularly and sometimes responses were collapsed into one and categorized as expose to US news media, while the hardly ever and never were collapsed into not expose to US news media category. The measure of attitudes toward the United States involved asking respondents to mark on the left or right of the five bi-polar statements that better reflects their views. The five statements are (i) it's good/bad that American ideas and customs are spreading here, (ii) I like/dislike American ideas about democracy, (iii) I like/dislike American way of doing business, (iv) I like/dislike American music and movies, and (v) I admire/do not admire the United States for its technological and scientific advances.

There were slightly more female (54.2%) than male subjects (45.8%) with an average age of 22 year (SD= 1.54). About sixty-two percent of the respondents were Muslims, and the other thirty-eight percent were non-Muslims. In terms of interest in politics, 41.3% of the respondents indicated interest in politics, 41.0% not very much interested and 17.7% not at all interested.

RESULTS

Table 1 summarizes the findings on attitudes toward the United States by exposure to US news media. As shown in Table 1, while a substantial percentage of the respondents were exposed to CNN, not many read US newsmagazines. Accessibility and selectivity factors may explain for one's exposure to these news media. With regard to attitudes toward the United States, the findings clearly showed that, on the one hand, a majority of the respondents like American music and movies, American ways of doing business, and admire America's technological and scientific advancement. On the other hand, a majority of the respondents disliked American idea and customs spreading here, and their disdain to American idea about democracy. This pattern of findings suggests that respondents weighted and reacted differently on issue related to morality such as cultural and religious values and issues unrelated to morality such as technological progress reported in the news media. Nevertheless, when responses on the five different items on attitudes toward the Unites States were compared, the results of the χ^2 tests revealed no significant differences on all the five items for exposure to CNN, suggesting exposure to CNN has no influence on feelings toward the United States. A similar pattern of results is observed for exposure to US newsmagazine, except on the item admire (do not admire) American technological and scientific advancement. Overall, the present study fails to support the hypothesized difference in attitudes toward the US between those who were exposed to the US news media with those who were not exposed.

Does religion have any bearing on non-American audiences' attitudes toward the United States? Table 2 summarizes the results of the c^2 tests on the five attitudinal items by religion. The survey found significant differences on four items (except item on American ways of doing business) when the responses of Muslim and non-Muslim respondents were compared. The differences are more pronounced on American idea and custom spreading in the country and the American idea about democracy. The percentage of Muslims who disliked American idea and custom spreading in Malaysia and American idea about democracy is significantly higher than that of non-Muslims. Overall, this finding generally supports hypothesis 2, suggesting that religion has an influence on

TABLE 1
Attitudes towards the United States by exposure to CNN and US newsmagazine

Item	Expose to US news magazine		χ^2	Expose to CNN		χ^2
	Yes (n=47)	No (n=244)		Yes (n=98)	No (n=191)	
Like American ideas and customs spread here	21.3	17.2	.210	19.8	16.8	.218
Dislike American ideas and customs spread here	78.7	82.8	(.647)	80.2	83.2	(.641)
Like American idea about democracy	28.3	24.5	.127	23.0	26.2	.204
Dislike American idea about democracy	71.7	75.5	(.722)	77.0	73.8	(.652)
Like American ways of doing business	60.9	57.8	.051	58.0	58.4	.000
Dislike American ways of doing business	39.1	42.2	(.821)	42.0	41.6	(1.000)
Like American music and movies	87.0	85.2	.007	88.9	83.7	1.031
Dislike American music and movies	13.0	14.8	(.933)	11.1	16.3	(.301)
Admire American technological and scientific advancement	76.1	89.3	4.923	85.7	88.0	.126
Do not admire American technological and scientific advancement	23.9	10.7	(.026)	14.3	12.0	(.723)

TABLE 2
Attitudes towards the United States by religion

Item	Religion		
	Islam (N=181)	Non-Islam (N=105)	χ^2
Like American ideas and customs spread here	8.3	34.3	28.906
Dislike American ideas and customs spread here	91.7	65.7	(.000)
Like American idea about democracy	11.0	48.6	48.140
Dislike American idea about democracy	89.0	51.4	(.000)
Like American ways of doing business	54.4	66.7	3.604
Dislike American ways of doing business	45.6	33.3	(.058)
Like American music and movies	81.6	91.4	4.357
Dislike American music and movies	18.4	8.6	(.037)
Admire American technological and scientific advancement	83.2	94.3	6.330
Do not admire American technological and scientific advancement	16.8	5.7	(.012)

Note: Figures are in percentages; χ^2 used continuity-correction test.

TABLE 3
Attitudes towards the United States by religion and exposure to CNN

Item	Muslim & Expose to CNN (n=59)	Muslim & Not Expose to CNN (n=122)	Non-Muslim & Expose to CNN (n=42)	Non-Muslim & Not Expose to CNN (n=63)	χ^2
Like America ideas and customs spread here	10.2	7.4	33.3	34.9	
Dislike American ideas and customs spread here	89.8	92.6	66.7	65.1	30.909
	χ^2 = .123 (.570)		χ^2 = .000 (1.000)		(.000)
Like American idea about democracy	8.6	12.2	42.9	52.4	51.625
Dislike American idea about democracy	91.4	87.8	57.1	47.6	(.000)
	χ^2 = .213 (.644)		χ^2 = .573 (.449)		
Like American ways of doing business	56.9	53.3	59.5	71.4	5.782
Dislike American ways of doing business	43.1	46.7	40.5	28.6	(.123)
	χ^2 = .087 (.768)		χ^2 = 1.116 (.291)		
Like American music and movies	80.7	82.0	100.0	85.7	
Dislike American music and movies	19.3	18.0	-	14.3	9.241
	χ^2 = .000 (1.000)		χ^2 = 4.866 (.027)		(.026)
Admire American technological and scientific advancement	76.8	86.2	97.6	94.3	11.064
Do not admire American technological and scientific advancement	23.2	13.8	2.4	5.2	(.011)
	χ^2 = 1.807 (.179)		χ^2 = .597 (.440)		

Note: Figures are in percentages.

attitudes towards United States among non-American audience.

As not many of the respondents were exposed to US newsmagazine, only exposure to CNN was considered in examining the combined effect of media and religion on attitudes toward the United States. As shown in Table 3, when exposure to CNN and religion were factored simultaneously, it is clearly evident that religion has a greater role in explaining the variation in attitudes toward the United States among the non-American audiences.

DISCUSSION AND CONCLUSION

The present study clearly underscores the idea that in measuring attitude researchers need to specify the component of attitude being examined. As observed in the present analysis, while non-American subjects had a favorable attitude towards American music, movies, and business practices, they seem to have reservation or objection on American customs spreading into the country and American idea about democracy. This pattern of findings show that, while it is acceptable to develop an aggregate measure of attitudes toward the United States, one should take note that aggregating data would also result in a loss of information and specificity. As evident in this analysis, the study would not be able to tap the differential in attitudinal orientation on matters pertaining to ideology and morality and those that are not.

The present study found that, even of the emergence of CNN factor in the news broadcast as pointed by Hawkin (2002), exposure to CNN did not cultivate favorable attitudes towards the US among non-American audiences. The finding of the relationship between exposure to American news media among the non-American audience and attitudes toward the US is not in line with the findings of a number of studies such as Ware and Dupagne (1994) and Dell'Orto *et al.* (2003) but corroborate with the findings of other studies such as (e.g., Saito 1996; Willnat *et al.* 1997). The inconsistency in the findings of the relationship between exposure to American news media and attitudes towards the US could be due to whether the confounding influence of religion was taken into account in the analysis. As observed in the present study, religion is a factor in explaining for the variation in attitudes towards the US, consistent with the findings of Golan (2001).

A no significant difference on attitudes toward the United States between those who were exposed and not exposed to CNN has to be taken cautiously. A failure to find support for the hypothesized difference could be attributed to measurement error. Only one question was used to measure the exposure variable and this measure may not be sensitive and discriminating enough. It is not known how much attention audiences pay to the news and programs in the CNN. Had a better measurement be established, the expected difference in attitudes toward the United States between those who were exposed and not exposed to CNN could have been observed. Despite some flaw in the measurement, the unexpected pattern of findings seems to suggest that effect of exposure may not be as strong as it was anticipated.

Although the influence of religion on attitudes toward the United States is clearly evident in the present study, it is not clear how religion actually influences information-processing capability of audiences. It is obvious that religion serves as a filter in news consumption, comprehension and reaction. One probable explanation is, because of the contrasting and competing ideological values between Islam and the west, Muslim audiences are sensitive and mindful when interpreting news produced by the American media, particularly when they are skeptical of the United States and recognizing the fact that the US news media seemed to promote nationalism in journalism.

The present study raised more questions than answers to the research objectives. A conclusion on the lack of effect of exposure to CNN on attitudes towards the United States among non-American audiences even though religion was taken into account could not be definitive enough. Although religion seems to have an influence on the attitudes, more studies are needed to understand how religion influences attitudes. And more importantly, a more rigorous design and statistical technique is required in examining the effect of exposure to US media and religion on attitudes toward the United States among non-American audiences. The relationships among religion, exposure to US news media, and attitudes toward the United States seem much more complex. In addition to religion, more factors need to be considered, and a multivariate analysis technique is more appropriate than a bivariate analysis in determining the nature and strength of relationships between exposure to US media and attitudes toward the United States.

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Participation and Quality of Life: A Study on the People's Empowerment in a Malay Village Community

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ABSTRACT

Pendayaupayaan sering dikatakan berlaku apabila manusia secara kolektif menentang mereka yang kaya, berkuasa, pemilik gedung perniagaan dan semua bentuk penindasan. Walau bagaimanapun, ia tidak selalunya begitu. Pendayaupayaan komuniti juga tersirat dalam penyertaan komuniti semasa mereka mengendalikan hal ehwal kehidupan. Dalam proses individu mengawasi kehidupan mereka menerusi penyertaan itulah terpancarnya elemen pendayaupayaan komuniti. Artikel ini menerangkan pendayaupayaan manusia yang terbentuk melalui penyertaan di sebuah perkampungan komuniti Melayu. Ia mengesahkan kesedaran komuniti mengenai keperluan dan masalah bersama yang dihadapi. Kesedaran ini diterjemahkan pula kepada tindakan kolektif apabila mereka menyusun diri dan menyertai pelbagai organisasi berasaskan kumpulan. Kumpulan-kumpulan ini adalah wadah bagi ahli-ahli komuniti menawarkan bantuan atau pertolongan untuk mencapai matlamat kumpulan mereka. Dalam usaha yang digerakkan oleh komuniti inilah individu-individu membentuk keupayaan mereka untuk mempengaruhi perubahan dalam kehidupan komuniti, membolehkan mereka membentuk kecekapan, belajar menggunakan usaha secara kolektif bagi menghasilkan output yang memanfaatkan mereka, dan akhir sekali menguasai kehidupan mereka. Menerusi proses penyertaan inilah pendayaupayaan manusia terbentuk yang membolehkan mereka perlahan-lahan meningkatkan kualiti hidup dalam persekitaran komuniti.

ABSTRACT

Empowerment is often said to take place when people collectively organise themselves to fight the rich, the powerful, the owner of large businesses and other forms of oppression. However, this has not always been the case. Community empowerment is also embedded in the people's participation when dealing with their everyday community life. It is within the process of how individuals take control over their life depicts the elements of community empowerment. This paper portrays the people empowerment through their participations in a Malay village community. It illustrates the people's awareness towards the emergent common needs and problems. People's consciousness is translated into a collective action when they organised themselves and participated in various group-based organisations. These self-propelling groups are avenues for members to offer assistance in order to meet the groups' goal. In this community-driven endeavour, individuals develop their capacity to affect change in their community life, enabling them to develop competence, learn to use collective effort to shape the outcomes that benefit them and ultimately, take control over their life. It is within this participation process that the people's empowerment is embraced and developed, enabling them to gradually improve their quality of life in the community environment.

INTRODUCTION

Quality of life covers a wide spectrum of human life. It includes the social, economics, cultural as well as natural living environment of the people or the community (hereafter the word community and people will be used interchangeably). Each of these areas can be further divided into sub-areas, for example within the social dimension it could cover education, health, demographic profile, safety, social integration and so forth. Schalock (1996, 2004) proposed eight dimensions relating to quality of life, and these include emotional well-being, interpersonal relationship, material well-being, personal development, physical well-being, self-determination, social inclusion and rights. Based on the dimensions mentioned, there are basically two main aspects concerning quality of life, the subjective well-being and objective well-being. The objective well-being has more to do with the tangible things that one benefits from a quality condition of life. Increase in income, wealth, and ability to possess a decent living environment are examples of this objective well-being. This tangible thing is not easy to obtain. Individuals have to work for it at the same time they have to participate in the process of achieving the quality of life. In relation to this, Borthwick-Duffy (1992) and Schalock (2004) considered community participation as one of the indicators under the dimension of social inclusion. It is through participation, community members are able to discuss, think, plan, manage and take action to meet their mutual felt-needs. The process of how they organise themselves collectively enables them to learn experience and exercise their skills and abilities to meet their common needs. Meeting the common needs will help to upgrade their quality of life. Thus, through participation, community members gain and develop skills, knowledge, experience and confidence. It is the participatory process engaged in by individuals as they work collectively to improve the quality of life in their communities is the important component of empowerment (Peterson and Speer 2000; Gutierrez 1995; Kieffer 1984). In general, many researchers perceive empowerment as the process through which people gain control over their life and participate in the life of their community (Israel *et al.* 1994; Zimmerman and Rappaport 1988; Kieffer 1984). In short, it is through participation that individuals or the community members help to increase their quality of life. This is about the subjective well-being. This paper focuses on how the individuals as community members see things and able to put themselves together to achieve their common needs so as to upgrade their quality of life in their living space, i.e., their living environment.

PROBLEM STATEMENT AND OBJECTIVE OF STUDY

Traditionally, quantitative approach is heavily used in studying quality of life. Economic indexes and social indicators are the two main yardsticks to measure people's quality of life. Hedley, Dubin and Taveggia (1980), Hankiss (1978), Rosen (1979) and Roback (1982) focused on economic account in examining quality of life. Both, Rosen (1979) and Roback's (1982) studies focused on economic indicators referring to wage and price amenities to rank the quality of life in cities. Headey (1993) made an attempt to integrate psychological variables into economic framework to account the household well-being and proposed three interrelated elements. According to the writer, the well-being is a function of stocks (comprised of family support, friendship network, leisure skills, work skills health and wealth), background (gender, knowledge, social status and age) and daily activities, including the psychic income and satisfaction.

One must not forget that there is also a subjective account or element in examining quality of life. Community involvement is one of it. As mentioned above, by participating in community life, individuals would be able to organise themselves to meet their need, thus help to enhance their quality of life. Participation is a process; hence it is difficult to study using a quantitative approach. It demands a qualitative methodology to explain the dynamic of the process. Hence, this paper will describe how people are able to improve their quality of life and illuminate the element of empowerment within that dynamic involvement process. through participation.

Many local studies on participation focused on the benefit gained by the participants in development programmes or project initiated by the government such as Felda (Rokiah 1987) and the conflict between modern bureaucratic and the local people's working style (Zahid 1992; King 1992) in promoting change. Zahid noted the 'tension' between the cultivators in the RISDA (Rubber Industry Small Holders' Development Authority) mini-estate programme and authority due to differences in working schedule introduced by the authority. Introducing a modern way of cultivation to the local people also created a conflict between estate and the villagers as reported by King in his study on SALCRA (Sarawak Land Consolidation and Rehabilitation Authority) in Sarawak. In development process, the participants have to make adjustment and adaptation as described indirectly by Rokiah (1987) and Shamsul *et al.* (1979). Peasants, fishermen, smallholders etc. do not reject development. The crucial point is whether this development meets the people's needs and how the responsible authority takes the initiative discussing related matters with the people (Nazaruddin *et al.* 2000). Writings on women's participation in development process within the perspective of gender have been developed by Makol (2004), Maimunah (1995, 1997) and Jariah and Laily (1997). They insisted that women have the capability to make change through their active participation and in some cases under certain circumstances such as when they are left by their husbands, they are able to earn their living. According to them, this portrays the people's (women's) empowerment. In short, various studies have shown that the participation is pertinent to make and affect changes in community life, and thus subsequently, quality of life.

Though many studies on people participation have been carried out, the focus has always been on the government-sponsored programme or project. There is still a need to study on the people's participations so as to explain community empowerment in relation to the quality of life. Studies on people's self-initiated projects that exemplified local people's involvement in promoting their quality of life have not been given high priority by local researchers. This investigation is crucial because local initiated projects could portray the elements of self-determination and self-development (another dimension in quality of life) of the community members. It is about their ability to care for themselves, which denotes their empowerment. In other words, by understanding the dynamic processes of how individuals or community members organise themselves, participating to achieve the felt needs help to explain community empowerment. This article focuses on the women's empowerment through participating in the local group-based organisations organised by them to meet their common needs or to overcome their perceived problems. It is important to note that the initiative taken to affect change may not involve the whole people in a community. Nevertheless, the women participation in this study is treated as an exemplar of people's empowerment as the women in the study area is part of the community as a whole.

In relation to empowerment, subjective aspect of the quality of life in terms of people's capabilities to affect changes in their life has not been explored qualitatively. Though there have been studies on empowerment, they are purely discussed in respect to learned behaviour (Zimmerman 1990; Abramson Seligman and Teasdale 1978), psychological empowerment (Zimmerman 1995; Chavis and Wandersman 1995), developmental perspective (Kieffer 1984) and skills development (Rappaport 1987) using quantitative approach. The whole notion about the subjective element of how people on their own initiative upgrade their living quality is yet to be explored further by social scientist. It is about understanding how the individuals as community members learn to organise themselves, identify common needs, work with each other towards achieving a common goal and taking decision to bring about change in their community life. These people's capabilities are the subjective element to quality of life in Sen's terminology (Sen 1993) that is closely related to the element of empowerment which will be explored further in this study.

Having said that, this study has three main aims; (i) to understand the individual's ability; (ii) to explain how such ability encourages individuals to affect change in their community life so as to upgrade their quality of life; and (iii) to discuss the relationship between the individual's ability and empowerment.

Quality of Life, Community Development and Community Empowerment: A Theoretical Underpinning

Quality of life and community development are not separate entities. Literally, community development is about a process of working towards achieving the betterment of the people (Batten 1957) by the people. In the phrase "achieving the betterment of the people", lies the notion of the quality of life. In fact, it is very much related in that the aim of community development is to upgrade the well-being of the community, which covers the economic, social and cultural aspects of the people through their own initiative or through a joint effort with the authority (United Nation 1960). To achieve this, the emphasis is on the participation of community members that can be seen through 'their effort to mobilise the people...into groups and organisations to enable them to take action on the social problems and issues which affect them' (Kramer and Specht 1969:10). Thus, community development is a process to develop a community with the goal of improving the quality of life of its members (Rahim and Asnarulkhadi 2003) by the community themselves or with the assistance from development agencies. In relation to this, Labonte (1993) suggests that communtity development is more about supporting community groups to identify and meet their needs and community-based projects are concerned with involving the community members, while Hawe (1994) used the term community development to describe several different project types such as community-based initiatives that have varying degree of people's participations.

There are two main themes embedded in the community development effort to improve quality of life. First, the 'product' of community development that is to provide betterment for the people by the people, which enhancing the quality of life of the community. Second, 'processes' towards achieving the product, which involves community participation. It is through participation that individuals or community members exercise their ability and portray their self-determination to achieve their need and overcome problems to affect change. It is within this dynamic process embedded the characteristics of empowerment. Hence, empowerment implies more participatory, social inclusion, bottom-up approaches and freedom to make decision. It is about achieving quality of life and human dignity (World Bank 2002) and helps in promoting wellness and human competence (Friedmann 1996; Parsons 1991).

The community needs vary from one community to the other. Even within the same community, the needs may differ from time to time or between groups. The needs may not be only the tangible ones such as the economic-related needs, but also the instrumental or supportive needs which are of equal importance to the community. The importance of the certain needs to certain community which can be translated as the felt needs that the members perceived and expected to achieve, embodies the element of the well-being of the community, epitomising the people's quality of life.

The ability of community members to realise and think about themselves, initiate an actions, plan and further decide for themselves in fulfilling their needs is the functioning characteristic of being a human. Thus, the ability is the functioning power of individual(s) to improve their condition individually or collectively, from one state to the other in which one can see the improvement or progress towards their quality of life. This ability is the actual empowerment which refers to the on going capacity of individuals or groups to act on their own behalf in achieving a greater measure of control over their lives and destiny (Staples 1990:30). In Sen's words, "functioning" represents parts of the state of a person that he or she manages to do or be in leading a life. The capability of a person reflects the alternative combinations of functioning the person can achieve (Sen 1993: 31), and these alternative combinations portray the person's ability to do valuable acts or reach valuables states of being (p. 32). In the process to achieve an improved condition of living so as to enhance their quality of life, they (community members) are definitely involved in the process of making choices. The process of making a choice or in Sen's words, 'the evaluative space' by the community members requires some decision-making skills. Thus, the people's ability to identify and prioritise their needs, plan their actions and strategise to meet the common needs portrays the empowerment of the community members to take control of their life. In short, how the people i.e. community members organise themselves and to take actions to upgrade their living conditions is about understanding the subjective aspects of how people improve their quality of life, in which also embeds the notion of people's or community's empowerment via community development endeavour. It is therefore, through community development "people strengthen the bonds within their neighbourhoods, build social networks, and form their own organisations to provide a long-term capacity for problem solving" (Rubin and Rubin 2001: 3) towards achieving better quality of life.

METHOD

This study employed a qualitative research approach. A total of 11 women were involved in this study. All of them are members of the local community group-based organisation such as Death Fund Association, Crockery/Eggs and Rice Association, and the Women's Self-help Group. This study was carried out in a small homogenous Malay village settlement situated in the Sepang District, Selangor. It is a land development scheme officiated in 1962 by the state government.

The snowball sampling technique was used in this study. Despite the small number of respondents, it reached its saturation point. For a start, the few names suggested by the leaders of the group or association during the preliminary informal conversation, a week before the actual data collection period, were considered as a set of a sample. In order to avoid sampling bias from leaders, each name was carefully cross-checked against the names suggested by the previous respondents. Using the snowball technique of sampling procedure, the few suggested az„*east three times by their friends were recruited as samples. By utilising this procedure, the validity of the data gathered is assured. The rationale was that the respondents' experience is the authentic form of information. This type of theoretical sampling (Glaser and Strauss 1967) directed the researcher to select appropriate sample by which the data (information) collected could be validated through the induction and deduction processes, as the number of samples accumulated. This interactive sampling strategy minimised the selection bias before going into the field. Indeed, the method of data collection and the sampling technique used also ensure a sufficient phenomenological intensity with regard to understanding community empowerment in this study.

Having identified the respondents, the researcher visited their homes to conduct the interviews. A four-week fieldwork using an in-depth interview technique was carried out. Prior to the interview session, a guideline was prepared. This guideline consists of questions pertaining to the respondents' experiences in initiating the local-based activities. It was a loosely and flexible kind of in-depth interview guideline which could easily be adapted to the real setting and was applicable to the respondents' experiences. The duration of each interview session ranged from a minimum of one hour and forty five minutes to three and a half hours. The assurance of confidentiality was also emphasised. The names used in the article are not their real names.

All interview sessions were carried out in the afternoon, after the completion of their daily chores. Occasionally, if more than one respondent were willing to be interviewed on the same day, adjustments and negotiations were made. All interview sessions were tape-recorded with the respondents' consent. Probing, paraphrasing or recapitulating technique was used during the interviewing. It allowed respondents to make some reflections on their experiences and reasoned out certain actions taken. This eventually delineated and explained the element of empowerment among respondents during their participation in community activities.

ANALYSIS OF DATA

After each interview session, the recorded dialogue was reviewed by listening to the tape and making notes. This induction process of making notes on respondents' factual descriptions was then cross-checked and validated by comparing it with the deductive idea/notes noted during the previous interview sessions. Therefore, in an interview process, the three elements of induction, deduction and verification took place simultaneously. The validity and reliability of the information gathered were checked during and between interviews. Ideas or loose thoughts on empowerment that emerged from the first interview then underwent the same process in the successive in-depth interview sessions.

After all interview sessions with the respondents were completed, the transcribing process took place. The verbatim transcribing process was done directly from the tape without editing, to maintain its originality. This process took triple the time taken in each interview session. Then, the data analysis continued. The analysing process was carried out in a cyclical manner that could be summarised as follows: (1) indexing or listing tentative categories (and sub categories) based on the transcripts; (2) refining and revising the categories by looking back at the information (transcript); (3) grouping the data under the tentative categories while revising, reassembling, and regrouping the overlapping and redundant categories for a 'permanent' categories; (4) choosing the theme statements that best described "the meaning" from the respondents' viewpoint by linking in and across the categories; (5) repeating steps 1-4 for the next respondents' interview tapes and comparing the findings by making analytical comparisons and deductions to produce central tentative themes at the end of the analysis process; (6) these central tentative themes or propositions were then again checked against step 4.

RESULTS

The study revealed that the respondents in the study possessed some abilities which can be labelled under three main themes; which are (i) understanding the common problem; (ii) organising and planning; and (iii) implementing and managing. Within each theme, there are also other sub-themes or categories as elaborated below. Examining these themes and sub-themes critically and closely will epitomise the people's abilities. These abilities as portrayed by the themes are the 'building blocks' of the people's empowerment, and they are interrelated. It is within the building blocks, other elements or traits of individual as well as group empowerment are embedded.

Understanding Common Problem

The process of making a community in a new settlement scheme (the study area) is not an easy task. The respondents realised that in the process of developing the community, they faced big problems or challenges. The common problem that they encountered was the real experiences of living in this land development scheme, as there was no assistance or allocation from the authority to help them at the beginning of their settlement. The common problems that they faced during those times can be categorised into three categories: (i) Difficulties in organising and preparing for communal activities; (ii) Difficulties during moment of crisis; and (iii) Expected problems and the need for mutual help.

(i) Difficulties in Organising and Preparing for Communal Activities

The respondents were really concerned about this problem. As settlers' wives, they shared the responsibilities with their husbands. Though initially together the problem was not a common problem at the beginning, they anticipated such difficulties to be attended quickly as they might jeopardise the process of making a community in the new settlement scheme. Reflecting on and consciously reasoning the problems that they faced, Mrs. Eton, who is the leader of the Crockery Association (*Persatuan Pinggan Mangkok*) elaborated:

> Hah! At times it was difficult to hold a 'kenduri' (feast). I still remember Ali (not his real name)...wanted to marry off his son. His wife just passed away a few months before the ceremony. He, like all of us here are from poor families...we owned only a few bits of crockery, pots and pans, not many....Therefore we, the settlers' wives, agreed together to help him out... . From that incident, we, Mrs. Yati, two other friends and I then discussed and decided to set up the Crockery Association. (Mrs. Eton)

Mrs. Yati, who was also involved in establishing and mobilising their friends, recalled the incident as a turning point for organising the group, as she expressed her deep concern about the problem:

> It was difficult building up a new life over here, in this settlement. It was a problem when you wanted to hold any functions or feasts. Who is going to help us over here if we do not help each other? Even though we wanted to compliant to the land scheme supervisor, there was no point...he could not do anything. There was no allocation for that sort of thing. That's where we started to think and decided to set up the Crockery Association, to help out any families and friends that needed our services. (Mrs. Yati)

The descriptions above clearly showed that they were sensitive to their community life. They have the ability to understand the difficulties that they face when organising communal activities, and based on that, they organise and mobilise themselves to form the respective group.

(ii) Difficulties during Moment of Crisis

As the group developed the members learned and became more matured, becoming more sensitive and attuned to their problems and needs. They did not restrict themselves only to initiating a group for solving problems faced during seasonal occasions (such as wedding ceremonies and communal feasts), but also during time of crisis such as when a death occurs in the community. The establishment of the Community Death Fund Association (*Khairat Kematian*) and the participation of the local people in this group exemplified the common concern felt by them. This was clearly expressed by Mrs. Anum, the leader of this group:

> We initiated this Community Death Fund Association in 1979...about ten years after the success of the Crockery Association. The fund we established was meant to help our members during moment of crisis - death of any family member...we provided money. For the last few years RM80 was given to the families of the deceased, and recently it was increased to RM100. We, the women, felt that this sort of help is a kind of support, a moral support to our friends who are depressed. (Mrs. Anum)

Mrs. Eton, who was among the initiators of this group together with Mrs. Anum, recalled the situation before its establishment:

> I can still remember one incident that happened....Our neighbour's wife passed away, his house was just down the hill. At that time there was no fund like this available. So we, the women, decided to collect money from house to house ...for the funeral services...to buy white cloth (for the deceased) and planks for making the coffin.... . (Mrs. Eton)

Based on the reasons above, it can be deduced that people had some understandings about their problems in community life, and as a result of thinking about these problems they began to seek solutions. It was in this process of self-reflection that the action of initiating the group and participating in the activity followed.

(iii) Expected Problems and the Need for Mutual Help

The problems faced were not personalised, and, as such, specific critical events (problems) associated with social life were not treated as individual problems. In fact, the reason people voluntarily became members in such associations was to help their friends. It is common in this village, among the community – especially the nearby neighbourhood – to practice mutual help activities as a way to lighten their burden or work load, regardless of whether this is when celebrating a significant day in family life, or in sorrow. Giving and receiving help to and from another person is a mutual practice among them, as well as being sensitive to their real life situations and past experiences in a self-contained village where mutual help is an essential practice, this is also in anticipation of the realisation that they might face similar problems in the future. This was clearly described by an ordinary member, Mrs. Maria:

> We live together...as neighbours...our friends' problems are also our problems. We share in times of difficulty and also in times of leisure. Helping each other, that's our lifestyle in this settlement scheme. Today, if one of our friends has a problem, we help her. Next, in future, if it is our turn to face a problem, our friend will help us out. That's why we set up this association...it helps us here. Five years ago I used the services provided by the Crockery Association...when my daughter got married....though I was a member of this association more than ten years ago. (Mrs. Maria)

The same response was also illustrated by Mrs. Fira, who is also a member in the Crockery Association/The Rice and Egg Cooperative, during a personal interview:

> Over in this scheme, we help each other. Today we help them; maybe tomorrow they will in turn help us. All of us here are facing the same hardship and problems...not much different. That's why I joined this Crockery Association/Rice and Egg Cooperation. We can help each other in times of need. (Mrs. Fira)

The above quotations describe the real situations faced by them. They were not only aware about the existing problems but also foresee the future problem as well. This showed that they were able to forecast certain future incidences in their life, and for them to take immediate actions is a necessity during those days. In other words, they were proactive, while at the same time possessed elements of self-initiation.

Organising and Planning Stage

The ability to understand common problem is crucial at the outset of the group formation. Without understanding what the real problem is, it is difficult to identify a common need. This is important because common needs could encourage concerted effort among community members to focus on their undertakings so that the targeted goal could be achieved. Based on the verbatim statements expressed above the data shows that they have the capability to think for themselves. This capability encouraged them to affect change in their community life. The people's capabilities to affect changes in their community life can be clearly seen in the organising and planning stage. In fact, these are the emerging themes deduced from the interviews. Within these themes there are several categories which denote the level of actions that they performed. Again, the action exemplified their ability to affect change gradually in their social life as explained below.

i. Pre Group Process – Inviting Friends

Before deciding on any activity, it was a common practice among the groups to invite members to attend a group meeting or discussion. Most of the group leaders interviewed mentioned that they had invited their group members to plan and organise the activities such as the Women Self-Help Group, Death Fund Association, and Crockery Association/Rice and Egg Cooperative as narrated by Mrs. Yati (Women self-help group leader) and Mrs. Anum (Community Death Fund Association).

> When we wanted to help our friends, for example, our neighbour who planned to hold a wedding ceremony, we would first meet. Normally, I will call all our friends and neighbours, either by phoning them or going personally to their houses. As for those friends who lived on the other side of the hill, I asked our representative to inform them....My close friend, Mrs. Eton, usually assisted me....We have been practising this since we started this group twenty five years ago. (Mrs. Yati)

> I always invited my friends, our group members, before deciding on any activity. I told them, "please come over this Sunday, we are going to have a meeting"....for our Community Death Fund Association or Crockery Association meeting this is what I normally do. I also informed and invited them to come along. (Mrs. Anum)

This practice was confirmed by the group members who had experienced the planning process, as shown from the statements below:

> I have been a member of this Women's Study Circle group for almost twenty years. When we want to carry out certain activities, the leader will inform us. It's the same when we are going to conduct a self-help group for a communal feast...the leader will inform us. She will say, "please come...we will discuss together". When I know about this, I will then inform my next door neighbours. (Mrs. Maria)

> In our association, we don't send letters inviting members to the meeting.... Normally Mrs. Anum, our leader, will invite them verbally. That's what we normally do for the Crockery Association, Community Death Fund Association Study Circle. (Mrs. Yati)

From the above statements, it can be inferred that, as a group, the members have the skills and ability to organise themselves for the planning activity. They are also aware of the importance of inviting and informing other members of the group. This can be seen by their self-initiated actions in informing or calling their friends to attend the meetings; either by writing invitation letters, sending them out or taking the initiatives to go to their friends' houses, showing that they have the ability to perform the task. This exemplifies that they are self-motivated, and prepared to take part in conducting the group activities. This situation is possibly related to the importance of having as many members as possible attending the group meeting or discussion (as a group process). The reason for this is that they can easily plan the action and divide the workload among the members. Hence, it is clear that they value the group process in organising, planning and deciding on an activity.

ii. Group Process

The actual group process normally takes place in a meeting. As informal groups, informal meetings are usually practised by the three neighbourhood groups. Group meetings are a focal point for most group members to sit together in discussing, planning and deciding on their group activities. In general, from the information gathered, it can be deduced that there are two functions of having a group meeting that can be categorised or labelled as (a) a medium for making decisions about the activity, and (b) as a medium for giving ideas. These two distinctive functions of group meetings employed by the community groups eventually influenced the group members' participation in the decision making process, as explained below. In other words, it is within group meetings that the process and level of peoples' participations in planning emerge simultaneously.

(a) Making decision *about* the activity

After the group members have agreed and decided on an activity or project, they then discuss and share ideas about it. Most of the members interviewed said that they had some experience in discussing different issues related to organising an activity. These experiences varied from one person to another, depending on the group they were engaged with. The issues discussed also vary according to the activities, from a very simple matter such as deciding on the date of the activity, to a more complex one such as determining the tactics and strategies in pursuing the agreed matters.

Deciding the date

Through in-depth interviews in an effort to understand people's participation process in the planning stage, the researcher noticed a significant element occurring at this preliminary stage - it was found that all the community groups emphasise the importance of deciding the date for activities. This is usually the first issue being raised and decided upon in the discussion, as can be seen from the statements given by Mrs. Wani, Mrs. Maria and Mrs. Hasif, consecutively. "Whatever it is, the date must be confirmed first.", "In the discussion, we would agree on the date first." and "Long before the launching of an activity, a suitable date is chosen and must be agreed by the members. This we decide during the group meeting."

Deciding the date is much more important than the time and venue for several logistic reasons, as perceived by the respondents, when they said, "When the date is confirmed we would then plan among ourselves...to do the preparation early... (Mrs. Mona)" and "All of us have our own work to attend to. This activity is a voluntary work. Once the date is fixed, then it would be easy for us to prepare. (Mrs. Lina)"

The reasons given by the respondents above on the importance of deciding on the date showed ttttheir willingness to contribute. It was also revealed through the interviews that the value and quality of group members' participations depend very much on the suitability of the date of the projects, as mentioned by Mrs Eton, "Our group activity stressed participation. If we are late in deciding the date, then the turn out will be poor". On the same tone, Mrs. Yati said, "We perform the work in a group. So, it is better to inform members early. When they know well in advance, they then can plan to come and help...". Mrs. Wan, who was also involved in the group activity, also said:.

> Since we have decided on the date and time, that would mean we have already committed ourselves to participate from the beginning to the end...arranging back the tables and chairs after the activity has ended. (Mrs. Wan)

The reasons given above show that these members have the knowledge to make use of local resources that they possess, and the group meeting is used to enable them to organise these resources. Their concern about the date to conduct the activity is practically important to the group because most community members are working to earn their living, especially the younger generations, who work in the nearby industrial estate. Consequently, only a few community members and group members are able to participate. In this regard, it is clear that some group members have the ability to think and project their ideas to affect other people's behaviour, i.e. their friends to participate in helping to conduct the activity.

'Content' of the activity

The group members' involvement in determining and identifying the 'content' of the activity of each group is also crucial. In this context, content refers to any sort of programmes and type of events. In order to achieve the targeted goal, group members try their best to ensure that the content of the activities is related to and geared towards those goals. This can be clearly seen from the comments made by Mrs. Fizi, when she said "Like I said earlier, we must be clear about our needs. Likewise in our meeting, we want to hear from the women, the members, what they want...later we can decide the activities they like".

(b) Giving ideas

In the community-initiated activity characterised by self-directed participation, the members' involvement is more active especially in expressing and sharing ideas in the group meetings. This can be seen by examining the statements of members' experiences. The dynamics of the group process in giving ideas to decide an activity was confirmed by Mrs. Fizi during the interview, a few days after their group meeting, when she said, "...It wasn't me who suggested the activity. The members wanted them. They suggested it in the meeting and requested me to handle it together with them...".

Regardless of their age, whether a senior member or a new member (young member) they were actively involved in discussion and giving suggestions based on their previous experience of handling the same task. In fact, this phenomenon was clearly observed in their group meeting when the researcher was invited to meet and attend their group meeting to discuss the preparation for the Hari Raya communal gathering. The practice of giving, sharing and discussing ideas before embarking on the activity is also reflected in Mrs. Maria's words:

> I always give my opinion on the type of dishes that we can cook for the feasts, whether for the religious or the communal feasts...because that's the type of work, we, the women can help with, isn't it? (Mrs. Maria)
>
> I told Mrs. Eton not to use the Crockery fund for our feast [but] I suggested that we collect money from the members. No matter how much, they are willing to pay... [Because] maybe there are some friends who are not members in the Crockery Association who will come to the feast... That way, we can save money to buy some more crockery. (Mrs. Anum)

Giving and sharing ideas in the community initiated activities, as shown above, allows members to be directly involved in the decision making process democratically. During this process, they learn to make suggestions and work together as a group to achieve their goals. Learning to give and accept suggestions are motivating factors for the members to continue contributing ideas, which later benefit the group. Moreover, it is a personal reward if an idea is well received and used by the group. This personal satisfaction encourages people to further contribute ideas and suggestions, which simultaneously develops and improves their competency and confidence in helping to organise a group activity. One important aspect in the whole process of contributing ideas is the development and formation of self-judgement, which is the ability of members to put forward ideas which are relevant and suitable for their group. All in all, the collective actions by the people in the organising and planning stage portray that they have the abilities and exercise those capabilities so as to create a better living environment according to their needs. Such endeavour is about people taking action through participation to upgrade their quality of life.

IMPLEMENTING AND MANAGING

The self-directed endeavour can be further examined in the implementing and managing stages. This is the third main theme emerged from the analysis. In comparison to the planning stage, people's participation in carrying out the activity is more active in both the implementing and managing stages. If at the planning stage some members only attend the meeting "to hear or listen" to the discussion, at this stage all members interviewed consciously described how they participate: helping in contributing their energy and materials to carry out the activity. From the respondents' statements, participating in implementing an activity is the 'heart' or the centre of their involvement. It is important to note here that in understanding the way they are involved in implementing and managing the group activities, the fundamental issue is to appreciate the capability of the members to carry out certain tasks or responsibilities voluntarily in their attempt to achieve group goals.

Contributing Energy

'Contributing energy' is the most frequent phrase used by the respondents in describing their involvement at this implementing stage. Literally, it means giving a helping hand, and has a close relationship to the mutual-help and self-help principle of conducting the activity. It concerns the work, tasks and responsibilities which each individual member have been decided upon and assigned at the earlier planning stage. This sharing of the workload between members is clearly expressed by the respondents below:

> Oh yes, helping Mrs. Yati cook 'mee goreng' and cookies for the feast is my favourite job. I like to do this.... This is the only way I can contribute my energy to the group. I can't do other than that because I'm getting older and weaker. Normally, we join with the WI (Women Institution) members to do this work. (Mrs. Maria)
>
> Collecting money from house to house is my responsibility when there is a death in this village. The money collected will be added to the money from our Community Death Fund collection, [because] each time our members or their close relatives pass away, our group contributes RM100 to the deceased family. If I didn't take this responsibility, didn't want to collect from members in our area, later the fund would decrease. (Mrs. Fira)

> For the preparation of the competition, I went to Bangi to get materials for the members. I went on my motorbike but I did not claim the money for petrol from my group. To me, this is small matter...what's important to me is that I can contribute to my group. (Mrs. Nor)

This people empowerment, i.e. the capability to carry out the task or responsibility towards achieving the goals as described above by the group members were also confirmed by the leaders. The role or task performed by the members which involves giving energy to support group activities shows their commitment to handle and manage the activity. The ability to share and perform the task together with, and for their friend reveals that they have to learn to work together as a group. This experience is an important element in the group work process, in which by possessing such abilities one can help to maintain the existence of the group, and such experience can be used when performing future group activities. In short, they are empowered in taking action to fulfil their needs and achieve their objectives.

Contributing Money and Materials

The member's commitment to support their groups (and group activities) to ensure the achievement of their common goal can also be examined through their collective action in contributing money to the project or activity. Again, their action is primarily based on the principle of sharing the burden. In some cases, the contributions made have a direct impact or benefits to the contributors, such as in the Death Fund Association and Crockery Association/Rice and Egg Cooperative. In order to ensure continuity, and to maintain group activity, there is some sort of mutual agreement among members to give 'donations' to their group. The statements below are some examples which illustrate their contribution and concerns maintain the group activity:

> Since I joined the Community Death Fund Association, I have had to contribute RM1 for every death that occurs, besides the RM4 annual fees. This is the regulation of the Association...[and] that's our promise last time. If we didn't pay the money, how could the Association survive or be maintained? (Mrs. Rosi)

> If we just expect donations from our friends who attend the class, of course it's not enough. Therefore, as their leader, I have to contribute at least RM10 per month. The money collected is used to pay the 'ustazah', water and electricity bills for this women's *surau*. I don't force them to pay...if we force them and they don't have the money, next time they are ashamed to attend. If the attendance is low, most probably the class will close. That's a loss to us...just because of few cents or ringgit, we would have to close this class. (Mrs. Anum)

> ...five eggs and three 'kati' of rice is not much, is it? That's the amount I normally contribute to friends who are going to marry off their son or daughter. We decided this a long time ago...so, the next time I want to have the same occasion, they will also help me. (Mrs. Yati)

The money contributed by the members is mainly to support the financing of the project or activity which also means that it maintains the group itself. It was also noticed that for a small project or activity, group members tried their best to solve the financial problems at group level. This commitment and the self-reliance spirit can be seen among the member of the self-help group in organising the communal activities. Below are some examples which depict their attempts to maintain and sustain the activity at this stage:

> ... to contribute RM10-15 for running the communal feast and self-help activity to clear the grave yards or school compound, is normal for me... We can't expect so much assistance from the District Office...how much they can give? (Mrs. Sidi)

> Yes, we contribute some amount of money, normally about RM10 to buy materials for the women to cook for our 'gotong-royong' activity.... For the orphanage project, each of us in the VDSC (Village Development and Security Committee- *Jawatankuasa Kemajuan dan Keselamatan Kampung*) contributes about RM15 to the fund....I know the District Officer can give us some allocation, but we can't depend on them very much. (Mrs. Wan)

The above descriptions are not exaggerations. Indeed, from close observation by attending the activity, for example in the Women Self-help group, the practice of giving donation is the norm. Since giving a donation is normal practice not only among leaders but also group members, it is not surprising that groups such as the Death Fund Association and Crockery Association have a stable flow of accounts.

Hence, from the above illustrations, and supported by evident obtained from group's leader during the study period, it is obvious that contributing money or other materials to the group for community feast or its members who are in need (such as for preparing a wedding feast) is voluntarily practised in community-initiated group activities, and is the way they keep the activity going. Their willingness to sacrifice their money to run the activity without depending on external assistance shows members' commitment to the group. In addition, it also shows that they have the capability and skills to manage other group activities themselves. They are self-reliant and through this participation process (by contributing the money and materials) they actually enable the group to survive. The skills and capabilities that are developed together, in their attempt to sustain the group (and group activities), are another product of people's empowerment, important element in the participation process.

DISCUSSION

Participation is a dynamic process. Hence, it is difficult to predict or even to quantify using a standard measurement. Participation is rather moulded by, and originates from, individuals' experiences in participating. In this research, the people's participation is viewed as a process by which individuals are involved in initiating, deciding, planning, implementing and managing the group and its activities. Participation is also a process in which people, as subjects in their own environment, seek out ways to meet their collective needs and to overcome their common problems so as to upgrade their quality of life and well-being. In pursuing the collective action, the self-help and mutual-help spirit that underlies the Asian traditional community spirit of working, helped to hasten the achievement of these shared interests through group-based-activities. Thus, by understanding this collective action in which members participate, it is possible to comprehend the aspect of people's empowerment.

The main reasons which motivate people to participate are the common problems that they faced and the common needs felt in their community lives. The responses given by them showed that they are capable to reflect past experiences and difficulties and further comprehend the problems, shared them together, and later organise themselves in their own way in the respective groups to establish, initiate and conduct various community-based activities. These reflections, which highlight the reasons for participation, include both their reaction towards overcoming past negative experiences, and intentions for fulfilling their future needs. The reflections are about people's real consciousness in understanding problems that they encountered, and their needs in the context of their everyday lives. These are the people capabilities which further developed into an action. This quality is an element of people's empowerment. In this case, the experiences undergone by the community members is not merely about psychological empowerment (Zimmerman 1995; Chavis and Wandersman 1995), rather it is the actual people empowerment when they are able to exercise their ability to take control over their lives (Staples 1990; Adam 1990).

The people's awareness was manifested through their actions in mobilising members, establishing groups, and participating in group activities. Their initial impetus to participate may not have materialised had the problems they encountered been personalised rather than shared. It was in the process of sharing the problems that previous negative experiences became a new knowledge that stimulated them into finding solutions. This complex interaction between them and their world involves the people's awareness and consciousness about problems, which eventually translated into group conscientisation (Freire 1972) in the form of establishing the group and initiating group activities. It can be suggested, therefore, that it is the people's ability, first, to perceive and understand their needs, and secondly to act upon it within their means which showed that, collectively, they have the potential to take charge of their lives. The effort to change their lives is the whole notion about how through participation, the people could improve their quality of life. Therefore, all the reasons given reflect the conscious intention of the people to liberate themselves from various kinds of problems and situations, and to achieve certain targeted social goals to fulfil their expected needs. This impetus towards organising and participating in community groups (and activities) is the first step in the grassroots mobilising process towards people's participation.

In summary, at this stage it can be said that the learning ability of the people to identify and to reason out their problems, needs and expectations which was later translated into an active process by to integrating and organising their efforts to decide, to influence and to engage in various community groups and activities, demonstrates that they were consciously aware of the internal community affairs, demonstrate the people's empowerment. Their energies fostered and engendered their participation in conducting, planning, managing and sustaining the various groups and their activities. People's empowerment therefore, constitutes the complex and continuous process of interaction between people themselves and their community life, and through understanding the situation (needs and problems) or by reflecting on their past experience based on those interactions, they collectively mobilised and organised themselves into various types of community-based groups to seek ways to overcome the problems and to achieve their shared needs and expectations (as revealed in the reasons given for participating). Hence, empowerment developed when individuals are able to comprehend their situation and their interaction with the living environment reciprocally influence their emotions, cognitive as well as behaviour which is translated in participation (see also Speer 2000).

The product of empowerment is manifested in their success in establishing the groups and conducting the activities, which resulted from their awareness of the situations and the capability to participate, manoeuvre, and negotiate and to take further action with the aim of improving general living standards, thus, the quality of life. It is the ability of the members to organise themselves in planning and decision making shows that they, as individual members and as a group, have the skills and capabilities to integrate their efforts and take personal responsibilitiy to achieve their social or group goals. It also depicts that the knowledge they have for using the group meetings as the focal point to mobilise their members' participation to decide about the activity and subsequently contributing energy and money to ensure meeting their targeted needs. The whole process is about the interactional competence of empowerment in Speer's term (2000). The interactional characteristic is the individual's (or people's) ability that is the functioning of individual members as manifested in their participation to effect change. Here, people's empowerment is their 'power to' or ability to think, rationalise and then act according to the situation and structure where they live. The end product of this empowering endeavour exercised by the people is the launching of the activities or actions to achieve their needs and expectations. Hence, the experiences gained by individuals in this village go beyond the perceived control (Chavis and Wandersman 1995). In the village, the people's empowerment through participation is resulted in a more tangible thing.

The self-directed groups and its activity or programme could not have materialised and been sustained to the present day if community members were not empowered to initiate and participate to support them. The creation and existence of these community self-directed activities emerged from their awareness about the needs and problems faced by community members as a whole. Various efforts have been made to alleviate problems and also to achieve group members' expectations by participating together. This resembles the idea of locality development model of Rothman's (1973). Since this empowering endeavour is generated from community members for the sake of developing themselves and other the community members as a whole, it demonstrates the principle of self-reliance. As such, this is in line with the consensus approach to community development as propagated by the state. Culturally and socially it has helped to develop themselves through the community self-help spirit and principle, and economically, at the same time has assisted the government in providing much needed services. In this regard, it can be suggested that an empowered community is taking the chances available within the structure in which they live and is confidently making use of their inherent ability to bring changes to their community life, and in those processes, by and large they are also contributing to national progress.

CONCLUSION

Human beings are creative creatures. Given them a chance and opportunities, they were able to do something to change their life conditions. This can be achieved through participation.

This denotes that participation can act as a means towards uplifting their standard of living, thus their quality of life. Also through participating in community life, community members exercised their abilities. However, first and foremost they should be aware about themselves, their problems and needs. In fact the people's awareness is the simplest form of people's ability. Afterward this ability grows into an action process via participation when community members progressively and collectively gaining more control over their lives, which underpin the notion of people's empowerment. In this respect, participation thus strengthened and intensified people's ability to master their lives. It was within the continuous learning process of participation that the people's empowerment was is embraced and developed which enable them to improve their quality of life gradually at their own pace.

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Perisian Helaian Hamparan (PHH) dengan Program Excel dan Perisian Berbantukan Komputer (PBK) dalam Pembelajaran Sains: Kesan Ke Atas Persepsi dan Kemahiran Berfikir Pelajar

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ABSTRAK

Kajian ini bertujuan untuk mengenal pasti keberkesanan penggunaan Perisian Helaian Hamparan (PHH) dengan program Excel dan perisian Pembelajaran Berbantukan Komputer (PBK) berbanding kaedah konvensional dalam pengajaran Fizik. Keberkesanan merujuk kepada persepsi pelajar terhadap penggunaan PHH dengan program Excel dan perisian PBK dalam proses pengajaran dan pembelajaran dan juga pemahaman konsep topik yang diajar. Kajian telah dijalankan ke atas 96 orang pelajar Tingkatan Empat melalui pendekatan *kuasi* eksperimen. Dua set soal selidik yang berbeza, yang kebolehpercayaannya telah ditentukan secara sistematik, telah digunakan untuk mengukur persepsi pelajar terhadap keberkesanan penggunaan PHH dengan program Excel dan keberkesanan penggunaan perisian PBK. Pengukuran pencapaian akademik pelajar telah dilakukan dengan menggunakan satu set ujian sumatif. Secara spesifik, kajian ini menggunakan reka bentuk faktorial (3 x 2 x 2) di mana faktor pertama mengandungi aspek kaedah pengajaran (PHH, PBK, KONV), faktor kedua mewakili jantina pelajar (lelaki, perempuan) dan faktor yang ketiga mengandungi aspek jenis soalan (aras kognitif tinggi, rendah). Analisis statistik yang terlibat ialah statistik deskriptif yang kemudiannya disusuli dengan statistik inferensi pada aras signifikan 0.05. Secara keseluruhannya, dapatan kajian menunjukkan bahawa pelajar kumpulan PHH memberikan maklum balas yang positif terhadap penggunaan PHH dalam pembelajaran Fizik, begitu juga dengan pelajar kumpulan PBK. Hasil kajian turut menunjukkan secara keseluruhannya, penggunaan Teknologi Maklumat dan Komunikasi (ICT) dapat menjana pembelajaran Fizik yang berkesan seperti mana yang diukur oleh ujian pencapaian yang dibina, di mana skor min kumpulan pelajar yang mengikuti kaedah pengajaran menggunakan PHH dengan program Excel (62.4) dan menggunakan perisian PBK (60.0) adalah lebih baik berbanding dengan kaedah konvensional (52.4). Dapatan kajian turut menunjukkan bahawa skor min soalan kognitif tinggi kumpulan PHH dengan program Excel (67.50) dan perisian PBK (61.25) adalah juga lebih baik berbanding dengan rakan mereka dalam kumpulan konvensional (55.53).

ABSTRACT

The research main aim is to determine the effectiveness of Excel spreadsheet and Computer Assisted Learning softwares as compared to the conventional method of Physics teaching. Effectiveness is referred to students' perception upon the use of Excel spreadsheet and Computer Assisted Learning softwares in Physic teaching and learning as well as their conceptual understanding on the topic taught. This study has been conducted on 96 Form Four students through a *quasi* experimental approach. Two different sets of questionnaires, which reliability were systematically established were used to gauge the students' perception of the effectiveness of using Spreadsheet and Computer Assisted Learning softwares. The measurement of students' academic performance was carried out using a set of summative test. Specifically, this study employed a factorial design (3X2X2) whereby the first factor represents teaching approach (Spreadsheet, Computer Assisted Learning, Conventional), the second factor represents gender (male, female) and the third factor represents types of questions (high, low cognitive levels). The statistical analysis used is descriptive analysis, followed by subsequent inferential analysis at the 0.05 level of significance. Overall the outcomes of the study reveal that students taught by Spreadsheet software responded positively towards the use of Spreadsheet in learning Physics and similar pattern of response is also demonstrated by students in the Computer Assisted Learning group. The results also show that generally the application of Information Communication and Technology (ICT) can generate effective Physic learning as measured in the self-instruced summative tests as the mean score of students exposed to Spreadsheet software and Computer Assisted Learning is 62.4 and 60.0 respectively as compared to those in the conventional group (52.4). It was also found that the mean scores of high cognitive questions for students' using Spreadsheet software (67.50) and Computer Assisted Learning software (61.25) is better as compared to their counterparts in the conventional group (55.53).

PENGENALAN

Perkembangan pendidikan di negara kita khususnya sejak awal tahun 1980an, menuntut perubahan berhubung cara guru mengendalikan pengajaran dan pembelajaran di bilik darjah. Hampir semua inovasi dalam bidang pendidikan, termasuk pelaksanaan sekolah bestari, memerlukan guru sekolah mengubah pendekatan mengajar supaya melaluinya pelajar dapat memainkan peranan yang aktif dalam proses pengajaran dan pembelajaran di samping turut serta dalam proses pembinaan makna *(meaning-making process)* (Chang-Wells dan Well 1993). Tegasnya tuntutan pendidikan semasa menuntut supaya pelajar tidak hanya berfungsi sebagai penerima maklumat, tetapi aktif dalam keseluruhan proses pengajaran dan pembelajaran. Meskipun demikian, dapatan kajian mengenai status pedagogi mendapati bahawa pedagogi di bilik darjah pada masa kini jika dibandingkan dengan masa dahulu tidak banyak perbezaannya, meskipun beberapa inovasi telah diperkenalkan dari semasa ke semasa (Cuban 1984; Cohen 1988; Rajendran 1998). Salah satu daripada sebab yang menyebabkan berlakunya keadaan ini ialah monopoli kuasa yang diamalkan oleh guru-guru dalam bilik darjah. Dalam kebanyakan situasi, guru didapati menguasai wacana yang secara tidak langsung menyebabkan pelajar menjadi individu yang pasif.

Dalam konteks pengajaran dan pembelajaran Fizik, isu yang banyak diperkatakan berkisar kepada pencapaian pelajar-pelajar bagi mata pelajaran tersebut dalam peperiksaan Sijil Pelajaran Malaysia (SPM) dan Sijil Tinggi Persekolahan Malaysia (STPM) yang tidak begitu memberangsangkan. Dalam kebanyakan keadaan, pelajar didapati menanggapi Fizik sebagai suatu mata pelajaran yang abstrak serta sukar untuk dikuasai berbanding mata pelajaran-mata pelajaran Sains yang lain (Abdullah 1998; Shaharom 1994). Salah satu komponen kurikulum Fizik yang kerap kali menjadi perbualan ialah tajuk Kinematik; komponen kurikulum yang melibatkan banyak penganalisisan graf dan carta untuk mengkaji keadaan gerakan jasad. Menurut Arons (1990), graf yang menggambarkan gerakan sesuatu jasad merupakan satu cara lain yang berkesan yang dapat menyampaikan maklumat yang membolehkan idea-idea yang kompleks mengenai gerakan disampaikan, dengan tidak memerlukan kepada penjelasan lisan yang panjang lebar. Oleh itu, kemahiran membina dan menginterpretasi graf adalah sangat penting. Kegagalan guru untuk mengajar kemahiran membina dan menganalisis graf atau mengambil langkah-langkah pemulihan untuk membantu pelajar menguasai kemahiran tersebut akan merugikan pelajar dan seterusnya menghalang mereka daripada memahami konsep-konsep Sains yang boleh diperoleh daripada graf dengan baik.

Persoalannya, bagaimanakah guru dapat mengubah cara pengajaran dan pembelajaran Fizik supaya ia menjadi lebih menarik serta pada masa yang sama membantu pelajar untuk memahami konsep-konsep Fizik dengan lebih mendalam. Inovasi dalam pedagogi sains dan perkembangan ICT terkini menyaksikan penggunaan internet, laman web dan jaringan yang agak ketara. Tegasnya perkembangan teknologi baru ini telah mewujudkan persekitaran pembelajaran baru yang lebih luwes bukan hanya dari segi masa, tempat, kaedah dan bahan pembelajaran, malahan turut mewujudkan peluang kolaborasi yang dalam proses pembelajaran yang berlaku (Nunan 1996; Jafari 1999). Justeru, kemudahan yang ditawarkan oleh ICT perlu dimanfaatkan dengan menerapkannya secara bermakna dalam sistem pendidikan sedia ada baik di peringkat rendah mahupun menengah.

Kajian kepustakaan berhubung penggunaan ICT sama ada untuk pembelajaran tutorial (Clack dan Sun 1996), penerokaan (Robler *et al.* 1997), sebagai alat aplikasi dan komunikasi telah menunjukkan kelebihannya sebagai alat bantuan pengajaran dan penyampaian maklumat yang lebih berkesan. Malahan tidak keterlaluan jika Feitcher (1991) menegaskan bahawa pembelajaran berbantu komputer menawarkan peningkatan sebanyak 10% hingga 20% dalam pencapaian pelajar berbanding kaedah konvensional yang biasa di samping meningkatkan keseronokan, motivasi, imaginasi dan kreativiti dalam kalangan pelajar. Namun demikian, penggunaan ICT dalam pengajaran dan pembelajaran perlu dirancang dengan baik dan bukan sekadar sebagai aktiviti sampingan yang bebas daripada tuntutan sesuatu kurikulum mata pelajaran. Penggunaannya perlu bersesuaian dengan keperluan kurikulum dan untuk mendapatkan kesan yang optimum hasil penggunaannya, perkakasan dan perisian yang digunakan perlu sesuai dengan kurikulum mata pelajaran yang diajar.

Justeru, kajian ini bertujuan untuk mengkaji kemungkinan memperkenalkan penggunaan PHH dengan program Excel dalam tajuk Kinematik yang melibatkan graf. Martin (1996) menyatakan bahawa PHH boleh meningkatkan kefahaman pelajar terhadap hubungan berangka dalam satu graf dan Winn (1990) menyarankan bahawa aktiviti *microcomputer based laboratories* (MBL), dengan pemplotan graf dilakukan oleh komputer amat bermakna dalam situasi pengajaran dan pembelajaran. Di samping itu, kajian ini turut ingin meneroka kemungkinan memperkenalkan penggunaan perisian PBK dalam tajuk yang sama. Seterusnya kajian ini juga ingin mengkaji persepsi pelajar terhadap keberkesanan perisian aplikasi PHH dengan program Excel dan perisian tutorial PBK setelah mereka menggunakan kedua-dua perisian tersebut dalam pembelajaran Fizik bertajuk 'Kinematik'.

Keberkesanan pengajaran berkait rapat dengan teknik dan pengolahan penyampaian guru serta adunan yang sesuai dengan bahan-bahan bantu mengajar yang digunakan. Penggunaan ICT dalam proses pengajaran dan pembelajaran mempunyai banyak kelebihan dan kebaikan. Bagaimanapun guru perlu berhati-hati dalam melaksanakan pendekatan ini. Kesilapan dalam membuat pertimbangan boleh mengakibatkan pembaziran masa dan tenaga, menghalang penggunaan kemudahan ICT yang lebih produktif, menjurus ke arah penyalahgunaan kemudahan ICT dan mengakibatkan lebih banyak masa diperlukan oleh pelajar untuk mempelajari sesuatu bidang ilmu. Adalah diharapkan dapatan kajian ini dapat mengubah persepsi guru terhadap peranan yang perlu mereka mainkan dalam melaksanakan pengajaran dan pembelajaran di bilik darjah. Guru harus berusaha mewujudkan budaya pembelajaran berpusatkan pelajar. Beliau juga harus prihatin tentang gaya dan prinsip pembelajaran serta penerimaan pelajar dalam era ICT supaya penyesuaian isi kandungan dengan tahap pemikiran pelajar dapat dicapai. Tegasnya, guru harus bertindak sebagai fasilitator atau pengemudi ilmu dan tidak lagi hanya sebagai pemberi ilmu *(knowledge transmitter).*

TUJUAN KAJIAN

Umumnya, kajian ini bertujuan untuk mengenal pasti keberkesanan penggunaan perisian helaian hamparan (PHH) dengan program Excel dan perisian pembelajaran berbantukan komputer (PBK) berbanding kaedah konvensional dalam proses pengajaran dan pembelajaran Fizik. Menyusul daripada tujuan kajian ialah objektif kajian yang secara khususnya bertujuan untuk mengenal pasti:

i. persepsi pelajar terhadap keberkesanan penggunaan PHH dengan program Excel dalam pembelajaran Fizik bertajuk 'Kinematik';
ii. persepsi pelajar terhadap keberkesanan penggunaan perisian PBK dalam pembelajaran Fizik bertajuk 'Kinematik';
iii. sama ada terdapat kesan kaedah pengajaran terhadap skor min pencapaian tajuk 'Kinematik' dalam mata pelajaran Fizik;

iv. sama ada terdapat kesan jantina terhadap skor min pencapaian tajuk 'Kinematik' dalam mata pelajaran Fizik;
v. sama ada terdapat kesan jenis soalan terhadap skor min pencapaian tajuk 'Kinematik' dalam mata pelajaran Fizik; dan
vi. sama ada terdapat interaksi antara jenis soalan, kaedah pengajaran dan jantina terhadap pencapaian tajuk 'Kinematik' mata pelajaran Fizik.

Untuk mencapai objektif kajian, beberapa hipotesis perlu diuji iaitu:

Ho1 : Tidak terdapat kesan utama kaedah pengajaran;
Ho2 : Tidak terdapat kesan utama jantina;
Ho3 : Tidak terdapat kesan utama jenis soalan;
Ho4 : Tidak terdapat interaksi antara kaedah pengajaran dengan jantina;
Ho5 : Tidak terdapat interaksi antara jenis soalan dengan kaedah pengajaran;
Ho6 : Tidak terdapat interaksi antara jenis soalan dengan jantina; dan
Ho7 : Tidak terdapat interaksi antara jenis soalan dengan kaedah pengajaran dengan jantina.

METODOLOGI KAJIAN

Reka Bentuk Kajian

Kajian ini menggunakan kaedah *kuasi eksperimen* dengan kumpulan kawalan. Hanya ujian pos diberikan setelah rawatan atau olahan dijalankan ke atas kumpulan eksperimen. Reka bentuk kajian adalah berasaskan reka bentuk ujian pos kumpulan kawalan tidak serupa *(Posttest-Only, Nonequivalent Control Group Design)*. Perincian reka bentuk eksperimen yang dijalankan adalah seperti dalam *Rajah 1*. Kumpulan PHH dan kumpulan PBK menggunakan modul pembelajaran dalam proses pengajaran dan pembelajaran Fizik bertajuk 'Kinematik' yang berlangsung selama lebih kurang satu bulan dengan jumlah masa pengajaran dan pembelajaran selama 640 minit. Bagi kumpulan KONV, kaedah konvensional yang melibatkan kaedah kuliah dan eksperimen makmal yang dijalankan berdasarkan kandungan yang terdapat dalam buku teks yang digunakan iaitu Fizik Tingkatan 4 yang diterbitkan oleh Pustaka Sistem Pelajaran Sdn. Bhd. Malaysia. Kedua-dua modul PHH dan PBK yang dirancang menggabungkan strategi dan kaedah pembelajaran kolaboratif, individu, aktif, reflektif dan anjal. Berasaskan kepada reka bentuk tersebut, dan mempertimbangkan pemboleh ubah bebas yang terlibat dalam kajian, reka bentuk yang digunakan ialah reka bentuk faktorial (3 X 2 X 2) (lihat Jadual 1).

Berdasarkan Jadual 1, reka bentuk faktorial (3 x 2 x 2) dalam kajian ini mengandungi tiga faktor. Faktor pertama adalah kaedah pengajaran yang terdiri dari tiga aspek iaitu menggunakan perisian helaian hamparan (KUMP PHH), menggunakan perisian (KUMP PBK) dan menggunakan kaedah konvensional (KUMP KONV). Faktor yang kedua adalah jantina yang terdiri dari dua aspek iaitu pelajar lelaki dan pelajar perempuan. Manakala faktor yang ketiga adalah jenis soalan yang terdiri dari dua aspek iaitu soalan kognitif tinggi dan soalan kognitif rendah.

Sampel Kajian

Populasi kajian ini terdiri dari pelajar Tingkatan Empat di Sekolah Menengah Sains Muar (SMSMr), Muar, Johor Darul Takzim. Semua

Kumpulan	Olahan/Rawatan	Ujian Pos
G1	X1	O1, O2
G2	X2	O1, O2
G3		O1, O2

G1 : Kumpulan Rawatan
G2 : Kumpulan Rawatan
G3 : Kumpulan Kawalan
— — — — : Ketiadaan Pensampelan Rawak

O1 : soal selidik
O2 : ujian sumatif

Rajah 1: Reka bentuk eksperimen ujian pos kumpulan kawalan tidak serupa

JADUAL 1
Reka bentuk ujian pos kumpulan kawalan tak serupa reka bentuk faktorial 3 x 2 x 2

Kaedah Pengajaran	Jantina	Jenis Soalan	
		Kognitif Tinggi	Kognitif Rendah
E1 (KUMP PHH) Menggunakan Perisian Helaian Hamparan	L P	G1	G1
E2 (KUMP PBK) Menggunakan Perisian PBK	L P	G2	G2
K (KUMP KONV) Menggunakan Kaedah Konvensional	L P	G3	G3

E = Kumpulan Eksperimen
K = Kumpulan Kawalan
L = Lelaki

populasi ini mengambil mata pelajaran Fizik sebagai mata pelajaran elektif. Bersesuaian dengan kaedah *kuasi* eksperimen yang dijalankan, kajian ini melibatkan tiga kelas daripada keseluruhan 11 kelas tingkatan empat di Sekolah Menengah Sains Muar, Johor. Sampel kajian terdiri daripada 34 responden yang menggunakan PHH dengan program Excel, 30 responden yang menggunakan perisian PBK dan 32 responden menggunakan kaedah konvensional. Jumlah keseluruhan pelajar yang menjadi sampel kajian ini adalah seramai 96 orang dari tiga buah kelas yang diajar oleh guru Fizik yang sama dan mempunyai pencapaian yang hampir sama berdasarkan keputusan PMR dalam mata pelajaran Sains dan Matematik. Oleh kerana sampel kajian tidak merupakan satu perwakilan yang sebenar, keputusan, interpretasi umum dan generalisasi hanyalah benar dan boleh diimplikasikan kepada pelajar sekolah terbabit sahaja.

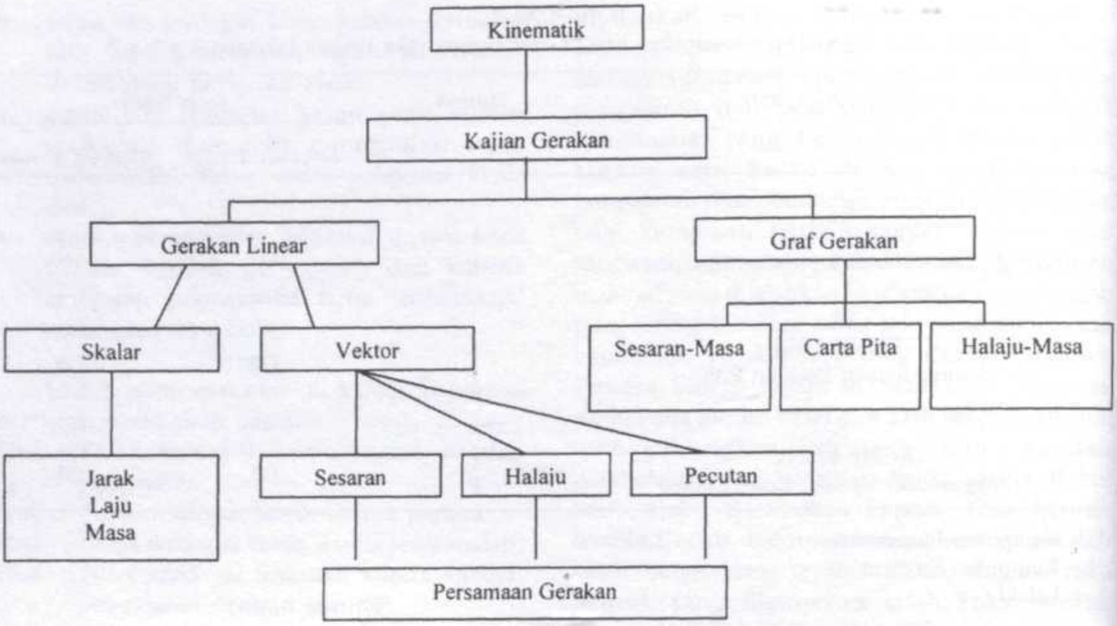
Kajian ini terbatas kepada tajuk 'Kinematik' kerana tajuk tersebut memerlukan pelajar untuk mahir menganalisis graf dan carta untuk mengkaji keadaan gerakan sesuatu jasad. Semua isi kandungan modul yang dibina merangkumi Sukatan Pelajaran Fizik Tingkatan Empat di bawah tajuk 'Kinematik'. *Rajah 2* menunjukkan pemetaan terperinci keseluruhan tajuk 'Kinematik'.

INSTRUMEN KAJIAN

Soal Selidik Pelajar

Soal selidik menggunakan skala Likert dengan lima pilihan iaitu 1 untuk sangat tidak setuju, 2 untuk tidak setuju, 3 untuk tidak pasti, 4 untuk setuju dan 5 untuk sangat setuju. Skor diberikan bagi memudahkan penganalisisan data daripada sangat setuju kepada sangat tidak setuju. Soal selidik dibahagikan kepada dua bahagian. Bahagian A mengandungi lima item untuk mendapatkan maklumat mengenai latar belakang responden dari segi jantina, bangsa, pencapaian PMR dalam mata pelajaran sains dan Matematik, tahap pengetahuan komputer dan pemilikan komputer peribadi di rumah. Bahagian B soal selidik kumpulan PHH mengandungi dua puluh item soalan untuk mengetahui persepsi pelajar terhadap keberkesanan penggunaan PHH dengan program Excel, manakala bahagian B soal selidik kumpulan PBK pula mengandungi dua puluh item soalan untuk meninjau persepsi pelajar terhadap keberkesanan penggunaan perisian PBK dalam pembelajaran Fizik bertajuk 'Kinematik'.

Oleh kerana soal selidik menggunakan skala Likert, indeks kebolehpercayaan diukur dengan kaedah Cronbach Alpha (Nunally dan Bernstein, 1994). Nilai Cronbach Alpha yang diperoleh



Rajah 2: Pemetaan terperinci keseluruhan tajuk 'Kinematik'

menunjukkan satu ukuran ketekalan dalaman instrument yang dibina. Daripada analisis statistik yang dilakukan terhadap soal selidik kumpulan PHH nilai Cronbach's Alphanya adalah .94 manakala untuk kumpulan PBK nilai Cronbach's Alpha ialah .82. Berdasarkan kedua-dua nilai Cronbach Alpha yang dilaporkan, dapat dirumuskan bahawa kedua-dua soal selidik tersebut sesuai digunakan sebagai instrumen untuk meninjau persepsi pelajar terhadap PHH dan PBK masing-masing.

Ujian Pencapaian

Soalan-soalan yang dikemukakan dalam ujian pos adalah soalan berbentuk objektif. Bilangan soalan yang dikemukakan adalah sebanyak tiga puluh soalan. Jadual 2 di bawah memperincikan bilangan soalan serta kekompleksan kognitif yang terlibat.

Pemilihan item-item mengikut aras kognitif telah disemak oleh dua orang guru Fizik. Analisis korelasi Spearman digunakan untuk melihat korelasi aras pengetahuan (skala ordinal) dalam jadual penentu ujian di antara pengkaji dengan guru pertama dan guru kedua. Indek korelasi Spearman di antara pengkaji dengan guru pertama dan guru kedua ditunjukkan dalam Jadual 3.

Jadual 3 menunjukkan korelasi tinggi yang signifikan di antara pengkaji dengan guru pertama (0.713) dan guru kedua (0.558). Ini menunjukkan wujud persamaan di antara pengkaji dan penilai dalam menentukan aras kognitif item-item soalan dalam ujian sumatif yang digunakan. Sehubungan itu, pengkaji memutuskan untuk mengekalkan kesemua item soalan dalam ujian sumatif mengikut aras kognitif seperti yang telah dikenal pasti. Bagi

JADUAL 2
Jadual penentuan ujian

Domain Kognitif		No Soalan	Bilangan Soalan
Kognitif Rendah	Pengetahuan	S8, S9, S23, S24, S30	5
	Kefahaman	S5, S14, S15, S16, S18, S27, S29	7
Kognitif Tinggi	Aplikasi	S1, S2, S3, S6, S13, S19, S20, S21, S28	9
	Analisis	S4, S10, S11, S22, S25	5
	Sintesis	S7, S12, S17, S26	4

JADUAL 3
Korelasi aras pengetahuan dalam JPU

Spearman's rho	Guru 1	Guru 2
Pengkaji Pekali korelasi, r	0.713	0.558
Signifikan (dua hujung), p	0.000**	0.001**
N	30	30

**p<.01 : korelasi adalah signifikan pada aras 0.01 (2-hujung)

ujian sumatif, pekali kebolehpercayaan dikira menggunakan rumus KR-20 kerana ujian sumatif merupakan soalan objektif berbentuk dikotomi dan mempunyai kesukaran yang berbeza antara satu sama lain (Dick dan Haggerty 1991). Berdasarkan analisis KR-20 yang dilakukan, didapati nilai KR-20 adalah .81. Maka ujian sumatif tersebut boleh digunakan sebagai instrumen kajian untuk mengukur prestasi pencapaian pelajar dalam tajuk 'Kinematik'.

Seterusnya bagi ujian sumatif tersebut, pengkaji turut menghitung indeks kesukaran (IK). Menurut Sax (1989), kesukaran sesuatu item ujian bergantung kepada berapa ramai calon dalam kumpulan yang diuji menjawab betul dalam item tersebut. Semakin ramai calon menjawab betul item tersebut, semakin mudahlah item tersebut dan sebaliknya. Dari ujian rintis yang dijalankan ke atas empat puluh orang pelajar tingkatan lima yang mempunyai ciri-ciri yang identikal dengan sampel kajian, didapati nilai indeks kesukaran ujian sumatif adalah 0.70. Nilai ini menunjukkan tahap kesukaran yang sederhana dan seterusnya boleh digunakan untuk menguji pencapaian pelajar (Thorndike dan Hagen 1997).

Indeks diskriminasi ujian sumatif turut dihitung. Menurut Thorndike dan Hagen (1997), indeks diskriminasi berfungsi sebagai indeks yang menggambarkan ketepatan sesuatu item yang membezakan kebolehan pelajar yang berpencapaian tinggi daripada yang berpencapaian rendah. Berdasarkan garis panduan perhitungan nilai indeks diskriminasi seperti mana yang disarankan oleh Ebel dan Frisbie (1986), didapati nilai min indeks diskriminasi ujian sumatif yang dibina ialah .39. Ini menunjukkan ujian yang dibina mempunyai nilai diskriminasi positif yang tinggi dan seterusnya boleh digunakan untuk membezakan pelajar yang berpencapaian tinggi dengan kohort pelajar yang berpencapaian rendah.

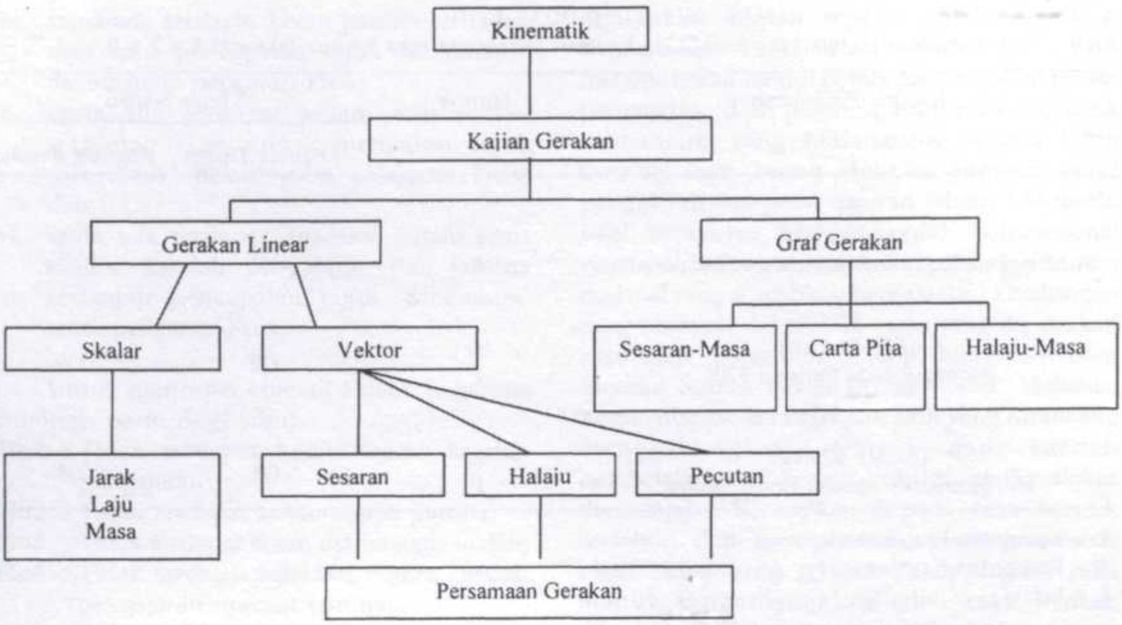
DAPATAN KAJIAN

Pelajar Kumpulan PHH dengan Program Excel

Berdasarkan data yang dirumuskan dalam Jadual 4, didapati pelajar-pelajar dalam ketiga-tiga kumpulan mempunyai ciri-ciri yang lebih kurang sama. Ini jelas daripada bilangan pelajar lelaki dan perempuan dalam kumpulan-kumpulan tersebut. Begitu juga latar belakang Sains dan Matematik pelajar untuk ketiga-tiga kumpulan juga sama. Ciri ini penting untuk memastikan kehomogenan sampel sebelum menerima sebarang intervensi seperti yang dirancang.

JADUAL 4
Profil responden kajian

		PHH	PBK	KONV
Jantina	Lelaki	16 (47.1%)	12 (40.0%)	19 (59.4%)
	Perempuan	18 (52.95)	18 (60.0%)	13 (40.6%)
Sains PMR	A	34 (100.0%)	30 (100.0%)	32 (100.0%)
Matematik PMR	A	34 (100.0%)	30 (100.0%)	32 (100.0%)



Rajah 2: Pemetaan terperinci keseluruhan tajuk 'Kinematik'

menunjukkan satu ukuran ketekalan dalaman instrument yang dibina. Daripada analisis statistik yang dilakukan terhadap soal selidik kumpulan PHH nilai Cronbach's Alphanya adalah .94 manakala untuk kumpulan PBK nilai Cronbach's Alpha ialah .82. Berdasarkan kedua-dua nilai Cronbach Alpha yang dilaporkan, dapat dirumuskan bahawa kedua-dua soal selidik tersebut sesuai digunakan sebagai instrumen untuk meninjau persepsi pelajar terhadap PHH dan PBK masing-masing.

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Kognitif Tinggi	Aplikasi	S1, S2, S3, S6, S13, S19, S20, S21, S28	9
	Analisis	S4, S10, S11, S22, S25	5
	Sintesis	S7, S12, S17, S26	4

JADUAL 3
Korelasi aras pengetahuan dalam JPU

Spearman's rho	Guru 1	Guru 2
Pengkaji Pekali korelasi, r	0.713	0.558
Signifikan (dua hujung), p	0.000**	0.001**
N	30	30

**p<.01 : korelasi adalah signifikan pada aras 0.01 (2-hujung)

ujian sumatif, pekali kebolehpercayaan dikira menggunakan rumus KR-20 kerana ujian sumatif merupakan soalan objektif berbentuk dikotomi dan mempunyai kesukaran yang berbeza antara satu sama lain (Dick dan Haggerty 1991). Berdasarkan analisis KR-20 yang dilakukan, didapati nilai KR-20 adalah .81. Maka ujian sumatif tersebut boleh digunakan sebagai instrumen kajian untuk mengukur prestasi pencapaian pelajar dalam tajuk 'Kinematik'.

Seterusnya bagi ujian sumatif tersebut, pengkaji turut menghitung indeks kesukaran (IK). Menurut Sax (1989), kesukaran sesuatu item ujian bergantung kepada berapa ramai calon dalam kumpulan yang diuji menjawab betul dalam item tersebut. Semakin ramai calon menjawab betul item tersebut, semakin mudahlah item tersebut dan sebaliknya. Dari ujian rintis yang dijalankan ke atas empat puluh orang pelajar tingkatan lima yang mempunyai ciri-ciri yang identikal dengan sampel kajian, didapati nilai indeks kesukaran ujian sumatif adalah 0.70. Nilai ini menunjukkan tahap kesukaran yang sederhana dan seterusnya boleh digunakan untuk menguji pencapaian pelajar (Thorndike dan Hagen 1997).

Indeks diskriminasi ujian sumatif turut dihitung. Menurut Thorndike dan Hagen (1997), indeks diskriminasi berfungsi sebagai indeks yang menggambarkan ketepatan sesuatu item yang membezakan kebolehan pelajar yang berpencapaian tinggi daripada yang berpencapaian rendah. Berdasarkan garis panduan perhitungan nilai indeks diskriminasi seperti mana yang disarankan oleh Ebel dan Frisbie (1986), didapati nilai min indeks diskriminasi ujian sumatif yang dibina ialah .39. Ini menunjukkan ujian yang dibina mempunyai nilai diskriminasi positif yang tinggi dan seterusnya boleh digunakan untuk membezakan pelajar yang berpencapaian tinggi dengan kohort pelajar yang berpencapaian rendah.

DAPATAN KAJIAN

Pelajar Kumpulan PHH dengan Program Excel

Berdasarkan data yang dirumuskan dalam Jadual 4, didapati pelajar-pelajar dalam ketiga-tiga kumpulan mempunyai ciri-ciri yang lebih kurang sama. Ini jelas daripada bilangan pelajar lelaki dan perempuan dalam kumpulan-kumpulan tersebut. Begitu juga latar belakang Sains dan Matematik pelajar untuk ketiga-tiga kumpulan juga sama. Ciri ini penting untuk memastikan kehomogenan sampel sebelum menerima sebarang intervensi seperti yang dirancang.

JADUAL 4
Profil responden kajian

		PHH	PBK	KONV
Jantina	Lelaki	16 (47.1%)	12 (40.0%)	19 (59.4%)
	Perempuan	18 (52.95)	18 (60.0%)	13 (40.6%)
Sains PMR	A	34 (100.0%)	30 (100.0%)	32 (100.0%)
Matematik PMR	A	34 (100.0%)	30 (100.0%)	32 (100.0%)

JADUAL 5
Persepsi pelajar terhadap keberkesanan penggunaan PHH dengan program Excel dalam tajuk 'Kinematik'

Item	Kenyataan	AS	S	TP	TS	ATS
1.	Program Excel ini telah menjadikan saya lebih berminat dengan mata pelajaran Fizik.	2 5.9%	13 38.2%	15 44.1%	3 8.8%	1 2.9%
2.	Saya suka pembelajaran dengan menggunakan program Excel	4 11.8%	16 47.1%	11 32.4%	3 8.8%	0 0.0%
3.	Saya tertarik dengan penggunaan program Excel	7 20.6%	17 50.0%	6 17.6%	4 11.8%	0 0.0%
4.	Saya tidak berasa sukar untuk mengendalikan program Excel ini	6 17.6%	13 38.2%	10 29.4%	4 11.8%	1 2.9%
5.	Saya bertambah rajin atau lebih bersungguh-sungguh apabila menggunakan komputer dalam mata pelajaran Fizik	7 20.6%	14 41.2%	8 23.5%	5 14.7%	1 2.9%
6.	Saya lebih mudah menggambarkan keadaan gerakan keseluruhan pergerakan jasad dengan menggunakan program Excel	7 20.6%	14 41.2%	8 23.5%	5 14.7%	0 0.0%
7.	Penggunaan program Excel ini lebih menjimatkan masa terutamanya yang memerlukan graf diplotkan	14 41.2%	11 32.4%	5 14.7%	2 5.9%	2 5.9%
8.	Saya lebih mudah mengkaji graf gerakan dengan menggunakan program Excel	13 38.2%	15 44.1%	2 5.9%	3 8.8%	1 2.9%
9.	Penggunaan program Excel ini harus diperluaskan aplikasinya dalam subjek Fizik	12 35.3%	8 23.5%	13 38.2%	1 2.9%	0 0.0%
10.	Dengan penggunaan program Excel ini, daya ingatan saya bertambah baik	1 2.9%	13 38.2%	14 41.2%	5 14.7%	0 0.0%
11.	Program Excel ini mempunyai banyak kelebihannya yang dapat membantu pembelajaran Fizik	2 5.9%	15 44.1%	15 44.1%	1 2.9%	1 2.9%
12.	Saya seronok menggunakan komputer dalam pembelajaran Fizik	10 29.4%	15 44.1%	7 20.6%	2 5.9%	0 0.0%
13.	Penggunaan program Excel untuk mengkaji gerakan linear, menggalakkan perbincangan sesama rakan dan guru	14 41.2%	13 38.2%	5 14.7%	1 2.9%	1 2.9%
14.	Saya rasakan program Excel ini tidak sesuai digunakan untuk mengkaji gerakan linear	1 2.9%	3 8.8%	11 32.4%	13 38.2%	6 17.6%
15.	Melalui program Excel ini jadual dapat dilengkapkan dengan tepat	16 47.1%	17 50.0%	1 2.9%	0 0.0%	0 0.0%
16.	Bentuk graf dan carta dapat dibina dengan cepat menggunakan program Excel	18 52.9%	14 41.2%	1 2.9%	0 0.0%	0 0.0%
17.	Saya berasa gementar atau takut untuk menggunakan program Excel dalam pembelajaran Fizik	3 8.8%	3 8.8%	6 17.6%	14 41.2%	8 23.5%
18.	Saya rasa lebih mudah dan selesa menggunakan program Excel untuk memplot graf gerakan	11 32.4%	14 41.2%	7 20.6%	2 5.9%	0 0.0%
19.	Saya rasa Bahasa Inggeris yang digunakan dalam program Excel ini mudah difahami	8 23.5%	17 50.0%	8 23.5%	0 0.0%	1 2.9%
20.	Setelah mengetahui kebaikan program Excel dalam pembelajaran Fizik, maka saya ingin gunakan program ini dalam mata pelajaran yang lain	8 23.5%	10 29.4%	14 41.2%	2 5.9%	0 0.0%

Persepsi Terhadap Keberkesanan Penggunaan PHH dengan Program Excel

Berdasarkan Jadual 5, didapati item 15 memperoleh peratus setuju yang paling tinggi (97.1%). Untuk item tersebut, seramai 47.1% pelajar memberikan maklum balas amat setuju dan 50% memberikan maklum balas setuju. Sementara itu, item yang memperoleh maklum balas yang paling minimum ialah item 1 di mana hanya 5.9% pelajar yang memberikan maklum balas amat setuju dan 38.2% memberikan jawapan setuju. Pola maklum balas persepsi seperti yang diberikan oleh pelajar menunjukkan bahawa kebanyakan daripada mereka tidak menafikan kelebihan program PHH khususnya dalam menangani aspek-aspek teknikal untuk mempelajari tajuk Kinematik. PHH memberikan kelebihan khususnya dalam membantu pembinaan jadual dan graf dengan cepat (item 15 dan item 16). Namun, secara keseluruhannya, bagi kebanyakan pelajar, merasa tidak pasti bahawa program tersebut semata-mata boleh menjadikan mereka lebih berminat dengan mata pelajaran Fizik.

Persepsi terhadap Keberkesanan Penggunaan Perisian PBK

Jadual 6 menunjukkan pilihan pelajar kepada item-item soal selidik yang berkaitan dengan persepsi mereka terhadap keberkesanan penggunaan perisian PBK dalam tajuk 'Kinematik'.

Berpandukan Jadual 6, didapati item yang mempunyai peratus setuju yang paling tinggi ialah item 15, di mana seramai 10% pelajar memberikan maklum balas yang amat setuju dan 60% pelajar memberikan jawapan setuju. Ini menunjukkan bahawa kebanyakan pelajar bersetuju bahawa animasi pada perisian PBK memudahkan mereka mengkaji keadaan gerakan. Dalam pada itu, peratusan maklum balas yang rendah diberikan kepada item 17 menunjukkan bahawa kebanyakan pelajar tidak berasa gementar atau takut untuk menggunakan perisian PBK dalam pembelajaran Fizik. Berdasarkan pola maklum balas yang diberikan, dapatlah disimpulkan bahawa secara keseluruhannya, pelajar memberikan persepsi yang positif terhadap keberkesanan penggunaan perisian PBK dalam proses pengajaran dan pembelajaran Fizik bertajuk 'Kinematik'.

Ujian Pencapaian

Jadual 7 meringkaskan keseluruhan skor pencapaian pelajar mengikut jantina, kaedah pengajaran dan jenis soalan. Didapati pelajar perempuan memperoleh skor min (60.9) yang lebih baik berbanding dengan skor min pelajar lelaki (56.4). Manakala skor min mengikut kaedah pengajaran menunjukkan bahawa skor min kumpulan PHH adalah yang tertinggi (62.41), diikuti dengan kumpulan PBK (59.95) dan kumpulan KONV (52.39). Seterusnya, skor min mengikut jenis soalan mendapati bahawa skor min soalan pada aras kognitif tinggi (61.56) adalah lebih baik berbanding dengan soalan kognitif rendah (55.04).

Jadual 8 pula memperincikan pencapaian pelajar mengikut jantina, kumpulan eksperimen dan aras soalan. Berdasarkan Jadual 8, dapat disintesiskan bahawa skor min pelajar lelaki kumpulan PHH untuk soalan aras kognitif tinggi adalah 66.06 dan pelajar perempuan 68.78. Bagi kumpulan PBK pula, skor min pelajar lelaki ialah 63.83 manakala pelajar perempuan ialah 59.56. Untuk kumpulan KONV pula, skor min pelajar lelaki adalah 54.63 dan perempuan 56.85 masing-masing.

Bagi soalan kognitif rendah pula, didapati pelajar lelaki kumpulan PHH memperoleh skor min 54.13, manakala pelajar perempuan memperoleh skor min 60.17. Untuk kumpulan PBK, pelajar lelaki memperoleh skor min 51.58 dan pelajar perempuan memperoleh skor min 63.33. Seterusnya bagi kumpulan KONV, skor min pelajar lelaki adalah 50.47 dan skor min pelajar perempuan adalah 47.46. Secara keseluruhannya, dapat disimpulkan bahawa prestasi pelajar-pelajar lelaki adalah lebih baik untuk soalan-soalan yang melibatkan kemahiran berfikir, manakala bagi pelajar perempuan, kebanyakan daripada mereka memperoleh skor yang lebih tinggi berbanding dengan pelajar-pelajar lelaki dalam soalan aras kognitif rendah.

Analisis Kesan Kaedah Pengajaran, Jantina dan Soalan

Jadual 9 menunjukkan kesan utama kaedah pengajaran yang signifikan ($p<.05$) dan membawa kepada penolakan hipotesis nol pertama. Kesan utama kaedah pengajaran yang signifikan menunjukkan bahawa kaedah pengajaran yang berbeza akan menentukan skor pelajar dalam ujian pencapaian yang diberikan.

JADUAL 6
Persepsi pelajar terhadap keberkesanan penggunaan perisian PBK dalam tajuk 'Kinematik

Item	Kenyataan	AS	S	TP	TS	ATS
1.	Perisian PBK ini telah menjadikan saya lebih berminat dengan mata pelajaran Fizik.	2 6.7%	11 36.7%	7 23.3%	8 26.7%	2 6.7%
2.	Saya suka pembelajaran dengan menggunakan Perisian PBK	2 6.7%	7 23.3%	13 43.3%	7 23.3%	1 3.3%
3.	Saya tertarik dengan penggunaan Perisian PBK	2 6.7%	18 60.0%	4 13.3%	5 16.7%	1 3.3%
4.	Saya tidak berasa sukar untuk mengendalikan Perisian PBK ini	3 10.0%	18 60.0%	4 13.3%	5 16.7%	0 0.0%
5.	Saya bertambah rajin atau lebih bersungguh-sungguh apabila menggunakan komputer dalam mata pelajaran Fizik	2 6.7%	8 26.7%	10 33.3%	10 33.3%	0 0.0%
6.	Saya lebih mudah menggambarkan keadaan gerakan keseluruhan pergerakan jasad dengan menggunakan Perisian PBK	3 10.0%	14 46.7%	6 20.0%	7 23.3%	0 0.0%
7.	Penggunaan Perisian PBK ini memberi kebebasan kepada saya untuk mengulang kaji bahagian yang tidak saya fahami	4 13.3%	16 53.3%	7 23.3%	3 10.0%	0 0.0%
8.	Saya lebih mudah mengkaji graf gerakan dengan menggunakan Perisian PBK	3 10.0%	14 46.7%	4 13.3%	8 26.7%	1 3.3%
9.	Penggunaan Perisian PBK ini harus diperluaskan aplikasinya dalam subjek Fizik	4 13.3%	6 20.0%	13 43.3%	5 16.7%	2 6.7%
10.	Dengan penggunaan Perisian PBK ini, daya ingatan saya bertambah baik	0 0.0%	3 10.0%	13 43.3%	12 40.0%	2 6.7%
11.	Perisian PBK ini mempunyai banyak kelebihannya yang dapat membantu pembelajaran Fizik	1 3.3%	10 33.3%	11 36.7%	7 23.3%	1 3.3%
12.	Saya seronok menggunakan komputer dalam pembelajaran Fizik	4 13.3%	13 43.3%	6 20.0%	7 23.3%	0 0.0%
13.	Penggunaan Perisian PBK untuk mengkaji gerakan linear, menggalakkan perbincangan sesama rakan dan guru	4 13.3%	15 50.0%	6 20.0%	4 13.3%	1 3.3%
14.	Saya rasakan Perisian PBK ini tidak sesuai digunakan untuk mengkaji gerakan linear	1 3.3%	8 26.7%	11 36.7%	9 30.0%	1 3.3%
15.	Animasi pada skrin perisian PBK memudahkan saya mengkaji keadaan gerakan	3 10.0%	18 60.0%	5 16.7%	4 13.3%	0 0.0%
16.	Bentuk graf dan carta dapat dibina dengan cepat menggunakan Perisian PBK ini	3 10.0%	16 53.3%	8 26.7%	3 10.0%	0 0.0%
17.	Saya berasa gementar atau takut untuk menggunakan Perisian PBK dalam pembelajaran Fizik	0 0.0%	0 0.0%	6 20.0%	15 50.0%	9 30.0%
18.	Saya rasa lebih mudah dan selesa menggunakan Perisian PBK untuk menganalisis graf gerakan	0 0.0%	16 53.3%	7 23.3%	6 20.0%	1 3.3%
19.	Saya rasa nota dalam perisian PBK ini mudah difahami	1 3.3%	13 43.3%	7 23.3%	7 23.3%	2 6.7%
20.	Setelah mengetahui kebaikan Perisian PBK dalam pembelajaran Fizik, maka saya ingin gunakan program ini dalam mata pelajaran yang lain	2 6.7%	7 23.3%	13 43.3%	6 20.0%	2 6.7%

JADUAL 7

Skor ujian pencapaian mengikut jantina, kaedah pengajaran dan jenis soalan

	Min	N	Sisihan Piawai	Varian
Jantina				
Lelaki	56.44	47	16.24	263.565
Perempuan	60.09	49	18.12	328.442
Kaedah Pengajaran				
PHH	62.41	34	16.05	259.120
PBK	59.95	30	17.25	297.842
KONV	52.39	32	17.16	295.419
Jenis Soalan				
Kognitif Tinggi	61.59	96	17.45	304.628
Kognitif Rendah	55.04	96	17.09	292.167

JADUAL 8

Skor min ujian pencapaian pelajar berdasarkan jantina dan kumpulan eksperimen

Jenis Soalan	Kaedah Pengajaran	Jantina Pelajar	Min	Sisihan Piawai	N
	PHH	Lelaki	66.06	14.35	16
		Perempuan	68.78	15.59	18
		Jumlah	67.50	14.75	34
	PBK	Lelaki	63.83	15.65	12
		Perempuan	59.56	19.30	18
		Jumlah	61.27	17.77	30
Kognitif Tinggi	KONV	Lelaki	54.63	16.81	19
		Perempuan	56.85	20.65	13
		Jumlah	55.53	18.17	32
	JUMLAH	Lelaki	60.87	16.25	47
		Perempuan	62.22	18.68	49
		Jumlah	61.56	17.45	96
	PHH	Lelaki	54.13	16.92	16
		Perempuan	60.17	17.69	18
		Jumlah	57.32	17.34	34
	PBK	Lelaki	51.58	16.30	12
		Perempuan	63.33	15.73	18
Kognitif Rendah		Jumlah	58.63	16.73	30
	KONV	Lelaki	50.47	16.31	19
		Perempuan	47.46	16.37	13
		Jumlah	49.25	16.14	32
	JUMLAH	Lelaki	52.00	16.23	47
		Perempuan	57.96	17.55	49
		Jumlah	55.04	17.09	96

Berdasarkan ujian Post-Hoc ANOVA Tukey yang menyusul, didapati pasangan kumpulan yang berbeza secara signifikan adalah pasangan kumpulan PHH dan KONV di mana p adalah 0.010 pada aras signifikan 0.05 (Jadual 10). Ini menunjukkan bahawa perbezaan yang signifikan secara keseluruhannya dicetuskan oleh perbezaan antara kumpulan yang didedahkan dengan kaedah PHH dan pelajar yang menjalani pembelajaran dengan kaedah KONV yang biasa. Skor min kaedah PHH (62.41) adalah lebih besar berbanding skor min kaedah KONV (52.39).

Dari segi kesan utama jantina, analisis kesan utama tidak menunjukkan kesan yang signifikan. Ini dibuktikan dengan nilai p yang lebih besar daripada 0.05 dan seterusnya membawa kepada penerimaan hipotesis nol kedua. Ini bermakna kepelbagaian skor pelajar dalam ujian pencapaian yang diberikan tidak ditentukan oleh jantina pelajar. Manakala bagi kesan utama jenis soalan pula, didapati terdapat kesan utama yang signifikan ($p<.05$) wujud. Ini bermakna hipotesis nol ketiga ditolak dan jenis soalan menentukan pola jawapan yang diberikan oleh pelajar.

Analisis turut melibatkan penelitian kesan interaksi dan berpandukan kepada Jadual 8, didapati tiada kesan interaksi antara kaedah pengajaran dan jantina ($p>0.05$). Oleh itu hipotesis nol keempat diterima. Untuk kesan interaksi di antara jenis soalan dan kaedah pengajaran, didapati tiada kesan interaksi di antara kaedah pengajaran dan jenis soalan di mana $p=0.482$ ($p > .05$) dan hipotesis nol kelima diterima. Interaksi antara jenis soalan dan jantina juga didapati tidak signifikan di mana $p=0.255$ ($p > .05$) dan hipotesis nol keenam diterima. Dari segi kesan interaksi dua hala antara jenis soalan, kaedah dan jantina, didapati tidak terdapat kesan interaksi di mana $p=0.122$ ($p > .05$), bermakna hipotesis nol ketujuh turut diterima.

PERBINCANGAN

Secara keseluruhannya, pola dapatan menunjukkan bahawa pelajar dalam kumpulan PHH memberikan maklum balas yang positif berhubung isu penggunaan PHH dengan program Excel dalam pembelajaran Fizik bertajuk Kinematik. Dapatan kajian didapati setara dengan dapatan kajian yang terdahulu di mana Sivarani (1991), Geisert (1995) dan Kumareson (1998) turut mendapati bahawa PHH dengan program Excel mempunyai kuasa yang tinggi untuk memproses data dengan kadar yang cepat lagi tepat. Analisis maklum balas yang diberikan oleh pelajar menunjukkan bahawa keberkesanan penggunaan PHH dalam pembelajaran Fizik kemungkinannya terletak pada strategi adaptasi atau penyesuaian yang berlaku dalam diri pelajar semasa penggunaan PHH. Keberkesanaan penggunaan PHH juga boleh dikaitkan dengan fenomena keanjalan kognitif yang berlaku. Ini adalah kerana penggunaan multi media yang tidak linear sepertimana yang disajikan oleh PHH menjadikan kemudahan penyampaian maklumat

JADUAL 9
Analisis varian pencapaian

Punca	Jumlah Kuasa Dua	dk	Purata Kuasa Dua	F	Sig
Antara Kumpulan					
Kaedah	3 349.573	2	1 674.786	4.516	.014*
Jantina	308.573	1	308.066	.831	.364
Kaedah x Jantina	210.995	2	105.498	.264	.753
Ralat	17 712.090	90	370.837		
Dalam Kumpulan					
Soalan	2 343.651	1	2 343.651	11.909	.001*
Soalan x Kaedah	289.288	2	144.644	.735	.482
Soalan x Jantina	258.196	1	248.196	1.312	.255
Soalan x Kaedah x Jantina	849.281	2	424.641	2.158	.122
Ralat	17 712.090	90	196.801		

* $p<.05$: Signifikan pada aras 0.05 dk : Darjah Kebebasan

JADUAL 10
Ujian Post Hoc Anova kaedah pengajaran

	(I) Kaedah Pengajaran	(J) Kaedah Pengajaran	Perbezaan Purata	Sisihan Piawai	Sig
Tukey HSD	PHH	PBK	2.46	3.41	.751
		KONV	10.02	3.35	.010*
	PBK	PHH	-2.46	3.41	.751
		KONV	7.56	3.46	.079
	KONV	PHH	-10.02	3.35	.010*
		PBK	-7.56	3.46	.079

* p<.05 : Signifikan pada aras 0.05

yang kompleks lagi tidak teratur sepertimana yang terkandung dalam tajuk Kinematik.

Kelebihan penggunaan PHH juga boleh dikaitkan dengan strategi reflektif yang berlaku ketika proses pengajaran dan pembelajaran dengan PHH. Pembelajaran reflektif yang berlaku membantu pelajar bukan sekadar mengingati apa yang telah dipelajari, malahan mengintegrasikan maklumat tersebut dalam skema pengetahuan sedia ada. Selain daripada itu, melalui penggunaan komputer, peluang untuk pelajar bersama-sama dan saling membantu melalui strategi pembelajaran kolaboratif terbuka luas. Cerapan ini selaras dengan pandangan yang menekankan kepentingan interaksi sosial dan kolaborasi dalam pengajaran dan pembelajaran berbantukan komputer kerana melaluinya pelajar boleh mendapatkan bantuan rakan dalam pembinaan skema pengetahuan mereka. Kenyataan ini turut dipersetujui oleh Rio dan Kasiran (1994) dan Jonassen (1996) yang menegaskan bahawa pembelajaran secara kolaboratif dapat membantu pelajar membina pengetahuan yang lebih bermakna jika dibandingkan dengan pembelajaran secara individu.

Stephens (1991) menyatakan bahawa PHH boleh memplot graf secara terus daripada data yang dibekalkan dengan cara yang mudah secara terus kepada pengguna (Cooke 1997). Pengolahan data ke bentuk ilustrasi grafik seperti graf amat bermakna kerana ia memudahkan tafsiran data (Beare dan Hewitson 1996) lantas meningkatkan kefahaman pelajar. Martin (1996) turut bersetuju dengan menyatakan bahawa PHH boleh meningkatkan kefahaman pelajar terhadap hubungan berangka dalam sesuatu graf dan Winn (1990) turut menegaskan bahawa tugas pemplotan graf amat bermakna dalam mewujudkan pembelajaran sains yang bermakna. Pola maklum balas yang diberikan oleh pelajar mengesahkan persetujuan pelajar berhubung kelebihan penggunaan PHH dalam pembelajaran tajuk Kinematik. Tegasnya, kelebihannya dilihat dari perspektif keupayaannya memplot graf dengan cepat, tepat, mudah difahami dan dipersembahkan dalam bentuk yang menarik serta elemen kolaboratif yang ditawarkan dalam pengajaran menggunakan PHH.

Seperti dalam penggunaan PHH, pelajar yang didedahkan tajuk Kinematik berperantarakan perisian PBK turut memberikan maklum balas yang positif. Secara keseluruhannya pelajar merasakan penggunaan PBK memudahkan kefahaman mereka dan seterusnya menyingkirkan perasaan fobia terhadap komputer yang mungkin membelenggu mereka sebelum ini. Malah kemudahan dan tunjuk arah yang ditawarkan oleh perisian PBK mendorong pelajar agar lebih tekun mencari maklumat dalam menyelesaikan masalah pembelajaran yang dikemukakan. Di samping itu, kelebihannya terletak kepada keupayaannya untuk membantu pelajar mengingat semula kerana kapasiti penyimpanan maklumat yang banyak serta keupayaan pengesanan kembali dalam kadar yang cepat. Dapatan turut menunjukkan bahawa keberkesanan PBK turut terletak kepada keupayaannya mempamerkan animasi gerakan jasad, carta serta graf gerakan jasad dengan jelas dan mudah difahami. Dapatan ini menyokong dapatan Bates (2001) yang menyatakan bahawa multi media berupaya untuk mempersembahkan sesuatu ilmu pengetahuan dengan pelbagai cara berbanding teks semata-mata. Dengan adanya kombinasi teks, audio, visual, grafik dan elemen-elemen dinamik seperti animasi dan video akan memberikan kelebihan kepada guru dan pelajar untuk berinteraksi dengan sumber dan bahan pengajaran serta meningkatkan kapasiti tumpuan mereka.

Analisis kesan utama menunjukkan bahawa penggunaan ICT khususnya melalui penggunaan PHH dapat meningkatkan keberkesanan proses pengajaran dan pembelajaran dan seterusnya meningkatkan pencapaian pelajar. Kajian ini menyokong penghujahan Ismail (1994), Mather dan Bos (1993) yang menyatakan komputer mempunyai kemampuan untuk melayani keperluan pelajar yang berbeza latar belakang yang seterusnya meningkatkan pencapaian akademik mereka. Satu lagi kesan utama yang signifikan ditunjukkan oleh jenis soalan sekali gus membawa kepada kesimpulan bahawa penggunaan ICT dalam pembelajaran Fizik bertajuk Kinematik menghasilkan skor min soalan kognitif aras tinggi yang lebih baik berbanding kaedah konvensional yang biasa. Turkle (1984) dan Barton (1993) menyokong bahawa penggunaan perisian komputer akan mewujudkan suasana penyelesaian masalah yang boleh menggalakkan pelajar berfikir, meningkatkan daya ikhtiar, berdikari dan seterusnya meningkatkan semangat ingin tahu.

KESIMPULAN

Hasil kajian yang dilakukan untuk menilai keberkesanan penggunaan ICT dalam pembelajaran Fizik bertajuk 'Kinematik' menunjukkan pelajar kumpulan PHH dan kumpulan PBK memberikan persepsi yang positif secara keseluruhan terhadap keberkesanan penggunaan PHH dengan program Excel dan perisian PBK dalam pembelajaran Fizik bertajuk 'Kinematik'.

Seterusnya dapatan kajian juga menunjukkan penggunaan ICT dalam pengajaran dan pemelajaran menghasilkan pencapaian skor min yang lebih baik berbanding dengan kaedah konvensional. Di samping itu juga didapati skor min soalan kognitif tinggi bagi kumpulan yang didedahkan dengan PHH dan PBK adalah lebih tinggi berbanding dengan kumpulan kaedah konvensional. Namun demikian melalui ujian Tukey, didapati hanya kaedah pengajaran menggunakan PHH yang berbeza secara signifikan berbanding dengan kaedah konvensional. Ini dapat dijelaskan kerana tajuk 'Kinematik' dalam mata pelajaran Fizik melibatkan banyak penganalisisan graf dan carta untuk mengkaji konsep gerakan dalam tajuk tersebut. Pelajar kumpulan PBK hanya menganalisis graf yang dipaparkan pada skrin komputer untuk mengkaji konsep gerakan sementara pelajar kumpulan PPH berpeluang memerhatikan pelbagai bentuk graf gerakan dibina dari jadual yang diberikan dengan menggunakan program Excel. Ini memberikan mereka lebih ruang dan peluang untuk mengaitkan konsep gerakan dengan graf yang dibina dan seterusnya menguja pemikiran aras tinggi dalam pembelajaran yang berlaku.

Sebagai kesimpulannya, penggunaan komputer dalam pengajaran dan pembelajaran tidak mengambil alih tugas guru, sebaliknya guru sebagai fasilitator atau pengemudi ilmu perlu lebih kompeten (cekap), prihatin dan profesional dalam merancang dan menyusun isi pelajaran yang hendak disampaikan serta mempelbagaikan kaedah penyampaian agar bersesuaian dengan penggunaan teknologi ICT.

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Penterjemahan atau Penerjemahan: Satu Analisis Korpus Data Berkomputer

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Kata kunci: Korpus data berkomputer, penterjemahan, penerjemahan

ABSTRAK

Leksikal *penterjemahan* dan *penerjemahan* sering diguna pakai secara silih berganti. Dari segi semantik, kedua-dua leksikal ini mempunyai makna yang sama. Tetapi dari segi morfologinya, adakah pembentukan kedua-dua leksikal ini masih sama atau adakah salah satunya mesti digugurkan? Ada pendapat mengatakan yang leksikal penterjemahan itu merupakan kata pinjaman bahasa Arab yang perlu dikekalkan huruf 't' nya. Pada masa yang sama, ada pendapat mengatakan bahawa kata pinjaman Arab itu sudah menjadi milik bahasa Melayu lantas huruf 't' nya mesti digugurkan. Justeru, yang manakah yang betul? Oleh sebab itu, makalah ini cuba merungkai masalah tersebut melalui satu analisis korpus data berkomputer yang dibina oleh Dewan Bahasa dan Pustaka (DBP) dengan kerjasama Universiti Sains Malaysia (USM). Dalam konteks perkembangan linguistik moden hari ini, penggunaan korpus linguistik sama yang berbentuk manual atau berkomputer, sudah mula diiktiraf sebagai salah satu data atau sampel linguistik yang sahih dan boleh diguna pakai.

ABSTRACT

The lexical of "penterjemahan" and "penerjemahan" have been used by the translators in most of their works. Semantically, both of the particular lexical or words have the same meaning. But morphologically, is it the structure of both lexical still remain or either one must be deleted? There is an opinion that the lexical are borrowed from Arabic words and the alphabet of "T" must be dropped. At the same time, there is also another opinion about the lexical become the Malay word. Therefore, the "T" must be dropped. So, which is the correct one? According to this matter, this article aims to analyse the using of both lexical based on the corpus data that has been developed by the Dewan Bahasa dan Pustaka (DBP) in co-operation with Universiti Sains Malaysia (USM) since years ago. In the context of modern linguistics development, the use of linguistic corpus whether in manual form or computerised, is valid and consider as one of the real and original data or linguistic sample which can be used.

PENGENALAN

Leksikal *terjemah* merupakan satu perkataan yang diambil daripada bahasa asing, iaitu Arab. Leksikal ini sudah diterima pakai dan meresap dalam bahasa dan budaya Melayu sejak sekian lama. Berdasarkan leksikal ini muncullah kata-kata terbitan lain seperti *menterjemah, menterjemahkan, terjemahan, ketidakbolehterjemahan* dan *kebolehterjemahan*.

Namun begitu, berdasarkan kata nama apitan *penterjemahan*, lahir satu lagi leksikal yang berlainan bentuk morfologinya tetapi maksudnya masih sama, iaitu *penerjemahan*.

Ada sesetengah sarjana menggunakan *penerjemahan* (lihat Muhammad Bukhari Lubis dan rakan-rakan 1998) dan ada juga dalam kalangan mereka yang menggunakan *penterjemahan*. Malah, ada juga sesetengah institusi kebahasaan yang berwibawa seperti Dewan Bahasa dan Pustaka (DBP) yang menggunakan leksikal *penerjemahan*.

MASALAH DAN ISU KAJIAN

Menurut Kamus Dewan Edisi Ketiga (KD), apitan kata nama bagi leksikal terjemah itu membawa maksud perihal (kerja, usaha, dsb.) menterjemahkan (KD, 1433). Dengan kata lain, leksikal tersebut membawa maksud proses menterjemah. Namun begitu, kata entri untuk penerjemahan tidak ada. Oleh itu, perkataan penerjemahan dianggap sebagai tidak gramatis, iaitu tidak mematuhi rumus nahu Melayu.

OBJEKTIF KAJIAN

a) melihat wujudnya penggunaan leksikal penerjemahan dalam wacana bahasa Melayu;
b) mengeksploitasikan penggunaan data korpus berkomputer yang dibangunkan oleh DBP; dan
c) membetulkan persepsi kalangan pengguna bahasa Melayu bahawa leksikal penerjemahan adalah betul dan gramatis.

DEFINISI KAJIAN

Data Korpus Berkomputer

Sejarah data korpus bermula pada tahun 1964 apabila Francis dan Kucera membangunkan Korpus Universiti Brown (Rusli dan rakan-rakan 2004: 1). Penggunaan istilah korpus dan korpus berkomputer silih bertukar ganti.

Menurut Sinclair (dalam Rusli 2004: 4), korpus diertikan sebagai kumpulan cebisan bahasa (atau teks lengkap) yang dipilih dan disusun mengikut kriteria linguistik yang eksplisit dan digunakan sebagai sampel sesuatu bahasa.

Manakala korpus komputer pula ialah korpus yang diberi penanda, kod, dan diformatkan secara piawai serta dapat dicapai dan diproses dengan komputer.

Di bawah istilah korpus pula ada istilah subkorpus yang merupakan cabang atau mini korpus yang lebih kecil. Data korpus, lazimnya, mengandungi data yang berbentuk perkataan atau frasa dalam kuantiti yang sangat besar, iaitu jutaan perkataan. Misalnya, korpus *Birmingham Collection of English Texts (BCET)* yang membesar daripada 7.3 juta kata (pada pertengahan 1970an) kepada 20 juta kata menjelang 1985.

Pangkalan Data Korpus Bahasa Melayu DBP

Data korpus bahasa Melayu mula dibangunkan di Malaysia oleh DBP pada tahun 1983 yang diberi nama Projek Analisis Teks Secara Komputer (Rusli dan rakan-rakan: 2). Projek ini menyasarkan data teks sebesar dua juta kata melalui teknik ala korpus Brown. Data ini diambil daripada pelbagai sumber seperti teks klasik, buku, majalah, akhlak, dan efemeral (seperti brosur dan risalah kecil).

Berdasarkan sasaran Kerja Utama DBP 2001-2005, projek ini menyasarkan pengumpulan data sebanyak 30 juta kata lalu menjadikan jumlah keseluruhan pada tahun 2005 nanti sebanyak 120 juta kata. Apabila siap sepenuhnya nanti, projek ini akan menggantikan sistem yang sedia ada yang dibuat dengan kerja sama USM yang bermula pada tahun 1994.

Data korpus DBP ini dikategorikan berdasarkan tipologi atau jenis teks tertentu. Tipologi ini kenali juga sebagai subpangkalan data yang mengandungi kira-kira 100 juta kata (sehingga Mac 2004). Berikut ini ialah jadual subpangkalan data yang diklasifikasikan berdasarkan tipologi teks:

Imbuhan (Apitan) Leksikal "Terjemah"

Ada empat jenis apitan yang membentuk kata nama terbitan, iaitu 1) *peN-...-an*; 2) *pe-...-an*; 3) *peR-...-an*; 4) *ke-...-an*. Untuk apitan 1, *peN-...-an*, ada mempunyai lima kategori lagi. Namun yang berkaitan dengan leksikal "penterjemahan" hanyalah kategori yang ketiga (TDEB 1994: 120-121).

Dalam kategori ketiga ini, *peN-...-an* akan menjadi *pen-...-an* apabila digabungkan dengan kata dasar yang bermula dengan huruf *d,c,j,sy,* dan *z* serta kata pinjaman yang kata dasarnya bermula dengan huruf *t* dan *s* (TDEB: 121). Contohnya:

dapat	-	pendapatan
cari	-	pencarian
jajah	-	penjajahan
syarikat	-	pensyarikatan
zalim	-	penzaliman

Kata pinjaman:

tadbir	-	pentadbiran
tafsir	-	pentafsiran
terjemah	-	penterjemahan
sintesis	-	pensintesisan
stabil	-	penstabilan
swasta	-	penswastaan

Berdasarkan fakta di atas, sememangnya *t* dalam kata pinjaman akan kekal apabila mengalami apitan kata nama terbitan seperti "penterjemahan" dan "pentafsiran". Hal ini berbeza dengan huruf *t* yang bukan berbentuk

JADUAL 1
Data akhbar

Subpangkalan	Keterangan	Kata (sehingga Mac 2004)
Akhbar	data 94,95,96, dan 98	10,111,504
Akhbar97	data 97	3,443,849
Akhbar99	data akhbar NSTP Online tahun 1999	6,055,096
Akhbar00	data akhbar NSTP Online tahun 2000	6,800,502
Akhbar01	data akhbar NSTP Online tahun 2001	4,825,314
Akhbar01-Ekonomi	data akhbar NSTP Online tahun 2001-ekonomi	147,924
Akhbar01-Hiburan	data akhbar NSTP Online tahun 2001-hiburan	239,035
Akhbar01-Sukan	data akhbar NSTP Online tahun 2001-sukan	926,910
Akhbar02	data akhbar NSTP Online tahun 2002	4,586,869
Akhbar02-Ekonomi	data akhbar NSTP Online tahun 2002-ekonomi	227,605
Akhbar02-Hiburan	data akhbar NSTP Online tahun 2002-hiburan	420,438
Akhbar02-Sukan	data akhbar NSTP Online tahun 2002-sukan	1,101,196
Akhbar03	data akhbar NSTP Online tahun 2003	5,114,146
Akhbar03-Ekonomi	data akhbar NSTP Online tahun 2003-ekonomi	74,690
Akhbar03-Hiburan	data akhbar NSTP Online tahun 2003-hiburan	676,615
Akhbar03-Sukan	data akhbar NSTP Online tahun 2003-sukan	1,163,734
JUMLAH NSTP		45.915,427
UTUSAN	data Utusan Online	6,448,577
HARAKAH	data Harakah Edisi Internet	624,699
	Jumlah Data Akhbar	25,444,819

JADUAL 2
Data buku

Subpangkalan	Keterangan	Kata (sehingga Mac 2004)
DB3	data buku 70-an ke atas	11,137,717
DB2	data buku 70-an ke atas	9,739,899
DB1	data buku 60-an ke bawah	2,759,585
DB4	data buku 70-an ke atas	1,807,618
	Jumlah Data Buku	25,444,819

JADUAL 3
Data majalah

Subpangkalan	Keterangan	Kata (sehingga Mac 2004)
Majalah	data majalah	4,861,827
Majalah1	data majalah tambahan	3,361,029
Majalah Ilmiah	data majalah ilmiah	1,887,516
Majalah bukan Ilmiah	data majalah bukan ilmiah	2,119,001
	Jumlah Data Majalah	12,229,373

JADUAL 4
Data teks Melayu lama/tradisional

Subpangkalan	Keterangan	Kata (sehingga Mac 2004)
Klasik	Data teks Melayu lama atau teks tradisional	2,440,258
	Jumlah Data Teks Melayu Lama	2,440,258

JADUAL 5
Data teks terjemahan

Subpangkalan	Keterangan	Kata (sehingga Mac 2004)
Terjemah	Data terjemahan ke dalam bahasa Melayu	1,886,106
	Jumlah Data Terjemahan	1,886,106

JADUAL 6
Data teks Sabah dan Sarawak

Subpangkalan	Keterangan	Kata (sehingga Mac 2004)
Sukuan	Data bahasa Melayu terbitan Sabah & Sarawak	1,038,250
	Jumlah Data Bahasa Melayu Sabah dan Sarawak	1,038,250

JADUAL 7
Data buku teks

Subpangkalan	Keterangan	Kata (sehingga Mac 2004)
Buku teks	Data buku teks sekolah	1,095,726
	Jumlah Data Buku Teks	1,095,726

JADUAL 8
Data teks drama

Subpangkalan	Keterangan	Kata (sehingga Mac 2004)
Drama	Data drama	215,867
	Jumlah Data Drama	215,867

JADUAL 9
Data efemeral

Subpangkalan	Keterangan	Kata (sehingga Mac 2004)
Efemeral	Data efemeral	173,131
	Jumlah Data efemEral	173,131

JADUAL 10
Data puisi

Subpangkalan	Keterangan	Kata (sehingga Mac 2004)
Puisi	data puisi	2,348
	Jumlah Data Puisi	2,348

JADUAL 11
Data kad bahan

Subpangkalan	Keterangan	Kata (sehingga Mac 2004)
Kad bahan	Rekod kad bahan (kutipan kad bahan untuk penyusunan kamus)	3,130,641
	Jumlah Data Kad Bahan	3,130,641

JADUAL 12
Jumlah kumulatif data teks (sehingga Mac 2004)

Subpangkalan	Jumlah kata	Peratus
Akhbar	52,988,703	52.65%
Buku	27,797,010	27.62%
Majalah	12,229,373	12.15%
Teks tradisional	2,440,258	2.43%
Lain-lain	3,303,772	3.28%
Terjemahan	1,886,106	1.87%
Jumlah	100,645,222	100.00%

Sumber: Semua data di atas diambil daripada makalah Rusli Abdul Ghani dan rakan-rakan (2004: 8-12)

pinjaman yang akan luluh *t*-nya dan digantikan dengan bentuk sengau yang dilafazkan pada tempat yang sama daerah artikulasinya (TDEB: 121). Misalnya seperti:

tendang - penendang
tentu - penentuan
tamat - penamat

CONTOH DATA KORPUS (KONKORDONS)

Dalam subtopik ini, contoh data korpus atau konkordans yang membuktikan wujudnya penggunaan leksikal "penerjemahan" akan ditunjukkan. Subkorpus yang mengandungi leksikal "penerjemahan" ialah data akhbar (akhbar 94,95,96,98), data db2 (data buku 70an ke atas), data majalah ilmiah, data majalah (majalah bukan ilmiah), dan data majalah 1 (data majalah tambahan).

Antara sampel–sampel tersebut adalah seperti:

FILE : akhbar (akhbar 94,95,96,98)

1 î~D8endinginkannya kembali***? **Penerjem*****ahan** Nurhalim ini juga mampu m

FILE : db2 (buku 70an ke atas)

1 ku - Pelajaran dan Bahagian *****Penerjemahan***** diwujudkan untuk menerbi

2 Bonn kepada usaha-usaha *****penerjemahan*****, dan Passau kepada kajian

3 i. Tetapi penerbitan dan *****penerjemahan***** buku-buku ilmu pengetahu

4 ns dan teknologi. Dengan *****penerjemahan*****, mereka dapat membawa mas

JADUAL 12
Kekerapan leksikal "penerjemahan"

Subkorpus	Jumlah bilangan kata	Kekerapan Leksikal "Penerjemahan"
Akhbar (94,95,96,98)	10,111,504	1
DBP2 (buku 70-an ke atas)	9,739,899	18
Majalah Ilmiah	1,887,516	2
Majalah 1 (majalah tambahan)	3,361,029	4
Majalah(majalah bukan ilmiah)	4,861,827	2
	Jumlah Kekerapan	27

5 il kira keperluan seperti ***penerjemahan*** melalui komputer, pempro

FILE : majalah-ilmiah
1 arangnya dengan melakukan ***penerjemahan*** cerpen-cerpen yang dihas
2 mahan. Rupa-rupanya kerja ***penerjemahan*** itu dapat membentuk land

FILE : majalah 1 (data majalah tambahan)
1 namaan khas, dan panduan ***penerjemahan*** umum); dan pelaksanaan
2 dan teknologi; penulisan/***penerjemahan*** dan penerbitan buku (umum
3 yediakan kemudahan sistem ***penerjemahan*** bahasa Melayu kepada bah
4 lajaran, penulisan buku, ***penerjemahan***, penyelidikan) dan apl

FILE : majalah (bukan ilmiah)
1 umbangan terbarunya ialah ***Penerjemahan*** Arab-Melayu: Peraturan d
2 a hendak didasarkan pada ***penerjemahan*** karya tersebut $$20 ke d

RUMUSAN DAN KESIMPULAN

a) Tidak salah pengguna bahasa Melayu menggunakan leksikal "penerjemahan" kerana ia memang wujud dalam korpus data. Berdasarkan pendapat ahli linguistik moden, analisis terhadap sesuatu bahasa haruslah berdasarkan penggunaan bahasa itu dalam konteks yang "sebenar". Oleh sebab korpus data merupakan himpunan kata yang berbentuk penggunaan "sebenar" maka sewajarnya leksikal "penerjemahan" boleh diterima dan digunakan.

b) Leksikal "penerjemahan" merupakan perkataan yang gramatis dari segi nahunya. Meskipun ia berbentuk kata pinjaman tetapi apabila ia telah masuk dan meresap ke dalam bahasa Melayu maka ia menjadi milik bahasa Melayu. Oleh itu, pembentukan morfologinya haruslah mengikut rumus nahu Melayu. Sama seperti perkataan lain yang mengalami luluhan huruf *t* dengan

JADUAL 13
Kekerapan leksikal "penterjemahan" dalam korpus data bahasa Melayu DBP

Subkorpus	Jumlah Bilangan Kata	Kekerapan Leksikal "Penterjemahan"
Akhbar (94,95,96,98)	10,111,504	85
DBP2 (buku 70-an ke atas)	9,739,899	63
Majalah Ilmiah	1,887,516	63
Majalah 1 (majalah tambahan)	3,361,029	197
Majalah (majalah bukan ilmiah)	4,861,827	=
	Jumlah Kekerapan	408

JADUAL 14
Kekerapan peratusan leksikal "penterjemahan" dan "penerjemahan"

Kata Leksikal	Kekerapan	Peratusan
Penerjemahan	27	6.20%
Penterjemahan	408	93.79%
Jumlah	435	99.99% = 100%

dibunyikan sengau maka leksikal "penerjemahan" harus bersifat demikian.

c) Sesuatu kajian yang mantap dan tuntas haruslah berdasarkan penggunaan "sebenar" sesuatu bahasa itu oleh penutur jati bahasa tersebut. Penggunaan "sebenar" ini ada dihimpunkan dalam korpus data. Oleh itu, penggunaan korpus data sebagai data analisis bahasa amatlah dialu-alukan. Sebagai pengkaji bahasa juga, kita tidak boleh mencipta sampel bahasa secara imaginasi sahaja tanpa didasarkan pada penggunaan sebenar. Itulah sebabnya, ramai ahli linguistik moden hari ini lebih menumpukan kajian bahasa dan linguistik secara deskriptif dan bukan perskriptif. Kajian deskriptif lebih ideal dan "berpijak di bumi nyata" berbanding kajian perskriptif yang lebih bersifat "khayalan dan awang-awangan". Justeru, deskriptif lebih popular daripada perskriptif.

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Administrative Modernization in the Malaysian Local Government: A Study in Promoting Efficiency, Effectiveness and Productivity

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Keywords: Administrative, modernization, reforms, local government

ABSTRAK

Dalam tempoh pemerintahannya dari tahun 1981-2003, Dr. Mahathir Mohamad telah melaksanakan usaha pemodenan atau pembaharuan pentadbiran awam di Malaysia melalui pelbagai dasar dan program yang telah diperkenalkan – dilihat sebagai tempoh pemodenan dan pembangunan yang pesat. Usaha pemodenan pentadbiran di Malaysia tidak hanya melibatkan agensi-agensi kerajaan di peringkat persekutuan, tetapi turut membabitkan kerajaan tempatan. Penyelidik telah menganalisis program-program dan dasar-dasar pembaharuan yang telah diperkenalkan melalui kajian tinjauan dari tahun 2002-2003 dalam kalangan pegawai-pegawai kanan yang sedang berkhidmat di unit-unit kerajaan tempatan di lapan buah negeri seperti Perlis, Pulau Pinang, Kedah, Kelantan, Sabah, Sarawak, Pahang dan Terengganu. Pemilihan negeri-negeri ini dengan andaian mereka masih ketinggalan dan belum mencapai matlamat pembaharuan pentadbiran terutamanya di peringkat kerajaan tempatan masing-masing. Hasil kajian mendapati tidak semua usaha pembaharuan yang telah dilaksanakan oleh pihak kerajaan di peringkat kerajaan tempatan di negeri-negeri tersebut berkesan dan berjaya. Oleh itu, unit-unit kerajaan tempatan perlu bersedia melaksanakan pembaharuan dan menerima perubahan dalam usaha memodenkan sistem pentadbiran masing-masing agar dapat bersaing dengan kerajaan tempatan di negara-negara maju dan juga di negara-negara sedang membangun yang lain.

ABSTRACT

Closely examining the Malaysian administrative modernization or reform initiated by Dr. Mahathir Mohamad, the Prime Minister of Malaysia from 1981 to 2003 – a decade of modernization and faster economic growth – the reseacher analyses various programmes and reform policies introduced in the public administration system in Malaysia. Modernization efforts that were carried out not only involved the federal government levels but also included the local government level. This article identifies the administrative reform efforts that were introduced at the local government level. Research were carried out from 2002 to 2003, to gauge the opinion of the senior officers who are currently serving in various units in the local governments in eight states, namely Perlis, Penang, Kedah, Kelantan, Sabah, Sarawak, Pahang and Terengganu. The eight states were chosen based on the assumptions that they are still some reform efforts implemented that have not met the targets. The result of the research shows that not all reform efforts introduced and adopted in those states are effective and successful. This means that the local government must be ready to carry out reforms and changes to modernise their administrative system to be able to compete with other local government in other advanced and developing countries.

INTRODUCTION

The Malaysian government system is divided into three levels — namely federal, state and local governments (Ahmad Atory 2002; Malaysia 1999; Phang Siew Nooi 1996; Zahari 1991). Consequently, the state government has the right to determine types of programmes and policies that are suitable for their local governments. Morever, the local government's status and position is provided in the Malaysian Constitution, whereby the Constitution states that the local government is under the power and control of the respective state governments. This is a special provision stipulated in the Malaysian Constitution to administer, formulate policies, develop and control for the local government, which is known as The National Council for Local Government (NCLG).[1] The local governments derive their power and autonomy through the process of decentralization from the state government.[2] Though they have little power and autonomy, they play an important role in providing basic facilities and services, as well as maintaining infrastructures. The local government, to that extent could to find their own revenue such as getting involved in the privatization projects and so forth.

Since Dr. Mahathir Mohamad became the Prime Minister in 1981, a substantial number of administrative reforms in the public administration system had been introduced. The administrative reforms that were introduced are still carried out until now. The reforms were introduced mainly to improve and upgrade effectiveness, image and the quality of the administration of government including local governments. It also helped to change the attitude of the civil servants, which is the most encouraging success of the reform. Malaysia can now claim to have an administrative system, which is comparable to that of other advanced and developing countries (Ahmad Atory 1998). There are some developing countries that have emulated the Malaysian administrative model. However, at the local government level, efforts towards reform in the administrative system are given less attention. Realising the situation, research about the administrative reform in the local government administration in Malaysia was carried out to get the opinions as well as evaluation from the senior officers of the effectiveness of the reforms that were introduced so far. The study focused on the perceptions of effectiveness of various reform initiatives.

At the local government level in Malaysia, there are still lack of information about administrative reform carried out by the government. In conjunction to that, the discussion in this article consists of finding of research undertaken in 2002 (and completed in the year 2003), by compiling opinions and evaluation of public officers of the local government regarding the reform that has been implemented to upgrade the efficiency, effectiveness and productivity.

Efforts to achieve and upgrade efficiency, effectiveness and productivity in the public service and administration are the main objective of the Mahathir administration. To achieve this objective, various efforts and reform strategies that involve work procedures and civil servants' attitude have been carried out, including at the local government level. The government had introduced Malaysia-Incorporated Policy; Clean, Efficient and Trustworthy; Leadership By Example; Look East Policy; Privatisation Policy and many more in efforts to change the attitude of the civil servants so that they will be more positive, innovative, disciplined, responsible, and efficient. Apart from that, the reform aims to improve and upgrade the capability and developing system in the public administration in Malaysia.

These programmes and policies have brought a lot of changes and success in upgrading efficiency, effectiveness and productivity of the public administration in Malaysia. Ahmad Atory in his book entitled "Administrative Reform in Malaysia (1998) has listed down a number of reform efforts that

[1] Under Item 4 in List 2 of the Ninth Schedule, the Malaysian Federal Constitution stipulates local government to a subject under the State List. Hence, all local authorities fall under the exclusive jurisdiction of the state governments (Malaysia 1991; Phang Siew Nooi 1996).

[2] Following an amendment to the Malaysian Federal Constitution, the government enacted, under Article 95A, the National Council for Local Government (NCLG) to advise and coordinate the local authorities in matters especially pertaining to legal and major policy issues (Malaysia 1999; Report of the Royal Commission of Enquiry to Investigate in the Working of Local Authorities in West Malaysia 1970). Also see Ahmad Atory (2002).

have brought positive changes in efficiency, effectiveness and productivity of the Malaysian public sector particularly during the Mahathir's administration. His findings noted that epitome of examples can be seen in the. reform efforts like privatisation, trimming size of the civil service, attitudinal changes of the civil servants though several procedural reforms like punch card system, name tag identification among the civil servants, manual procedures, client-chartered, open space lay-out. In addition, some positive changes have also been identified through various programs to upgrade the leadership quality among civil servants. Some of these programs are as follows: (i) training opportunities for levels of civil servants; (ii) better promiotion prospects and fringe benefits such as opportunities for postgraduate studies and sabbatical leaves; (iii) job specialization; and (vi) job rotation to give civil servants wider exposure to various operations of their respective departments. But, how is it at the local government level? Therefore, research objectives of this study are:

(a) To evaluate the extent to which reform efforts at the local government level were achieved through responses of the senior officers regarding work procedures and attitude of their colleagues; and
(b) To study the success in privatisation as one of the reforms adopted in the local government administration.

Based on the objectives above, the effectiveness of the reform programmes and policies that were introduced by Dr. Mahathir Mohamad administration, including the reform in the local government system were evaluated by selected respondents undertaken by the authors. The evaluation made by the officers concerned especially those serving in the various units in the local government is very important to be known on how effective is the reform made in the local government system. The respondents can give their important evaluation because they are involved directly with the implementation of the reform efforts.

THE CONCEPT OF ADMINISTRATIVE REFORM (MODERNIZATION)

The concept of administrative reform means different things to different people. Caiden (1969) uses it to refer "... to all improvements in administration; ... to general administrative overhauls in difficult circumstances; ... to specific remedies for maladministration; ... to any suggestion for better government; ... and to intention of self-styled administrative reformers...". According to Hanh (1970), administrative reform is defined as "a systematic and integrated effort to bring about fundamental changes in public administration to enhance public administrative capability to achieve national development goals." This definition is designed to accommodate: (i) organizational improvements (both structural and procedural); and (ii) improvements in the behaviour of civil servants.

The main objectives of structural reforms include the reduction of overlapping and duplicating functions, redefinition of responsibilities, reduction of span of control and redesigning of organizastion and institutions (Caiden 1969: 35). While the lowest level of structural reforms includes improvement in prodedures or changing the routines of public administration. Incompetency of administrative procedures in coping with increasing demand for implementaion of development projects is usually the reason for procedural reforms. The range of procedural reforms may vary. Reform may take the form of improvement in procedures concerned with organisation, planning, finance, budgeting, accounting, auditing, methods and supply management and elimination exchange control. Reforms can also take the form of simplification of export procedures and other aspects such as ICT, ISO, TQM, E-Government, etc.

Basically, behavioral reforms make use of the propositions drawn from the field of psychology and sociology. Herbert Kaufman uses the phrase administrative behavior to designate human behavior in organizational setting, particularly behavior of others. This literature which deals mostly with motivation is also often concerned with application and advising, for example, how to secure greater work productivitry or acceptance of change or "change in value" (*International Encyclopedia of Social Sciences*: '72). Behavioral reform can be subdivided into two dimensions (i) personnel improvement; and (ii) improvement of personnel behavior ot attitudes. The former is concerned more with the material well-being of the personnel in the civil service, both extrinsic and intrinsic benefits, while the latter is concerned with improvement of the behavior of civil servants in terms of the alteration of belief, values, attitudes and individual actions. It is hope that by changing the attitude and behavior of civil servants, efficiency, effectiveness and productivity will follow.

The local government system in Malaysia has experienced changes in its administrative system and structure to a greater scale since independence. The effect thus brought to the restructuring of local government in Malaysia did not have any special system, structure, categories and standardised and systematic regulation aspects. So, during that time, the government saw that the situation caused problems in the management and administration of various units in the local government. To identify problems, the government formed a Royal Commission for restructuring and investigating the local government system of which Athi Nahappan was made as the Chairman of the Royal Commission. It started the investigation on local governments in Peninsular Malaysia on 1 July 1965 even though *Yang DiPertuan Agong* (The King of Malaysia) had approved the formation of the Royal Commission in July 1963 (Ahmad Atory, 2002; Norris 1980; Phang Siew Nooi 1996; Zahari 1991).

After the investigation was undertaken, a report was sent to Yang DiPertuan Agong on 30 January 1969. The report forwarded suggestions that brought to the efforts in restructuring the local government in Malaysia under The Local Government Act 1973 (Temporary Provision). The act had a lots of effects on the local government system in Malaysia until it was then changed to The Local Government Act 1976 (Act 171). Under The Local Government Act 1976, the restructuring process of local government in Malaysia (only in the Peninsular Malaysia) was carried out with four main objectives as outlined below:

a) Reducing the types of local authority by establishing only three types or entities that is the city council (majlis bandaraya), municipality council (majlis perbandaran) and and district council (majlis daerah);
b) Integrating laws involving the formation, function and main power of local authority for the three categories of local authority as to avoid duplication with the local government laws in West Malaysia;
c) Reducting the numbers of local authority through the combination or merger of the existing local authority; and
d) Introducing uniformity of the power and laws of construction works and regional planning through the Building, Drain and Road Act 1974 (Act 133), The Urban and Rural Planning Act 1976 (Act 172) and other minor acts.

METHODOLOGY AND SAMPLING

The research that was undertaken using survey method has with 600 questionnaires that were randomly mailed to senior officers (between three and five respondents per local authority e.g district officer, assistant district officers, president or chairman of the district council , including those in the various units of administration e.g finance, engineering or planning units. The questionnaires were only sent to the local governments of the eight states of Perlis, Penang, Kedah, Kelantan, Sabah, Sarawak, Pahang and Terengganu (as shown in Table 1). The local governments for other than these states are not covered in the study. About 600 questionnaires mailed, only 210 (35%) were returned. Of the total (210) only 187 (89.04%) were completed for the analysis.

TABLE 1
Distribution of respondents by state

N=187

State	Number of Respondents	Percentage (%)
Perlis	3	1.6
Penang	4	2.1
Kedah	26	13.9
Kelantan	21	11.2
Sabah	31	16.6
Sarawak	62	33.2
Pahang	16	8.2
Terengganu	24	12.8
Total	187	100

Source: Survey Data (2002)

The questionnaire has three parts; the first part is about respondent's demography such as, age, race, designation, sex, state, service unit and service duration. The second part includes questions about efforts made to improve working procedures and system, upgrading public service, improving staff's attitude, upgrading work ethics and the use of the computers. While the third part includes questions about the achievement of the privatisation policy or decentarization policy that was implemented at the local government level and the form of privatisation that were carried out.

DISCUSSION

Improving Procedures and Work System

While efforts were made to improve the working system and procedures in the civil service, the government as shown in Table 2, then introduced about twelve work procedures for which can be categorized into the procedures and works systems. The effectiveness in improving work system and procedures in the civil service are based on the evaluation of officers who are presently serving in the local government in the eight states as shown earlier in Table 1.

The introduction of punch card system is aimed at to improving the work attendance, apart from upgrading the efficiency and effectiveness in the civil servant. The government staff are required to punch in before 8.00 am and punch out after 4.15 pm. While the use of name tags is mainly for easy recognition of those officers who deal with the public. The Quality Control Circle concept was introduced to encourage the officers to analyse the problems and suggest solutions to overcome the problem and forward them to the management units. This system involves all staff in solving problems by collectively seeking solutions.

The government too had introduced the concept of open space office to create conducive and suitable working atmosphere. The aim is to ensure the formality is reduced and communication in the office is smooth and effective. On the other hand, the implementation of the file system in management aim to speed up the service process of the government agencies as what is happening in the local government level. At the same time, the government had directed all government agencies including the local government to provide manual work procedures as a tool to upgrade effectiveness in the civil service.

In effort to improve the work system and procedure, the government improved the postal correspondence. It is to ensure letters are processed efficiently and fast. Before the reform of the administration was implemented, the government did not follow any suitable and exact system to call for meeting, including the writing of report about the minutes of the meeting as well as the actions taken to overcome any problems or anything in connection. Thus, the government provided guidelines on meeting

TABLE 2
Effectiveness of work systems and procedures

N=187

Work System and Procedures	Percent Positive Evaluation (Effective)	Neutral (Unable to Evaluate)	Percent Negative Evaluation (Ineffective)
Punch card	55.6	21.9	22.5
Name tag	72.2	0.5	27.3
Quality circle control	51.3	14.4	34.2
Open-space office layout	58.8	17.6	23.5
Work procedure manual	65.8	5.9	28.3
Desk file system	58.3	5.9	35.8
Postal correspondence	73.8	8.0	18.2
Management through meeting	82.9	4.3	12.8
Productivity measurement programme	39.0	30.5	30.5
TQM concept	43.9	21.4	34.8
ISO 9000 concept	62.6	14.4	23.0
Concept of electronic government	41.2	30.5	28.3

Source: Survey Data (2002)

management. To strengthen the work systems and procedures, productivity measures were also implemented to upgrade the product as well as the service quality.

Based on the officers' evaluation, efforts to upgrade the work systems and procedures (which consist of the twelve procedures as shown in Table 2) were been indentified. But it did not achieve the expected result, or in other words, the effectiveness is still low. Only the use of the name tag (72.2%), postal correspondence (73.8%) and management through meeting had achieved high level of effectiveness in upgrading work system and procedures in the local government. Others procedures such as the quality control circle (51.3%), the use of punch cards (55.6%), desk file system (58.3%), open space office layout (58.8%), ISO 9000 standard (62.6%) and work procedure manual (65.8%) that were implemented to upgrade efficiency and effectiveness, only achieved moderate results (as evaluated from the respondents). On the other hand, other procedures that were implemented such as the Productivity Measurement Programmes (39%), concept of the electronic government (41.2%), TQM concept (43.9%) had not achieved expected results.

Based on the evaluation, it can be said that the twelve work procedures were not positively evaluated by the respondents. More effort should be done to upgrade and instil responsiveness among the government staff so as to be more efficient and effective in the administration and management of the local government.

Improving Services to the Public

The government has stressed on efforts to improve service quality for the public, as one of the reforms undertaken in the local government system. In 1982, one new concept was introduced, that is the One-stop Service Centre. It was introduced to make it easy for the public to pay bills and taxes as many bills can be paid at one counter. Thus the government introduced One-stop Payment Centre; One-stop Service Centre; One-stop Licence Centre; Suggestion Box; and GIRO System.

Regarding the efforts to improve service to the public, the evaluation made by the officers at the local government level on the efficiency and the effectiveness is shown in Table 3. From the evaluation, it is found that the One-stop Service Counter is the most effective (70.6%). The rest are still not that really effective, especially One-stop Licence Counter (52.4%), One-stop Service Counter (46.5%), Suggestion Box (32.6%) and GIRO System (20.9%).

Changing the Attitudes of the Civil Servants

Another aspect that was stressed by the government in the administrative reform of the local government is improving the government servants' attitude. This is the main focus or effort to bring changes in the civil service. Thus the Clean, Efficient and Trustworthy concept was introduced in order to instil ethics and good moral values among those in the government sectors especially at the local government level. They have to show and practice good moral values and be positive in their attitude.

TABLE 3
Effectiveness of services to the public

N=187

Services	Percent Positive Evaluation (Effective)	Neutral (Unable to Evaluate)	Percent Negative Evaluation (Ineffective)	Total (%)
One stop payment centre	70.6%	19.3%	10.2%	100
One stop service centre	46.5%	36.4%	17.1%	100
One stop licence centre	52.4%	30.5%	17.1%	100
Suggestion box	32.6%	17.1%	50.3%	100
GIRO	20.9%	61.5%	17.6%	100

Source: Survey Data (2002)

Apart from that the local government also introduced the concept of Leadership-by-example, which was launched by Dr. Mahathir Mohamad on 1 March 1983. It aimed to increasing efficiency and productivity in the public service. Those of the senior civil servants will be the example of those under their leardeship example. In connection with the concept, excellent service award was implemented mainly to show appreciation to those who are really efficient and excelled in their work.

On 25 February 1982, Mahathir's administration introduced Malaysia-Incorporated Concept. Through this concept, the government wants to see that Malaysia as a company thus exist cooperation between the private and public sectors. Not only that shared intelligence can exist between the two sectors, so that this country will experience better economic growth. The government also introduced the concept of friendliness among civil servants. This concept was introduced as there had been complaints about the unsatisfactory counter service in the government offices. So this concept was introduced in the hope that government officers will be friendlier and to strengthen the earlier concept of Leadership by Example.

Based on the evaluation as shown in Table 4, efforts in upgrading and improving the attitude of civil servants were not very encouraging. Only 72.2% of the evaluations are positive towards the Clean Efficient and Trustworthy concept. The implementation of Leadership by Example (69%); friendliness (69%); and Excellent Service Award (61%) concepts are moderately evaluated. At the same time, the implementation of the Malaysia Incorporated Policy is negatively evaluated. Only 35.3% showed positive attitude towards the concept, thus show to us that the cooperation between the government and the public sector is not that good as expected.

Inculcating Work Ethicsin Management

Apart from the efforts discussed earlier on, the Malaysia government then instil positive ethical values among civil servants. There are seventeen positive moral values that the government tried to instil as shown in Table 5. The efficiency and the effectiveness among civil servants in carrying out their daily work is connected to moral values that they possess. Thus they should bear in mind that only by having good moral values, positive work ethics can they be more efficient and effective in their performance. This aspect is very important, as they will deal with different levels of the society. Based on the evaluation from the respondents, it is found that having positive moral values when doing daily routine works, determine the success of the implementation of the reform in the administration of the local government. It seems that having the values of cooperation (82.4%); self-management (73%); and accountability (76.5%) are the best evaluation made. The other ethical values are also seen to be quite effective in implementing government policies. Hence, only the values of entrepreneurship (39%) are not that popular among government servants.

Utilization of Computers in the Local Government Management

Utilization of Computers is another reform introduced during the Dr. Mahathir

TABLE 4

Effectiveness of improving attitudes of civil servants

N=187

Administrative/Behavioural techniques	Percent Positive Evaluation (Effective)	Neutral (Unable to Evaluate)	Percent Negative Evaluation (Ineffective)	Total (%)
Clean, efficient and trustworthy	72.7%	4.3%	23.0%	100
Leadership by example	69.0%	3.2%	27.8%	100
Excellent service award	61.0%	4.8%	34.2%	100
Malaysia-Incorporated	35.3%	40.1%	24.6%	100

Source: Survey Data (2002)

TABLE 5
Inculcation of work ethics among local government officers

N=187

Values or Work Ethics	Percent Positive Evalution (Effective)	Neutral (Unable to Evaluate)	Percent Negative Evaluation (Ineffective)	Total (%)
Accountability	76.5%	2.7%	20.9%	100
Cooperation	82.4%	1.1%	16.6%	100
Self-management	77.0%	1.1%	21.9%	100
Self-development	65.8%	2.1%	32.1%	100
Diligence	69.0%	2.1%	28.9%	100
Intelectual	70.6%	3.7%	25.7%	100
Team spirit	72.7%	2.1%	25.1%	100
Thrift	61.0%	1.6%	37.4%	100
Creative and innovative	58.3%	2.1%	39.6%	100
Positive attitude	65.2%	1.6%	33.2%	100
Integrity	67.9%	3.2%	28.9%	100
Responsive	66.3%	2.1%	31.6%	100
Self-discipline	68.4%	1.1%	30.5%	100
Client-oriented	67.9%	2.7%	29.4%	100
High perfomance oriented	64.2%	2.7%	33.2%	100
Professionalism	57.2%	6.4%	36.4%	100
Enterprising	39.0%	17.6%	43.3%	100

Source: Survey Data (2002)

TABLE 6
Effectiveness of utilization of IT (computer) in local government

N=187

Particular	Percent Positive Evalution (Effective)	Neutral (Unable to Evaluate)	Percent Negative Evaluation (Ineffective)	Total (%)
Greater speed in policy decision	74.9%	10.7%	14.4%	100
Improvement in accuracy	78.1%	8.6%	13.4%	100
Improvement in counter service	80.2%	8.6%	11.2%	100
Efficiency in correspondence	69.0%	9.6%	21.4%	100
Efficiency in project implementation	69.5%	13.9%	16.6%	100
More speed programme evaluation	59.4%	17.1%	23.5%	100

administration. Though using computers for doing work in government offices was implemented long ago, yet it was still not that widely used until 1980's. Thus, in this research, the use of computers really shows us the positive result in the effectiveness and efficiency of the civil servants to upgrade productivity.

Most respondents gave positive evaluation on the utilization of computers as shown in Table 6. About 74.9% of the respondents stated that the utilization of computers is very effective, whereby 78.1% stated that the utilization of computers improved accuracy, standardisation and consistency. Apart from that, about 80.2% stated that computers assist in upgrading theirs effectiveness in the counter service. At the same time respondents' evaluations on the utilization of computers are very positive in the efficiency aspect on correspondence, project implementation and speed up programme, that are 69.0%, 69.5% and 59.4% respectively.

Implementation of Privatisation in the Local Government Management

One of the important efforts in the administrative reform that was implemented in the Mahathir's administration is privatisation policy. The government objectives of privatisation policy are to reduce the financial burden of the government, to stimulate the economic growth, to promote competition, efficiency and productivity, stimulates entrepreneurship, reduce the size of the public sector and meets the objectives of the New Economic Policy.

During the first ten years of its implementation, the response was not positive and the people were not convinced of the policy. Yet, some do not understand why it was implemented. Only after that then, the real picture about it become clearer. In the administration and management system of Malaysia, privatisation is believed to bring about changes in behaviour, attitude and values of the government servants and changes towards more efficient, effective, competitive, productive and dynamic (Ahmad Atory 1998).

Effectiveness of Privatisation Objectives

At the local government level, the implementation of privatisation was included in the government administration reform. As mentioned above, those similar objectives of privatisation at the federal level are also brought in the local government system such as to spur local government growth, to increase productivity among the local government staff, to promote competition towards organisation efficiency among the local government staff, to create Bumiputera's opportunities in business and to reduce government financial burden of the local government system (Atory 1998: 286-288).

How far have the privatisation objectives been achieved at the local government level? The result can be seen from the evaluation made by the respondents of this research as shown in Table 7. About 66.8%of the respondents agree that privatisation was an effective tool of economic growth at the local government level. About 58.3% stated that privatisation could increase the income of the local government. 61.5% respondents agree that the privatisation promote competition towards efficiency of the local government organisation, where as 58.8% then agree that privatisation create opportunities for the bumiputera to get involved in business. 52.9% respondents agree to the objective of privatisation in reducing financial burden of the local government system. We should bear in mind that the statistics showed in the table stated the difference percentages of positive and negative evaluation for several reasons. One is that the scope for privatisation at the local level is different from one to another. Not all the services are conducted for privatisation. Some privatisation are dictated by state/federal governments, perhaps they may not approve for a variety of reasons.

TABLE 7
Effectiveness of privatization objectives

N=187

Objective	Percent Positive Evaluation (Effective)	Neutral (Unable to Evaluate)	Percent Negative Evaluation (Ineffective)	Total (%)
Increase economic growth at the local level	66.8%	11.8%	21.4%	100
Increase income revenue at the local council	58.3%	11.2%	30.5%	100
Increase competition toward organization efficiency	61.5%	10.7%	27.8%	100
To give opportunity in business to Bumiputra	58.8%	11.8%	29.4%	100
To reduce financial burden of local council	52.9%	12.8%	34.3%	100

Source: Survey Data (2002)

After analysing the research based on the evaluation made by the respondents about the success of the implementation of privatisation, it can be said to be low and not that satisfactory. However the implementation at the local government level is still new to upgrade the quality, efficiency and effectiveness of the administration and the service offered.

Types of Privatisation Implemented in the Local Government System

In Malaysia, there are various types of privatisation being employed by the government. Thus, the same situation does apply to the local government as well as what is shown in Table 8. Out of 187 respondents, there are four types of privatisation being implemented largely at the local government level, i..e. Contracting out (107), Management Contract (29), Lease of Asset (23), Build-Operate-Own (17), Build-Operate-Transfer (21). While Build-Transfer, Build-Own Operate (13 respectively), and Sale of Equity, Sale of Asset and Management-by-Out (9 respectively).

Besides, the nature of privatisation is also evaluated by the respondents. Privatization of Service received high number of responses, i.e. 78, Partial Privatization (29), and Full Privatisation (15), while Privatisation of Production (3).

Apart from these, there are many activities or programmes being privatised by various local governments , where initially they were the solely under the responsibility of the local government. The research study shown in Table 9 justified that since a couple years, there have quite a number of activities been privatised, especially in the form of contracting out, followed by service contract and management contract.

As Table 9 shows, that there are various types of activities or programs being employed by the respective local governments as to respond to the government policy of the privatisation. Amongst the very popular programs that are being employed are the garbage disposal (54), rehabilitation, cleanliness and maintenance (20 respectively), parking are and grass cutting (16 respectively), maintenance and road repair (13 respectively), public toilets, building and drainage maintenance (11 respectively). While market maintenance (9), maintenance of street lighting (8), rent vehicle, landscape maintenance, construction of stalls and day and night markets (6 respectively), sewage and drainage (5 respectively), bridge construction (4), housing project and tourist management center (3 respectively); and tax collection/home assessment (2). It is expected that more projetcs and programs will be

TABLE 8
Types and nature of privatization implemented in the local government

No.	Type of Privatization	Frequency
1.	BOT (Build-Operate-Transfer)	21
2.	BOO (Build On Operate)	13
3.	Contracting Out	107
4.	SOE (Sale of Equity)	9
5.	SOA (Sale of Asset)	9
6.	BOO (Build-Operate-Own)	17
7.	COR (Corporatization)	7
8.	BT (Build-Transfer)	13
9.	MBO (Management-Buy-Out)	9
10.	LOA (Lease of Asset)	23
11.	MC (Management Contract)	29
	The Nature of Privatization	
12.	Privatization of service	78
13.	Full Privatization	15
14.	Partial Privatization	29
15.	Privatization of Production	3
	Total	392

Source: Survey Data (2002)

TABLE 9
Local government projects that are privatised

No.	Types of Activities	Frequency
1.	Parking area	16
2.	Land development	2
3.	Service	2
4.	Maintenance and road repair	13
5.	Garbage disposal	54
6.	Rehabilitation, cleanliness and maintenance	20
7.	Building and drainage maintenance	11
8.	Public toilets	11
9.	Landscape maintenance	6
10.	Market maintenance	9
11.	Bridge construction	4
12.	Tax collection/ home assessment	2
13.	Sewage and drainage	5
14.	Construction of stalls and day and night markets	6
15.	Tourist management center	3
16.	Housing project	3
17.	Maintenance of street lighting	8
18.	Rent vehicle	6
19.	Grass cutting	16
	Total	179

privatised by the local governments throughout the country in effort to reduce the financial burden of the local government administration and at the same time to enhance effectiveness and efficiency of the services rendered to the public.

SUMMARY AND CONCLUSION

Referring to various aspects that had been discussed, it is clear that in the. Mahathir administration, the main focus is to reform behaviour of the civil servants and and work procedures. It is the important base to improve service to the public especially at the local government level. The government officers who are having good quality, capable, skilful and as well as having positive moral values and work ethics, can improve the effectiveness, efficiency and productivity of the organisation including that in the local government.

Apart from that, the government should be more proactive to strengthen and improve the present local government administration system so that it will be more competitive with good quality and is able to upgrade efficiency and effectiveness. It is through the local government that the federal channels whatever development programmes are, to upgrade the local government itself. Thus, to ensure the success of the reform, all units at the local government administration must be committed to bring in development and modernisation of the systems in the local government from time to time. It would be difficult to achieve the reform objectives if the local government administrators hardly struggle for it.

At the state and federal government level, more attention and research had been carried out, unlike that at the local government level where empirical research were not that much being done. Most research is done on the reform of local government laws, leadership, power, financial autonomy, tax and politics. Due to that, details information about the effectiveness and result of the reform on local government administration is very limited. Hence, the need to undertake research in the effectiveness, efficiency, productivity aspects as well as better service delivery system of the local administration is imperative. The result of the study can be summarised as such, various reform efforts implemented at the local government level need to be improved and paid more attention. This is because researchers are optimistic that the local government administration is gaining momentum amid the strong public demand for better services delivered on the part of local authority. This will bring some benefits for the public administration in the country.

All programmes and efforts toward reforms especially through privatisation must be upgraded and carried out continuously. It is believed that through this programme, financial constraints can be solved as well as can be a source of income. It is also urged in the research done by Hazman Shah Abdullah (1992). It stated that privatisation can overcome financial problems and as a source of income for the government. Apart from that, through privatisation, the government and the private sectors is supposed to facilitate the public with services that they need. Thus, to provide the public, especially the Bumiputera the opportunity to involve themselves in the business field, they eventually will get employment and their better living standard will be better.

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Elasticity of Substitutions between Foreign and Local Workers in the Malaysian Manufacturing Sector

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ABSTRAK

Proses perindustrian yang berlaku di Malaysia telah membawa masuk ramai pekerja asing untuk bekerja di negara ini. Mereka telah memenuhi kekosongan pekerjaan di pelbagai kategori dan kebanyakan mereka memegang pekerjaan di peringkat rendah. Namun demikian penglibatan buruh asing di peringkat pekerjaan tinggi atau pegawai dagang tidak kurang pentingnya. Salah satu isu penting dalam pasaran buruh berhubung pekerja asing adalah sama ada mereka merupakan pengganti atau penggenap kepada pekerja tempatan. Peluang pekerjaan rakyat tempatan akan terjejas sekiranya mereka dengan mudahnya dapat digantikan dengan pekerja asing. Kesannya kadar pengangguran di kalangan pekerja tempatan akan meningkat. Artikel ini menganalisis keanjalan penggantian antara pekerja tempatan dengan pekerja asing dan antara pekerja dengan modal bagi pelbagai kategori pekerjaan. Analisis adalah berdasarkan kepada data Penyiasatan Perkilangan antara tahun 1985 hingga 1996 yang telah dikutip oleh Jabatan Perangkaan Malaysia. Analisis merangkumi empat kategori pekerjaan, iaitu pekerja tempatan separuh mahir, pekerja asing separuh mahir, pekerja tempatan tidak mahir dan pekerja asing tidak mahir. Lima jenis industri telah dipilih bagi tujuan analisis ini, iaitu industri berasaskan kayu, keluaran kertas, keluaran kimia, keluaran galian bukan logam dan keluaran logan asas. Dalam mendapatkan nilai keanjalan penggantian, fungsi kos translog telah digunakan. Hasil analisis ini menunjukkan pekerja tempatan dan pekerja asing adalah lebih merupakan pengganti. Selanjutnya hasil kajian ini menunjukkan keadaan penggantian atau penggenap tidak bergantung kepada jenis industri, tetapi bilangan nilai keanjalaan yang signifikan didapati lebih besar dalam industri ringan.

ABSTRACT

Industrialization has brought many foreign labours into Malaysia. They have fulfilled job vacancies at various levels and the majority of them are at the lower job rank. Nonetheless, the involvement of expatriates is also of significant. One of the pertinent labour market issues regarding foreign labours is their substitutability or complementarities with the local labours. Job opportunities for the local labours will be jeopardized when they can easily be substituted by these foreigners. Consequently, the unemployment rate among the locals would increase. This paper investigates the substitutability between local and foreign labours at various job categories and with capital. The data from the Manufacturing Survey of 1985 to 1996 collected by the Department of Statistics, Malaysia is used for the analysis. Four job categories covered in this analysis are semi-skilled local and foreign workers, unskilled local and foreign workers. Five sub industries are selected for the analysis, namely, wood-based, paper products, chemical products, non-metallic mineral products and basic metal products. The translog cost function is used to derive the elasticity of the substitutions. The results from this study show that both the local and foreign workers are more substitutes. Further, the study finds that the substitutability or complementarity does not depend on the types of industry but the number of statistically significant elasticity of substitutions is bigger in the light industry.

INTRODUCTION

During the 1980s, Malaysian economy experienced a dramatic change in its structure, a shift from dependence on the role of agriculture towards manufacturing and services sectors. High growth rates in these two sectors resulted in a substantial increase in the demand for labour, which consequently, led to the problem of labour shortages at all levels of job categories. The shortage was more severely felt by the manufacturing sector than other sectors due to its faster growth especially at the beginning of 1980s when the export-oriented industrialization and heavy industry were introduced. To overcome this problem, the Malaysian economy began to rely on foreign labours. The situation was seen as an opportunity for the excess supply of unskilled workers of the neighbouring countries like Indonesia, the Philippines, Thailand and Myanmar.

The economic transformation has also changed the structure of labour demand. The fast changing manufacturing and services sectors require more professional and skilled workers to cope with the rapid change in technological adoption. However, the demand for semi skilled and unskilled labours is still high due to the fact that total number of employment increases. In this regard, Malaysia faces two different economic scenarios. Firstly, the labour surplus in certain job categories is a reflection of improvement in the educational attainment amongst the citizens and the difficulties encountered in the human resource planning in meeting labour requirement. Furthermore, jobless are becoming choosier to accept jobs offered to them. Secondly, the shortage of labour exists especially at the lower job rank due to reluctance of the local labours to take these jobs (Rahmah 1997; Zulkifly and Rahmah 1997).

Despite of the business cycle experienced by the manufacturing sector, labour requirement in this sector is always large and the reliance on foreign labours is inevitable. Rapid technological advancement in this sector has changed the pattern of its labour demand towards more skilled workers. However, a dramatic increase in demand for labour has resulted in the shortages for jobs at the upper rank as well as the lower rank. Changes in the demand structure for the foreign labours in Malaysia are preceded by changes in policy for foreign labour that can be arbitrarily divided into three phases. Firstly, an introduction of heavy and export-oriented industrialization at beginning of the 1980s, which has led to substantial job opportunities. Secondly, an introduction of new policy in the mid 1980s that restricted the hiring of foreign workers to only certain sectors. Thirdly, another policy was introduced in 1992 to limit the hiring of the foreign workers to only skilled workers.

On the supply side, the development of the Malaysian economy has resulted in a great improvement in the educational attainment among its working population. The emphasis made by the government on education provides greater accessibility for Malaysians to acquire education. At the workplace, opportunities to further education and training are also greater. Employers are required to provide better training facilities to their workers to enhance their capabilities in carrying out duties and be more productive.

It is particularly important to look at the demand for labour and the substitutability between various skills, and with capital. It is important to study the labour demand because the effect of any policy change on factor prices faced by the employers will depend on the structure of labour demand. Besides, the impact of skill, human capital improvement and human capital mix can be assessed only if one knows the underlying structure of substitutions among different groups of workers. Knowledge of the values of the elasticity of substitution is useful for policy makers in changing the market signals for greater labour absorption and also to identify the appropriateness of techniques being used in the production process. Rosen (1983) and Grilliches (1969) for example, provide some initial findings on the capital-skill complementarity hypothesis. This finding has major implications on the employment effects of such policies as accelerated depreciation, investment tax credits and other attempts to stimulate investment in physical capital, suggesting that they will increase the demand for the skilled-related to unskilled labours. The elasticity of the substitution also has a positive relationship with output and productivity (Granville 1989; Klump and Granville 2000; Dupuy and deGrip 2002).

This article attempts to analyze elasticity of substitution between local and foreign labours and with capital in five manufacturing sub-sectors, namely, wood-based, paper products, chemical products, non-metallic mineral products and metal products. The rationale for choosing these sub-industries is based on their large involvement in hiring foreign labours. The first two industries are regarded as light industry and the other three industries are categorized as heavy industry. The analysis utilizes data obtained from the Manufacturing Survey of 1985-1996 conducted by the Department of Statistics, Malaysia. This paper is organized into six sections. The following write-up contains the review of foreign labour in the manufacturing sector, literature review, theoretical framework and model specification, analysis of the results and summary and conclusion.

FOREIGN LABOUR IN THE MANUFACTURING SECTOR

In most manufacturing sub-industries, the annual growth rate of the foreign workers was higher than that of local workers. This reflects that in a task to cut cost of production, many firms prefer hiring foreign workers especially the unskilled ones. In the light industry, for example, during 1985-1996, the average annual growth rate of the foreign workers was 26.1% as compared to 7.1% of the local workers. In the same vein, the annual growth rate of the foreign workers in the heavy industry was 32.8% as compared to 12.9% of the local workers during the same period. Some sub-industries that experience high growth rate of foreign workers are rubber products; textiles; publishing industry; and paper products, machinery and equipment and metal products. The growth rate of local workers is higher in the rubber products; paper products; fabricated metals, machinery and equipment, at above 10.0% that due to their high export contents.

It is particularly important to note that during 1985-990 and 1990-1996, annual growth rates of local workers decreased in both categories of industry. In contrast, the growth rate of foreign workers increased dramatically. In the light industry, growth rate increased from 18.5% during 1985-1990 to 32.8% during 1990-1996 and in the heavy industry, the rate increased from 11.2% to 53.9% during the same period. These statistics clearly indicate that the expansion of the Malaysian manufacturing sector increases the reliance on foreign labours. Technological advancement particularly in heavy industry requires more expatriates that may bring together their foreign direct investment (FDI). The detail distribution of the foreign labour in the Malaysian manufacturing sector is presented in Table 1.

Between 1985 and 1996 the largest percentage of foreign labours was unskilled. In the light industry, the percentage of unskilled labours increased from 27.9% in 1985 to 40.4% in 1990 but decreased to 33.3% in 1996. In this industry, the semi-skilled foreign workers formed the second largest percentage at 20.0% in 1985, but this decreased to only 19.5% in 1990 and 13.8% in 1996. The involvement of foreign labours in the professional, technical and supervisory employment is very minimal at less than 10.0%. They are commonly called expatriates.

The same scenario is observed in the heavy industry, with the largest percentage of the foreign workers is the unskilled. However, the percentage of the professionals in this industry is higher due to more advanced technology. Furthermore, it was also obvious that in both light and heavy industries, the percentage of the skilled workers increased substantially due to the technological advancement especially in the era of liberalization and globalization in the 1990s where production of export goods are more emphasized (refer to Table 2). A greater involvement of foreign labours at lower job categories implies that they are receiving lower wage rate. As a result, the bargaining power of local labours for wage increase is becoming lesser.

LITERATURE REVIEW

Most of the earlier studies using more than two-factor models were done using manufacturing data in the United States. Normally, they used two types of labour inputs that are to divide labour by occupation – with the majority using breakdown between production and non-production workers. Undoubtedly, this is largely due to the availability of data from government sources that separates labours by occupation. However, a study by Dupuy and deGrip (2000) in Denmark divided workers by their educational level and occupation as low, medium and high based on their educational achievement and

TABLE 1
Malaysia: Foreign labour in the manufacturing sector by sub industry 1985-1996

Code	Malaysian Industry Classification (MIC)	1985		1990		1996		Annual growth rate		
		Total	%	Total	%	Total	%	1985-90	1990-96	1985-96
A.	Light Industry	5,305	69.6	12,407	75.9	67,904	56.4	18.5	32.8	26.1
31	Food, beverage & tobacco	1,607	14.0	1,671	10.2	6,924	5.8	9.4	26.7	18.5
32	Textiles, wearing apparel & leather	372	4.9	372	2.3	17,772	14.8	0.0	90.5	42.1
33	Wood, wood products and furniture	3,548	46.6	9,881	60.4	19,607	16.3	22.7	12.1	16.8
342	Publication and publishing	41	0.5	29	0.2	1,087	0.9	-6.7	82.9	34.7
355/56	Rubber & plastic products	230	3.0	372	2.3	21,296	17.7	10.1	96.3	50.9
39	Others	47	0.6	82	0.5	1,218	1.0	11.8	56.8	34.4
B.	Heavy Industry	2,314	30.4	3,939	24.1	52,426	43.6	11.2	53.9	32.8
341	Paper and paper products	20	0.3	61	0.4	2,478	2.1	25.0	85.4	55.0
351/54	Chemical, petroleum & coal	287	3.8	216	1.3	1,617	1.3	-5.5	39.9	17.0
36	Metal products	541	7.1	1,035	6.3	4,931	4.1	13.8	29.7	22.2
37	Basic metals products	135	1.8	116	0.7	3,783	3.1	-3.0	78.7	35.4
38	Fabricated metals, machinery, electronic & equipment	1,331	17.5	2,511	15.4	39,627	32.9	13.5	58.4	36.1
Total		7,619	100	16,346	100	120,340	100	16.5	39.5	28.5

Source: Department of Statistics, various years

TABLE 2
Malaysia: Foreign labour by job category 1985-1996

Num	Job Category	1985		1990		1996		Annual Average Growth Rate		
		Total	%	Total	%	Total	%	1985-90	1990-65	1985-96
A.	Light Industry	5,305	69.6	12,407	75.9	67,904	56.4	18.5	32.8	26.1
1.	Professional	355	4.7	547	3.3	807	0.7	9.0	6.7	7.8
2.	Technical and supervisor	174	2.3	312	1.9	622	0.5	12.4	12.2	12.3
3.	Skilled	522	6.9	933	5.7	12,120	10.1	12.3	53.3	33.1
4.	Semi skilled	1,524	20.0	3,182	19.5	16,606	13.8	15.9	31.7	24.2
5.	Unskilled	2,126	27.9	6,601	40.4	36,503	30.3	25.4	33.0	29.5
6.	Others	504	6.6	832	5.1	1,246	1.0	10.5	7.0	8.6
B.	Heavy Industry	2,314	30.4	3,939	24.1	52,436	43.6	11.2	53.9	32.8
1.	Professional	668	8.8	1,437	8.8	3,284	2.7	16.6	14.8	15.6
2.	Technical and supervisor	108	1.4	181	1.1	627	0.5	10.9	23.0	17.3
3.	Skilled	152	2.0	288	1.8	10,191	8.5	13.6	81.2	46.6
4.	Semi skilled	574	7.5	710	4.3	12,388	10.3	4.3	61.0	32.2
5.	Unskilled	592	7.8	993	6.1	24,734	20.6	10.9	70.9	40.4
6.	Others	220	2.9	330	2.0	1,212	1.0	8.4	24.2	16.8
	Total	7,619	100	16,346	100	120,340	100	16.5	39.5	28.5

Source: Department of Statistics of Malaysia, various years.

TABLE 3
Elasticity of substitution – Production and non-production workers

Study	Data and Method	s_{pk}	s_{nk}	s_{pn}
Berndt-White (1978)	Manufacturing, 1941-71, translog cost	0.91	1.09	3.70
Clark-Freeman (1977)	Manufacturing, 1950-76, translog cost	2.10	-1.98	0.91
Kesselman *et al.* (1977)	Manufacturing, 1962-71, translog cost	1.28	-0.48	0.49
Berndt-Christensen (1974)	Manufacturing, 1929-68, translog production.	2.92	-1.94	5.51
Dennis-Smith (1978)	Manufacturing 1952-72, translog cost	0.14	0.38	-0.05
Denny-Fuss (1977)	Manufacturing 1929-68, translog cost	1.50	-0.91	2.06
Freeman-Medoff (1982)	Maufacturing 1972, translog cost	0.53	-0.02	-0.24
Grant (1979)	SMSA, census of population 1970, translog cost	0.47	0.08	0.52
Denny-Fuss (1977)	Manufacturing1929-68,translog production	2.86	-1.88	4.76
Woodbury (1978)	Manufacturing 1929-71, translog cost	-	-	-0.7
Hensen *et al.* (1975)	Manufacturing 1967, translog production.	-	6.0	-1.3
Dupuy & deGrip (2002)	Manufacturing, 1992-1995, translog cost	[a]1.73, [b]1.67, [c]1.63	[a]1.48, [b]1.53, [c]1.52	[a]1.43, [b]1.49, [c]1.56

Notes: The subscript 'p' denotes production workers, 'n' denotes non-production workers, and 'k' denotes capital. For the study by Dupuy and deGrip production workers are defined as workers with low education and low occupation, non-production workers are defined as workers with intermediate and high education in intermediate and high occupation. [a]denotes small size firms, [b] denotes medium size firms and [c] denotes large size firms.

Source: Hamermesh 1984, Dupuy & deGrip 2002

sector involved. The elasticity of substitution results from twelve studies in the United States is presented in the Table 3.

Ten of fourteen value of elasticity of substitution showed that production and non-production workers were substitutes. All studies in the table found that production workers and capital were substitutes. The results are less clear-cut between non-production workers and capital since four of the studies found that they were complements. The study by Dupuy and deGrip (2002) also found that the larger firms had a higher elasticity of substitution between skilled (non-production) workers in skilled jobs and capital than smaller firms. The elasticity of substitution between skilled and unskilled (production) workers in skilled jobs was also larger in the large firms. Fallon and Layard (1975) found that the substitutability between the combination of capital and skilled workers and workers with low and no education was higher than the substitutability between capital alone and workers with low or no education. This shows that the capital and skilled labour are more complement in the production process.

The earlier studies on elasticity of substitution in Malaysia had only focused on the traditional capital-labor substitution framework in the manufacturing sector. Thillainathan (1969) used the 1968 census data to estimate the elasticity of this substitution. The study measured the elasticity of substitution by using Constant Elasticity of Substitution (CES) model. The elasticity were measured for industries, defined at the two-digit level, including food, timber-based, chemical products and metal, machinery, electrical goods and transport equipment industries. Thillainathan concluded that the extent of the capital-labour substitution was significant, of which the elasticity range between 0.45 and 1.18. Based on these estimates, he rejected the proposition that factors were used in fixed proportions in the Malaysian manufacturing sector.

Using the same 1968 census data, Bhanoji and Ramana (1970) calculated the elasticity of substitution for 60 manufacturing industries made up of 35 four-digit level industries, 11 three-digit level industries, 6 two-digit level industries and eight industry group formed by adding two- or four-digit level industries. However, of the 60 industries considered, only 20 recorded elasticity measures that were statistically significant at the 5 percent level. They concluded that consumption-oriented industries tend to have a relatively higher elasticity than investment-oriented industries.

Maisom (1989) calculated time series estimates of elasticity of substitution. Estimates were made for 50 industry groups (five-digit level) for the period 1963-84. The study compared two methods for estimating the elasticity; CES and Translog Cost functions. The estimated elasticity using CES ranged between 0.254 and 1.259, where as translog cost function gave slightly higher estimates that the ones ranged between 0.462 and 1.325 (with the exception petroleum refineries, which had an elasticity of 4.649). Maisom also found that the elasticity to be quite low: 34 out of the 50 industry groups had their elasticity values smaller than one while 16 had greater than one.

Hoffman and Tan (1980) used four different approaches, including the Arrow-Cheney-Minhas-Solow (ACMS) measure, the Diwan method, the Variable Elasticity of Substitution (VES) and the Kmenta measures. Regressions were fitted to 55 industry group data based on a survey of 338 manufacturing establishments in West Malaysia in 1974. They found that the alternative estimates did not produce substantial differences. The results showed that of the 55 industries, 35 had elasticity of less than one, 17 greater than one and three industries exhibited elasticity equal to unity.

Mahani (1993) calculated estimates of elasticity of substitution for the textile and electrical and electronic industry group. The study compared two estimates for the years between 1979 and 1985. The study found that the elasticity of substitution for the textile industry in general had increased slightly from 0.893 in 1979 to 1.173 in 1985. The product group elasticity was varied in 1979; from a low 0.54 to a high 1.39. Nevertheless, the range of elasticity narrowed in 1985 and most product groups fell between the range of 1.0 and 1.3. Rahmah and Idris (2001) studied elasticity of substitutions between skills and with capital in the Malaysian manufacturing sector. In this study, workers were not divided into local or foreign categories but they were streamed into three groups, i.e. professional, skilled and unskilled. Their study found that the majority of elasticity of substitutions was greater than unity and there were substitutability and complementarities between skills.

Studies on the impact of foreign labor on local labor job opportunity can reflect their complementarities or substitutability. A study by Zimmermann (1995) in Europe and Dickson (1975), Norman and Meikle (1985) in Australia, Lalonde and Topel (1991), Simon *et al.* (1993), Winter and Zweimuller (1999) in Austria and Muller and Espenshade (1985), Grossman (1982) and Freeman and Medoff (1979) in the United States showed that both the foreign and local labours were complement. In contrast, Greenwood and Mc Dowell (1986) in the United States, Baker (1987) in Australia, Baker and Benjamin (1994) in Canada found that foreign labours affect job opportunities of local labours, indicating they are substitute.

Winegarden and Khor (1991) found that impact of foreign labour on job opportunities in the United State differed for Black and White workers. Their study showed that the foreign workers and Blacks were substitute, while foreign and Whites were complement. This is due the fact that the Whites are more skilful and cannot be substituted by the foreign labours that are mostly unskilled. Venturini (1999) found that in Italy, the substitutability (complementarities) between foreign and local labour was very much dependent on workers' geographical mobility and government policy on foreign labour. He argued that the higher was workers' mobility and the more stringent government policy resulted in complementarities between the foreign and local labour.

In contrast, when workers were less mobile and the government policy was more lenient, foreign and local workers tend to be more substitute. Markusen *et al.* (2000) found that inflow of foreign labour through foreign direct investment on the demand for domestic skilled labour was uncertain. They could be substitute or complement depending on at what equilibrium we are looking at. They may be substitute at partial equilibrium but complement at general equilibrium. On the other hand, Federico and Minerva (2005) found that there were complementarity between domestic and foreign employment in the case of advanced countries and substitute in the case of Western Europe countries. These results are contrary from what were found in the studies by Brainard and Riker (1997), Braconier (2000), Konings and Murphy (2001). These studies found that employment in foreign affiliates located in low wage countries is complementary to home employment, while there is substitution in advanced countries. The international trade especially in the form of outsourcing will also influence the elasticity of substitution. Rodrik (1997) and Senses (2004) argued that the increased possibility of substituting foreign labour for domestic should make labour demand more elastic. Therefore, understanding the substitutability between foreign and local labour will provide the policy makers the information on how wage change affect resulting from inflow of foreign labour will affect the demand for local labour.

THEORETICAL FRAMEWORK AND MODEL SPECIFICATION

The traditional capital-labour substitution framework assumes that labour inputs are perfectly substitutable. Therefore, labour can be combined into an aggregate labour index without losing economic information. This assumption allows researcher the luxury of using two-factor production and cost functions to estimate the various combinations of capital and labour needed to produce a given level of output and to determine the optimal combination of capital and labour for a given total of expenditure. However, the assumption that little is lost by aggregating perfectly substitutable labour inputs is no longer true when labour inputs are highly but imperfectly substitutable.

When labour inputs are not perfect substitute for capital, then it is possible to test the capital-skill complementarily hypothesis. This hypothesis states that the more skills acquired by workers, the more likely they will complement capital in the production process (Griffin 1992). In order to support this hypothesis, the elasticity of substitution estimates between labour inputs and capital must vary according to skill differences between labour inputs.

Translog Model

Many studies of production are done in the context of a flexible functional form. Flexible functional forms are used in econometrics because they allow researchers to model second-order effects such as elasticity of substitution, which are functions of the second derivatives of production, cost, or utility functions (Greene 1997). The linear model restricts this to zero, whereas the log-linear model (such as Cobb-Douglas model) restricts the elasticity to the values of –1 or +1. Among the most frequently used flexible functional forms in empirical work is the translog function.

a. Model with Two Inputs

A translog function is derived from a Taylor Series expansion and is a flexible functional form used to relax the unitary constraint inherent in Cobb-Douglas functions.

The Cobb-Douglas cost function $C = AW^{\delta 1} R^{\delta 2}$ in log terms is

$$\ln C = \ln A_0 + \delta_1 \ln W + \delta_2 \ln R \tag{1}$$

Where, C is cost of production, W is price of labor and R is price of capital.

Taylor Series expansion of (1) to the second moment is

$$\ln C = \ln A + \delta_1 \ln W + \delta_2 \ln R + {}^1/_2\delta_{11}(\ln W)^2 + {}^1/_2\delta_{12}(\ln W)(\ln R) + {}^1/_2\delta_{22}(\ln R)^2 + {}^1/_2\delta_{21}(\ln R)(\ln W) \tag{2}$$

Assuming symmetry ($\delta_{12}=\delta_{21}$), equation (2) takes the form

$$\ln C = \ln A + \delta_1 \ln W + \delta_2 \ln R + {}^1/_2\delta_{11}(\ln W)^2 + \delta_{12}(\ln W)(\ln R) + {}^1/_2\delta_{22}(\ln R)^2 \tag{3}$$

Equation (3) is the translog functional form of a two-factor Cobb-Douglas cost function.

By using a cost minimization approach and assuming input markets are competitive, Shephard's Lemma demonstrates that

$$\partial \ln C / \partial \ln P_i = (X_i \,/\, P_i) = S_i \tag{4}$$

Where X_i = L or K, P_i = W or R, and S_i is the cost share of the input in the total cost to produce at the optimal level of output.

In general, Shephard's Lemma is defined as the derivative of the expenditure function with respect to the price of a good that gives the Hicksian demand for that good. Taking partial logarithmic derivatives from the cost function (3) and equating them with the cost shares, we have

$$SL = \partial \ln C/\partial \ln W = \delta_1 + \delta_{11}\ln W + \delta_{12}\ln R \tag{5}$$

$$SK = \partial \ln C/\partial \ln R = \delta_2 + \delta_{12}\ln W + \delta_{22}\ln R \tag{6}$$

Where, SL is share of labour and SK is share of capital.

For the translog cost specification

$$\sigma_{ij} = (\delta_{ij} + S_i S_j)/ S_i S_j \quad i \neq j \tag{7}$$

Where, σ_{ij} is the elasticity of substitution (Allen Elasticity of Substitution) between pairs of factors.

$\sigma_{ij} > 0$ the factors are substitutes
$\sigma_{ij} < 0$ the factors are complements
$\sigma_{ij} = 0$ the factors have no relationship

b. Model with More than Two Inputs

Expanding the translog model from two factors to five factors requires the cost and production functions to change from two to five-input functions.

$$C = Q\, f\, (P_1, P_2, P_3, P_4, P_5)$$
$$Q = f\, (X_1, X_2, X_3, X_4, X_5)$$

Where, P_1 is the average annual wage for local semiskilled workers (X_1).
P_2 is the average annual wage for foreign semiskilled workers (X_2).
P_3 is the average annual wage for local unskilled workers (X_3).
P_4 is the average annual wage for foreign unskilled workers (X_4).
P_5 is the price of capital (X_5).

As shown for the two-factor model, the Cobb-Douglas cost function has the translog form,

$$\ln C = \ln Q + \ln\delta_0 + \Sigma\delta_i \ln P_i + {}^1/_2\Sigma\Sigma\delta_{ij}\ln P_i\, P_j \tag{8}$$

Where, $\delta_{ij} = \delta_{ji}$, technology parameters are δ_0, δ_i , δ_{ij} and C and P_i represent the total cost and input prices, respectively. If δ_{ij} equals zero, the translog reduces to the standard Cobb-Douglas function.

Once again, Shephard's Lemma demonstrates

$$\partial \ln C/\partial \ln P_i = (Xi/Pi) = S_i \tag{9}$$

Where, $X_i = X_1, X_2, X_3, X_4, X_5$, and S_i is the cost share of the input X_i in the total cost of producing Q.

Taking partial logarithmic derivatives and equating them with the cost shares for the cost function, we have

$$S_1 = \partial \ln C/\partial \ln P_1 = \delta_1 + \delta_{11}\ln P_1 + \delta_{12}\ln P_2 + \delta_{13}\ln P_3 + \delta_{14}\ln P_4 + \delta_{15}\ln P_5 \tag{10}$$

$$S_2 = \partial \ln C/\partial \ln P_2 = \delta_2 + \delta_{21}\ln P_1 + \delta_{22}\ln P_2 + \delta_{23}\ln P_3 + \delta_{24}\ln P_4 + \delta_{25}\ln P_5 \tag{11}$$

$$S_3 = \partial \ln C/\partial \ln P_3 = \delta_3 + \delta_{31}\ln P_1 + \delta_{32}\ln P_2 + \delta_{33}\ln P_3 + \delta_{34}\ln P_4 + \delta_{35}\ln P_5 \tag{12}$$

$$S_4 = \partial \ln C/\partial \ln P_4 = \delta_4 + \delta_{41}\ln P_1 + \delta_{42}\ln P_2 + \delta_{43}\ln P_3 + \delta_{44}\ln P_4 + \delta_{45}\ln P_5 \tag{13}$$

$$S_5 = \partial \ln C/\partial \ln P_5 = \delta_5 + \delta_{51}\ln P_1 + \delta_{52}\ln P_2 + \delta_{53}\ln P_3 + \delta_{54}\ln P_4 + \delta_{55}\ln P_5 \tag{14}$$

In order for the translog cost function to be homogeneous in prices, the cost shares must sum to one. This requires that the following three constraints be imposed:

a. $\delta_1 + \delta_2 + \delta_3 + \delta_4 + \delta_5 = 1$
b. $\delta_{11} + \delta_{12} + \delta_{13} + \delta_{14} + \delta_{15} = 0$
c. $\delta_{ij} = \delta_{ji}$, (symmetry)

There are two standard approaches to econometrically estimate the translog function. The first approach is to estimate the translog equation directly and then solve for the cost shares. The second approach is to estimate four of the cost share equations simultaneously and then impose the constraints to solve for the fifth cost share equation.

By using the second approach, the cost share equations will provide a seemingly unrelated regression model that can be used to estimate the parameters of the model. To make the model operational, one must impose the constraints and solve the problem of singularity of the disturbance covariance matrix of the share equations. This can be done by eliminating the last term in each row and column of the parameter matrix and by dropping one of the cost share equations.

It is possible to substitute the constraint ($\delta_{11} = - \delta_{12} - \delta_{13} - \delta_{14} - \delta_{15}$) into the first cost share equation:

$$S_1 = \delta_{11} + \delta_{121}(\ln P_2 - \ln P_1) + \delta_{131}(\ln P_3 - \ln P_1) + \delta_{141}(\ln P_4 - \ln P_1) + \delta_{151}(\ln P_5 - \ln P_1) \quad (15)$$

Likewise, substituting in the fact that ($\delta_{22} = - \delta_{12} - \delta_{23} - \delta_{24} - \delta_{25}$) into the second cost share equation:

$$S_2 = \delta_{21} + \delta_{121}(\ln P_1 - \ln P_2) + \delta_{231}(\ln P_3 - \ln P_2) + \delta_{241}(\ln P_4 - \ln P_2) + \delta_{251}(\ln P_5 - \ln P_2) \quad (16)$$

Likewise, substituting in the fact that ($\delta_{33} = - \delta_{13} - \delta_{23} - \delta_{34} - \delta_{35}$) into the third cost share equation:

$$S_3 = \delta_{31} + \delta_{131}(\ln P_1 - \ln P_3) + \delta_{231}(\ln P_2 - \ln P_3) + \delta_{341}(\ln P_4 - \ln P_3) + \delta_{351}(\ln P_5 - \ln P_3) \quad (17)$$

Likewise, substituting in the fact that ($\delta_{44} = - \delta_{14} - \delta_{24} - \delta_{34} - \delta_{45}$) into the fourth cost share equation:

$$S_4 = \delta_{41} + \delta_{141}(\ln P_1 - \ln P_4) + \delta_{241}(\ln P_2 - \ln P_4) + \delta_{341}(\ln P_3 - \ln P_4) + \delta_{451}(\ln P_5 - \ln P_4) \quad (18)$$

By estimating four of the five cost share equations using the seemingly unrelated regression technique and using the fact that ($S_5 = 1 - S_1 - S_2 - S_3 - S_4$), it is possible to solve for the fifth cost share.

Once the five cost shares are estimated, the elasticity of substitution (Allen Elasticity of Substitution) between pairs of factors can be calculated.

$$\sigma_{ij} = (\delta_{ij} + S_i S_j) / S_i S_j \quad i \neq j \quad (19)$$

Where, σ_{ij} is the elasticity of substitution (Allen Elasticity of Substitution) between pairs of factors.

$\sigma_{ij} > 0$ the factors are substitutes
$\sigma_{ij} < 0$ the factors are complements
$\sigma_{ij} = 0$ the factors have no relationship

Source of Data

Five industries are chosen, namely, wood-based (MIC 33), paper products (MIC 34), chemical products (MIC 35), non-metallic mineral products (MIC 36) and basic metal products (MIC 37). For the purpose analysis, the workers are divided into four groups, namely, local semi skilled (including skilled), foreign semi skilled (including skilled), local unskilled and foreign unskilled workers. The skilled workers cannot stand by themselves because their number are quite small particularly the foreign. This study uses annual time series data for the above mentioned industries for the period 1985-1996. The data is obtained from the annual Manufacturing Survey conducted by the Malaysian Department of Statistics (DOS). Data of 1985-1996 used in this study are gathered from the raw data at DOS. A more recent data cannot be utilized due to two reasons; firstly, difficulties in obtaining raw data from DOS due to time and cooperation; the published data is too aggregated and doesn't classified the occupational level by industries; secondly, data after 1999 was not classified by skills, ie unskilled, semi skilled and skilled labour were lumped together under the production workers. Unlike data up to 1999 the production workers are categorized by unskilled, semi skilled and skilled workers. The information from the survey that used in this analysis is total wage pay to local and foreign workers, number of local and foreign workers. Data on price of capital (interest rate) is obtained from the Annual Statistical Bulletin published by the Bank Negara Malaysia. In this study the annual average base-lending rate is utilised.

ANALYSIS OF THE RESULTS

Table 4 presents the results of the estimation of elasticity of substitution between foreign and local workers and capital in five selected industries. Among these industries there are two light industries, i.e. wood-based and paper products and three heavy industries, ie,

TABLE 4
Estimates of the elasticity of substitution in selected Malaysian manufacturing industries, 1985-96

Industry	σ_{12}	σ_{13}	σ_{23}
	1.0283	1.3613	0.3387
Wood-based (ISIC 33)	(3.7337)***	(1.3164)	(2.8331)***
	1.0039	2.7984	0.1516
Paper products (ISIC 34)	(0.3752)	(1.9102)**	(0.3132)
	1.0006	2.4849	0.9607
Chemical products (ISIC 35)	(0.2105)	(7.2659)***	(0.0773)
Non-metallic mineral products	0.9179	-2.7969	2.4778
(ISIC 36)	(1.7415)*	(-0.8053)	(0.5145)
	1.0259	3.0709	0.5086
Basic metal products (ISIC 37)	(0.8460)	(2.1599)**	(0.1905)

Notes: '1' denotes local workers
'2' denotes foreign workers
'3' denotes capital
'*' denotes significant at 10% level
'**' denotes significant at 5% level
'***' denotes significant at 1% level
The figures in the parentheses below the estimated elasticity are their t-statistics

chemical, non-metallic and basic metal products. There are fifteen estimated elasticity of substitutions, in which six of them are significant, five are less than unity and ten greater than unity.

Elasticity of substitution between foreign and local workers is significant in the wood-based and non-metallic product industries. The result shows that foreign workers are higher substitutes in the wood-based industry as compared to the non-metallic mineral products industry. This result could be attributed to lower technological adoption in the light industry, i.e. wood-based and associated with a greater hiring of unskilled workers. Noticeably, the majority of foreign workers are unskilled. Further, the result shows that the elasticity of substitution between capital and foreign workers is only significant in the wood-based industry.

The results of estimation of elasticity of substitution by level of skills are presented in Table 5. Of the fifty estimated elasticity of substitution, thirty-five are greater than unity (in absolute value) and 15 are less than unity and twenty-three are statistically significant. The majority of elasticity of substitutions is higher in the paper products and basic metal products and most of them are statistically significant. In the wood-based industry, even though most of the elasticity of substitution is significant, they are less than unity. The results indicate that elasticity of substitution between local and foreign workers does not depend on group of industry whether they are light or heavy. Instead the elasticity of substitution is very dependence on types of products and skills mix. This result could also be attributed to level of technological adoption and skill required by these industries. For example, technology is higher in the paper product industry as compared to the wood-based, and need more skilled workers. On the hand in the heavy industry, most of the elasticity of substitutions is not statistically significant. The elasticity of substitution is greater in the chemical and basic metal products as compared to non-metallic mineral products.

The elasticity of substitution between local and foreign semiskilled workers is statistically significant in the paper products, non-metallic mineral products and basic metal products. In the first two industries, they are complement and in the last industry they are substitute. In contrast, the local semiskilled and foreign unskilled workers are substitutes in most of the industries under study. The value of elasticity is significantly high especially in the paper products, chemical and basic metal products. This result indicates that any wage reduction for the unskilled foreign workers will result a decrease in demand for local semiskilled.

The foreign semiskilled workers are shown to be a substitution for local unskilled in the

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TABLE 5

Estimates of the elasticity of substitution in selected Malaysian manufacturing industries, 1985-96

Industry	σ_{12}	σ_{13}	σ_{14}	σ_{15}	σ_{23}	σ_{24}	σ_{25}	σ_{34}	σ_{35}	σ_{45}
Wood-based (ISIC 33)	1.2740 (1.2906)	0.9037 (3.7325)** *	1.1542 (3.6799)* **	0.9687 (0.4614)	1.1128 (2.4457) ***	0.8151 (2.4615) ***	0.6805 (3.0107) ***	-0.7417 (-0.0823)	0.9726 (-1.8738) *	0.9481 (2.1874) **
Paper products (ISIC 34)	-12.2870 (-1.9870) **	-0.6491 (-6.1695) ***	13.8672 (1.9265) *	1.0158 (0.9826)	7.9826 (3.9065) ***	-11.6168 (-2.4452) **	1.0992 (0.1280)	-13.1181 (-0.7702)	0.9243 (1.7054) *	1.9855 (1.2268)
Chemical products (ISIC 35)	6.0167 (0.4302)	-1.4868 (-5.7243) ***	9.8898 (0.9682)	1.0744 (2.6109) ***	-2.1133 (-0.2516)	-1.6434 (-0.8052)	1.1050 (0.1775)	-7.4556 (-0.0534)	0.9775 (0.6659)	1.7781 (1.5073)
Non-metallic mineral Products (ISIC 36)	-2.6223 (-2.5904) ***	0.8002 (2.0871) **	1.5242 (2.0824) **	1.0511 (1.5709)	-1.3217 (-0.7145)	7.0839 (0.7117)	1.1811 (0.9330)	-9.2866 (-4.4888) ***	0.9834 (1.1671)	0.9457 (-1.4494)
Basic metal products (ISIC 37)	5.9429 (1.8975) *	0.5803 (4.5136) ***	4.0245 (4.3564) ***	1.0658 (1.3379)	4.7686 (0.7902)	-1.9058 (-0.8138)	1.0712 (1.4588)	8.7280 (3.0569) ***	1.0079 (0.4336)	0.8903 (0.7988)

Notes: '1' denotes local semiskilled workers
'2' denotes foreign semiskilled workers
'3' denotes local unskilled workers
'4' denotes foreign unskilled workers
'5' denotes capital
'*' denotes significant at 10% level
'**' denotes significant at 5% level
'***' denotes significant at 1% level
The figures in the parentheses below the estimated elasticity are their t-statistics

wood-based and paper product industries. Both values are greater than unity and in the paper products the value of elasticity is high. This result could be attributed to willingness of foreign workers to accept lower wage even though they are more skill. The foreign semiskilled and capital are substitutes in the wood-based industry, which implies that technological adoption in this industry is still low. Further, the result show that the local and foreign unskilled workers are complement in the non-metallic mineral products industry and substitute in the basic metal industry. The foreign unskilled and capital are substitute in the wood-based industry.

The results from this study can also be influenced by the availability of labor facing some industries. When there is labor shortage, foreign and local labor is more likely to be complement regardless of their skills. Therefore, even though wage increase for the particular skills, the demand for them increase because of shortages in their supply.

SUMMARY AND CONCLUSION

The results from this study show that the foreign and local workers are more substitutes than complement. Of the fifteen significant elasticity of substitution, eleven are substitute and four are complement. This reflects that when the foreign wage rate decrease, firms would be willing to take foreign workers to cut cost of production. A high substitutability are found in heavy industry basic metal products

The results suggest that the influx of foreign labour may jeopardize the local in terms of job opportunity especially in heavy industry. The less complementarity between the local and foreign labours and the higher elasticity of substitution suggest that the government must undertake a correct policy to safeguard local workers especially in getting jobs. Any wage change that involved foreign labour will affect local job opportunity in certain industries. Although the wage policy suggest equal pay for equal job regardless of local or foreign, many employers do not obey this rule and continue to pay less wages to the foreign.

This study covers data from 1985 to 1996 which exclude the crisis period of 1997/98. This is because of problem in gathering the recent data, even though it is available until 1999 with the same data format. But given longer time further research may include 1997, 1998 and 1999 data. However, we would expect that there will be not much different in the results because the 1997/98 crisis affect mostly on the output and export not the technology. The cost function estimated in this study concerning cost share that may change via technological change. Further research may be needed just to confirm this claim.

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Perceptions of Supervisors, Teachers, and Students Regarding the New Agricultural Science Syllabus for the Malaysian Upper Secondary Schools

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Keywords: Perceptions, supervisors, teachers, students, agricultural science syllabus

ABSTRAK

Kementerian Pendidikan Malaysia telah memperbaharui kurikulum sekolah menengah bersesuaian dengan aspirasi masyarakat umum dan pembangunan ekonomi negara. Kurikulum baru sekolah menengah telah diperkenalkan secara berperingkat mulai tahun 1989. Mata pelajaran Sains Pertanian mempunyai silibus baru mulai tahun 1993. Silibus baru diharapkan lebih berteknologikal dan integratif berbanding dengan silibus sebelumnya. Tujuan kajian adalah untuk mendapatkan maklum balas daripada penyelia, guru dan pelajar terhadap pengajaran sains pertanian berasaskan silibus baru. Secara khusus, kajian bertujuan mendapatkan persepsi responden terhadap pelbagai aspek pengajaran sains pertanian di sekolah menengah atas. Kajian berbentuk tinjauan deskriptif dengan menggunakan soal selidik mel sebagai alat pengumpulan data. Kajian melibatkan semua guru sains pertanian dan penyelia mereka. Responden pelajar dipilih secara rawak bertujuan. Soal selidik telah dikaji rintis dan menghasilkan koefisyen kebolehpercayaan .80. Sejumlah 511 (61%) soal selidik berguna telah dikumpul dan dianalisis. Kadar respons adalah 194 (57.4%) daripada guru, 85 (63.9%) daripada penyelia, dan 232 (58%) daripada pelajar. Keputusan membuktikan bahawa semua responden mempunyai persetujuan persepsi dari segi projek sains pertanian. Bagaimanapun, responden kurang bersetuju dalam persepsi mereka terhadap pencapaian objektif, kandungan mata pelajaran, prestasi mata pelajaran, pelaksanaan, pelajar, dan penilaian. Kajian juga memperlihatkan perbezaan dan perkaitan signifikan antara pemboleh ubah latar belakang terpilih dengan persepsi mereka. Kajian memberi sumbangan penting dengan memberi kefahaman tentang status semasa mata pelajaran Sains Pertanian pada peringkat sekolah menengah atas. Dapatan kajian juga berguna sebagai asas untuk pembangunan selanjutnya mata pelajaran Sains Pertanian.

ABSTRACT

The Ministry of Education, Malaysia has reformed the school curriculum in accordance with the aspirations of the general public and economic development of the country. The new curriculum for secondary schools was introduced in stages beginning in 1989. The agricultural science subject had its new syllabus starting from 1993. The new syllabus was supposed to be more technological and integrative as compared to the old one. The purpose of the study was to obtain feedback from supervisors, teachers and students regarding the teaching of agricultural science subject based on the new syllabus. Specifically, the study sought the perceptions of respondents with regard to various aspects of agricultural science teaching in upper secondary schools. The research was a descriptive survey, employing a mailed questionnaire as the research instrument. The study included all teachers and supervisors of agricultural science. On the other hand, student respondents were purposively sampled. The instrument was pretested, yielding a reliability coefficient of .80. A total of 511 (61%) usable questionnaires were received and analyzed. The response rate was 194 (57.4%) from teachers, 85 (63.9%) from supervisors, and 232 (58%) from students. The results revealed that all respondents were in agreement in term of their perceptions of the agricultural science project. However, the respondents were in less agreement in their perceptions of the accomplishment of objectives, subject content, subject performance, implementation, students and evaluation. The study also revealed significant differences and associations between selected background variables of respondents with their perceptions. The research contributes significantly in providing insights regarding the present status of the agricultural science subject at upper secondary schools. The research findings are also useful as a basis for furthering development of the agricultural science subject.

INTRODUCTION

Presently, the Ministry of Education, Malaysia divides the upper secondary education into two streams — academic and vocational stream. The academic stream prepares students for further study whereas the vocational stream prepares students for gainful employment. Generally, the academic stream is associated with the secondary academic schools. On the other hand, the vocational stream is associated with secondary technical and vocational schools. However, the two streams are not totally exclusive. The vocation-oriented subjects such as agriculture, home economics, commercial studies and engineering are still offered at the academic schools. Similarly, the academic-oriented subjects such as mathematics and science are offered at the technical and vocational schools. This pattern of subject offering is in consonant with the educational philosophy upheld by the country, i.e., to produce well-balanced and harmonious individuals and at the same time to establish an equality in the educational opportunity. However, there is a clear distinction between the offers of agriculture in the two school systems. The academic schools offer agriculture as a subject whereas the vocational schools offer it as a course.

Agriculture has been included in the Malaysian educational system for a long time. Agriculture was among the early practical subjects taught in academic schools. It was first taught as a gardening activity in elementary schools during colonial days. After Malaysia became an independent nation and through the passage of the comprehensive educational policy, agriculture was offered as an elective subject at the lower and upper secondary levels, covering the period of three and two years, respectively.

The secondary education in Malaysia enters its new era with the inception of the Integrated Curriculum for Secondary Schools or shortly named as ICSS since 1988. The ICSS represents the effort of the Ministry of Education, Malaysia in reforming the school curriculum so as to achieve the educational goal of producing well-balanced and harmonious individuals. As a part of the reformation process, a new agricultural science syllabus was developed and put into practice for lower secondary students. Subsequently, the agricultural science subject at the upper secondary level also had its new syllabus.

At the lower secondary level, agriculture is taught as an integrated component of a new subject called Living Skills. The teaching of agriculture takes 20% of the total time allotted for the Living Skills subject. Meanwhile, at the upper secondary level, agriculture is taught as an independent subject. However, agricultural science at the upper secondary level is offered as an elective subject.

In any new educational program such as the reformed agriculture subject, a real, concerted effort is needed to evaluate the subject. This appraisal can be done by obtaining information from those people involved in the implementation of the program. The information gathered is very useful in assisting planners in determining the effectiveness of the program and in making decisions regarding program improvement. Studies of perceptions of teachers, students, and administrators regarding new agricultural education programs had been reported by Duncan (2004), Warnick and Thompson (2004), Connors and Elliot (1994), Newman and Johnson (1993), Norris and Briers (1989), Birkenholz (1987) and Thompson (1986). The respondents studied gave their positive responses toward new agricultural education programs in the schools. Such studies have contributed significantly in determining the status and value of agricultural education programs. However, such studies are not well-addressed in Malaysia.

PURPOSE AND OBJECTIVES

The purpose of the study was to obtain feedback from supervisors, teachers and students regarding the teaching of agricultural science at the upper secondary academic schools based on the new syllabus. Specifically, the study sought to accomplish the following objectives:

a. To gather background information on supervisors, teachers, and students of the agricultural science subject at the upper secondary schools.
b. To determine the perceptions of the respondents regarding the new agricultural science syllabus for upper secondary schools.
c. To determine the difference in perceptions of respondents regarding the new agricultural science syllabus.
d. To determine the variables which have relationship with the perception of respondents.

METHODOLOGY

Design

The study was designed to be a descriptive-correlational type of research study. The variables studied were respondent category, selected background characteristics and their perceptions. The research utilized a survey method to meet the purpose of the study.

Study Population

The study population consisted of supervisors, teachers and students of agricultural science subjects in the upper secondary academic schools of Malaysia. The study took a census population of 133 supervisors and 338 teachers. However, the students were selected by using a purposive sampling technique. Twenty schools were sampled by region and 20 students were selected by teacher from each school. The list of supervisors, teachers and schools were secured from State Department of Education so as to control any frame error.

Instrumentation

The study made use of questionnaire to gather data. Three different questionnaires were used, one each for supervisor, teacher and student respondents. Each questionnaire differed only in the items of securing the background data of respondents. They had identical items for measuring the perceptions of respondents. These items covered eight aspects — objective attainment, general perception, subject characteristics, subject performance, subject implementation, evaluation and agricultural project. There were 66 perception items included in the questionnaire. The perception was measured on a five-point Likert scale ranging from 1 point (strongly disagree) to 5 points (strongly agree). The content validity of the questionnaire was assessed by a selected panel of teacher educators and serving teachers. The questionnaire was pretested to a group of preservice teacher education students. The resulting reliability coefficient was .80 for all items. The reliability coefficient by category of items was as follows: objective attainment (.90), general perception (.80), subject characteristics (.80), subject peformance (.70), subject implementation (.90), students (.70), evaluation (.80) and agricultural projects (.80).

Data Collection and Analysis

The questionnaires were mailed directly to the supervisor and teacher respondents. The student questionnaires were mailed to the respective teacher. An adequate instruction was given each of the teachers in the selection of students, administering and mailing back the questionnaires. A few selected non-respondents were contacted through personal visits and telephone calls. No statistically significant difference was observed in the responses of early and late respondents.

The data were analyzed by a software package, SPSSPC+. The descriptive statistics were used as a measure of central tendency of responses. The F statistic was used to analyze the differences in perceptions of respondents. An appropriate coefficient of correlation was used to describe the relationship of variables. In analyzing the degree of perception, mean value 3.5 and above were considered as indicating agreement whereas the mean value below 3.5 was considered as indicating disagreement.

FINDINGS

Tabulation of Respondents

A total number of 511 (61%) usable questionnaires were received and analyzed. The response rate was 85 (63.9%) from supervisors, 194 (57.4%) from teachers and 232 (58%) from students.

Data on Supervisors

Based on the responses provided by 85 supervisors, it was found that a great majority of the supervisors were Malay males holding

TABLE 1
Level of agreement and rank of perceptions

No	Variable Category	Supervisors (n=85)	Teachers (n=194)	Students (n=232)	Total (n=511)
		Respondent Category [x(s.d.)^{rank}]			
1.	Accomplishment of of objectives	3.7(0.5)$^{\#2}$	3.5(0.5)$^{\#3}$	4.2(0.4)$^{\#1}$	3.8(0.6)$^{\#2}$
2.	General perceptions	3.7(0.4)$^{\#2}$	3.7(0.4)$^{\#2}$	3.7(0.4)$^{\#4}$	3.7(0.4)$^{\#3}$
3.	Subject characteristics	3.2(0.3)$^{\#7}$	3.2(0.4)$^{\#7}$	3.7(0.4)$^{\#4}$	3.4(0.4)$^{\#6}$
4.	Subject performance	3.5(0.4)$^{\#4}$	3.4(0.4)$^{\#4}$	4.1(0.4)$^{\#2}$	3.7(0.5)$^{\#3}$
5.	Subject implementation	3.5(0.3)$^{\#4}$	3.4(0.4)$^{\#4}$	3.4(0.4)$^{\#7}$	3.4(0.4)$^{\#6}$
6.	Students	3.1(0.3)$^{\#8}$	3.1(0.4)$^{\#8}$	3.3(0.4)$^{\#8}$	3.2(0.4)$^{\#8}$
7.	Evaluation	3.3(0.5)$^{\#6}$	3.3(0.5)$^{\#6}$	3.6(0.6)$^{\#6}$	3.5(0.6)$^{\#5}$
8.	Agricultural project	3.9(0.4)$^{\#1}$	3.8(0.5)$^{\#1}$	4.1(0.5)$^{\#2}$	4.0(0.5)$^{\#1}$

Scale:
5=Strongly Agree
4=Agree
3=Slightly Agree
2=Disagree
1=Strongly Disagree

Spearman Rank-order correlation (r_s=.5) showed significant associations between respondent category and their perceptions at .05 alpha level.

bachelor degrees. On the average, these schools have one agricultural teacher, three agricultural classes and 50 agricultural enrolees. Forty (93.3%) of the responding supervisors reported their schools offered agriculture both at the lower and upper secondary levels.

Data on Agricultural Teachers

An analysis of responses provided by 194 teachers revealed that a majority of teachers were Malay males, holders of bachelor's degree, had approximately ten years of teaching experience and taught subject in accordance with their qualifications. The most frequent problem reported by teachers was the rather strong tendency of arts students to enrol in the agricultural science class. This problem was attributed to the school policy regarding the subject selection by these students.

Data on Agricultural Students

An analysis of responses provided by 232 students showed that a great majority of the students were Malay male, raised by farm families and enrolled in the agriculture elective whilst in the lower secondary level. A high number and percentage of these students were encouraged by their peers in selecting the agricultural science subject. A high number and percentage of students reported better exam results in agricultural science subject than in their science subject.

Analysis of Perceptions by Agriculture Subject Categories

The perceptions of respondents towards various categories of the agricultural science subject are summarized in Table 1. Overall, respondents were in agreement in term of their perceptions regarding five of eight categories of the agricultural science subject. The five categories were: objective accomplishment, general perceptions, subject performance, evaluation and agricultural project. Agricultural project received the highest mean value. The respondents were in disagreement in three categories of the agricultural science subject: subject characteristics, subject implementation and students.

Perceptions by Specific Statements

The perceptions of all categories of respondents towards specific statements are as shown in Table 2. The selected statements were those ranking in the top ten. Statements 1, 2, 5, 6, 10 were considered as general perceptions, whereas Statements 3 and 4 were related to subject performance and subject characteristic respectively. Statements numbered 7 and 8 were related to agriculture project whereas Statement

TABLE 2
Level of agreement of perception regarding selected statements

No	Statement	Composite Mean(rank)	s.d.
1.	Agricultural science subject ought to be given due respect by the university of agriculture in the process of screening applicants for the diploma program.	4.6(1)	0.7
2.	Agricultural science subject is suitable only for students who are weak in science.	4.3(2)	1.0
3.	Agricultural science subject enables the students to identify factors influencing plant and animal production.	4.3(2)	0.6
4.	Agricultural science subject makes use of elements from other subjects such as mathematics, basic sciences, social sciences, and commercial studies.	4.2(4)	0.8
5.	Agricultural science subject should be retained whenever the government reforms the public education.	4.2(4)	0.8
6.	The effectiveness of teaching agricultural science is greatly dependent on the competence of the agriculture teacher.	4.2(4)	0.8
7.	Agricultural project carried out by students is beneficial in inculcating positive work habits.	4.2(4)	0.7
8.	Agricultural project carried out by students enables the teacher to identify students' interests and aptitudes toward agriculture.	4.2(4)	0.6
9.	Agricultural science subject has succeeded in creating awareness among students with regard to the contribution of agriculture toward economic development in Malaysia.	4.1(9)	0.7
10.	The teaching unit on agriculture in Malaysia gives adequate exposure to students with regard to various crops, livestocks, and their importance to the country's economy.	4.1(9)	0.8

9 was about objective accomplishment. Clearly, the respondents were in agreement in most categories of the agricultural science subject. However, particular attention should be given to the level of agreement of respondents regarding the suitability of agricultural science subject. In the perception of the respondents, agricultural science subject was meant for those students who were weak in science. It could be interpreted

Difference of Perceptions

The differences of perceptions of respondents regarding the agricultural science subject are reported in Table 3. The perceptions of respondents were found to be significantly different with regard to three variables; respondent category, race and school location. Student respondents had more positive perceptions compared to the supervisor and teacher respondents in six categories of the agricultural science subject. Malay respondents had positive perceptions compared to other races in the category of subject characteristics. Respondents from rural schools had more positive perceptions compared to the respondents from urban schools in the category of objective accomplishment and subject performance.

Relationship of Perceptions

The relationship of variables in the study is reported in Table 4. The variables that had significant relationships with perceptions were respondent category, race and gender. Respondent category recorded a significant coefficient of correlation with six categories: objective accomplishment, subject characteristics, subject performance, students, evaluation and agriculture project. The variable, race had a significant correlation with three categories: objective accomplishment, evaluation and agriculture project. The gender variable had a significant relationship with only two categories: subject performance and students.

TABLE 3
Difference in respondents' perceptions

No	Characteristics[a]	Mean				F Value
1.	Respondent Category	Supervisors (n=85)	Teachers (n=194)	Students (n=232)		
	Objective accomplishment	3.7	3.5	4.2		103.5
	Subject characteristics	3.2	3.2	3.7		93.8
	Subject performance	3.5	3.4	4.1		161.8
	Students	3.1	3.1	3.3		23.4
	Evaluation	3.3	3.3	3.6		18.0
	Agricultural project	3.9	3.8	4.1		19.6
2.	Race	Malay (n=419)	Chinese (n=24)	Indian (n=18)	Others (n=47)	
	Subject characteristics	3.4	3.1	3.3	3.4	4.3
3.	School Location	Urban (n=35)	Rural (n=158)			
	Objective accomplishment	3.3	3.6			1.0
	Subject performance	3.2	3.4			1.6

[a]Domain where differences were observed

TABLE 4
Relationships of selected personal characteristics of respondents and their perceptions (N=511)

Variable Category	Category of Respondent	Race	Gender
	r_s	r_s	r_{pb}
Objective accomplishment	.56	.42	.09
Subject characteristics	.51	.11	.10
Subject performance	.63	.12	.25
Students	.29	.13	.28
Evaluation	.23	.29	.06
Agricultural project	.28	.31	.05

Coding Note.
Category of Respondents: 1=Supervisors 2=Teachers 3=Students
Race: 1=Malay 2=Chinese 3=Indian 4=Others
Gender: 1=Male 2=Female

CONCLUSION

Based on the research findings, it could be concluded that agricultural science at the upper-secondary academic schools was supervised by qualified personnels, taught by experienced teachers and learned by students who had farm background. Certainly, these background factors would strengthen the agricultural science subject.

The subject was well-perceived by supervisors, teachers and students. In fact, the students had a higher mean value of perception than the other two categories of respondents. This conclusion may provide some good insights with regard to the youth perception on agriculture. All the while, most agricultural agencies have been confronted with the problem in getting youth to get involved in the agricultural activities.

The respondents were in agreement in their perceptions regarding five of eight categories of the agricultural science subject. These categories were: objective accomplishment, general perceptions, subject performance, evaluation and agricultural project. Of the five categories, the agricultural project received the highest mean value. The respondents were in disagreement with the five categories: subject characteristics, subject implementation and students.

The research findings also revealed the difference in the perceptions held by respondents by their category, race and school location. The student respondents had a higher mean value of perception than the supervisor and teacher respondents in six categories: objective accomplishment, subject characteristics, subject performance, students, evaluation and agricultural project. The different perceptions by race and school location in one or two characteristics. Respondent category, race and gender influenced the way the respondents teach the agricultural science using the new syllabus.

RECOMMENDATIONS AND IMPLICATIONS

Agricultural science was perceived as a subject which is suitable only for those students who are weak in science. This has an implication on the image problem of agriculture subject. In contrary, the new agricultural science syllabus was sicence- and technology-based. Hence, there was a need for the school to review the policy with regard to selection and offering of subject so as to encourage students with strong background in science to enrol in these agriculture classes.

The agriculture subject was well-perceived by all supervisors, teachers and students. Interestingly, the students had better perceptions on the agricultural science subject than the supervisors and teachers. This has a positive implication on the problem confronted by agricultural agencies in getting the involvement of youth in agricultural activities. Since school youth had positive perceptions on agriculture, it is recommended that the government step up efforts in luring youth to take up agriculture as an occupation.

The importance of agricultural project was well-perceived by all categories of respondents. Hence, agricultural projects ought to be retained and enhanced as an approach in teaching of the agricultural science subject. This approach is in line with the principle of learning agriculture as advocated by Newcomb *et al.* (1989). The proper implementation of agricultural project needs effective planning and management strategies on the part of the teacher. This implies that teachers need to be competent in both planning and managing the agricultural project.

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