

INVESTIGATING TEACHERS' USE OF COMPUTERS IN TEACHING ENGLISH: A CASE STUDY

by Saadiyah Darus

adi@pkriscc.ukm.my

and Ho Wai Luin

Faculty of Social Sciences and Humanities

Universiti Kebangsaan Malaysia

Abstract

In Vision 2020, Malaysia aspires to become a fully developed country by the year 2020 (The Malaysian Dream: Vision 2020). Later, the Multimedia Super Corridor (MSC) was announced in August 1995 to spearhead a number of nationwide IT projects that are intended to transform major sectors of Malaysian society including education using IT. One of the IT projects that was implemented was the Smart School project. Among its objectives was to prepare Malaysian citizens for the information age through an innovative education delivery process. This study specifically investigates teachers' use of computers in teaching English as a second language (ESL) in a public school in Malaysia. It examines teachers' attitudes, the challenges that they faced in using computers in teaching English, and their suggestions in order to overcome these challenges. Feedback gathered from questionnaires show that they faced many challenges that demotivate them from using computers in the classroom. The results of the study suggest that there must be strong support of both the instructional and administrative aspects of IT in the school so that teachers will be able to embrace IT fully in teaching English in their classroom.

Keywords: ESL, IT in language education, English language teaching.

Introduction

The complete text of the working paper entitled *The Way Forward* was read by the fourth Prime Minister of Malaysia, Tun Dr. Mahathir at the Malaysian Business Council in late February 1991. In this text which was better known as Vision 2020, Malaysia aspires to become a fully developed country by the year 2020 (*The Malaysian Dream: Vision 2020*). Following this working paper, Tun Dr. Mahathir then announced the Multimedia Super Corridor (MSC) in August 1995 to spearhead a number of nationwide IT projects

that are intended to transform major sectors of Malaysian society using IT. These major sectors include healthcare, commerce, governance, manufacturing and education. One of the projects in education was the Smart School project. It was initiated as one of the seven Flagship applications of the MSC. The Smart School Project Team (1997) has defined the Malaysian Smart School as a learning institution “reinvented in terms of teaching-learning practices and school management in order to prepare children for the Information Age” (Smart School Project Team, 1997: 20). It is envisaged that by 2010 all primary and secondary schools in Malaysia will be Smart Schools.

In order to achieve the above objective, the government had taken several steps. Many teachers have been trained over the recent years in how to use computers to teach English (Ya'acob, Mohd Nor & Azman, 2005) as well as other subjects for example Mathematics and Science. Thus, many secondary schools in Malaysia are supplied with computers, notebooks, LCD projectors and software to enable teachers to bring technology into classrooms. Many new schools also have rooms specially equipped with computers for students to attend classes while some schools have been offering the IT Paper as one of the options for the SPM (Sijil Peperiksaan Malaysia) examination. The SPM examination is a nationwide examination in Malaysia which Form Five students, usually in their fifth year of their secondary school education, have to sit for.

The Smart School project has been implemented for at least twelve years. It is therefore quite timely to investigate the teachers' use of computers in classroom. In this present study, the focus is the use of computers in teaching English in a public school in Malaysia. The following research questions direct the investigation of this research:

1. What are the teachers' attitudes towards teaching English using computers?
2. What are the challenges faced by teachers in using computers to teach English?
3. What are the teachers' suggestions in order to overcome these challenges?

Motivation, attitude and school culture as contributing factors

The literature review points that there are several contributing factors to the usage of an innovation. The first contributing factor is motivation. According to Gross (1992), motivation involves the pushes and prods; be it biological, social or psychological, that defeat our laziness or move us, either eagerly or reluctantly to action. Weiner (1990)

states that social motivation is determined by what one expected to get and the likelihood of getting it. Weiner (1991: 929) further adds that, “Attributions of responsibility (controllability, intentionality)...have a variety of motivational consequences, influencing social emotions...social behaviors...achievement evaluation; and interpersonal satisfaction”. Ames (1992) considered two types of motivation goals, which are performance goals, and mastery goals, which involve different ways of thinking about oneself. According to Ames (1992), especially important in achieving performance goals is public recognition that one has done better than others do or performed in a superior manner.

Davis et al. (1989) have developed a theory of action called the Technology Acceptance Model (TAM) to explain computer-usage behavior that relates to reasons why some people use computers and their attitudes towards them. Their model, shown in Figure 1, links the perceived usefulness and ease of use with attitude towards using ICT and actual use. They discovered that people’s computer use was predicted by their intention to use it and that perceived usefulness was strongly linked to these intentions. A positive attitude towards performing certain behaviors was related to the perceived value of those behaviors. According to Malhotra and Galletta (1999), TAM has emerged as one of the most influential models in Information Systems research. The theoretical basis of TAM was Fishbein and Ajzen’s (1975) Theory of Reasoned Action (TRA). TRA is a widely studied model from social psychology, which is concerned with the determinants of consciously intended behaviors.

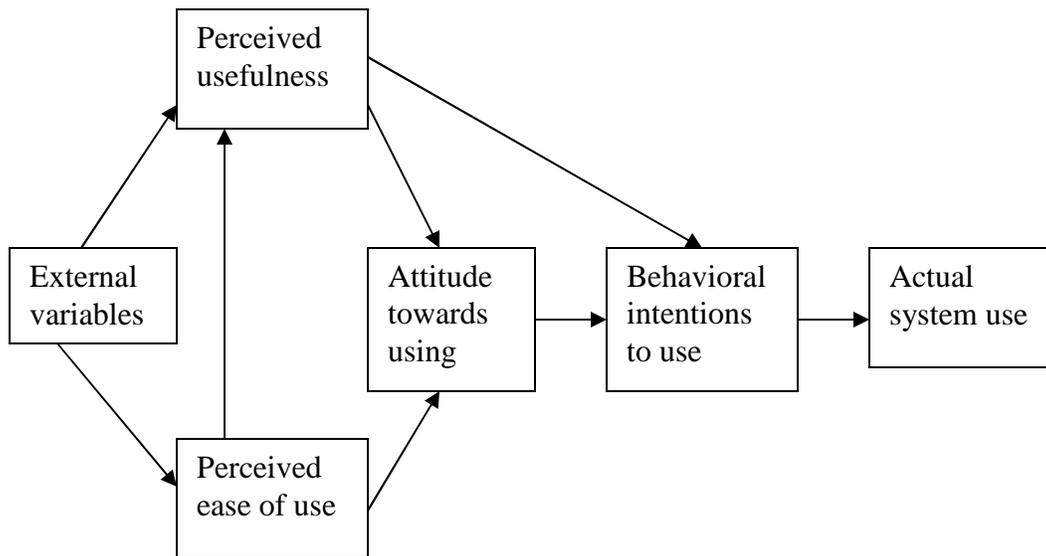


Figure 1. Technology acceptance model (Davis, Bagozzi, & Warshaw, 1989: 985).

Dawes and Selwyn (1999) found that a major deterrent to use the computer by teachers was computer phobia. The teachers' anxieties could be caused by a few factors. The first one is psychological factor such as having little or no control over the students' activity. Teachers do not want to be seen as incompetent in the eyes of their students. They have the fear that the students possess more knowledge of computers than they do. The second factor is sociological factor such as ICT being regarded as a solidatory activity, needing to be clever to use one, and being replaced by the computer in the long term.

Stoll and Fink (1996) define school culture as a combination of the realization of relationships, beliefs, attitudes and ideologies of all those that work in the establishment. The culture may be intangible but it is a very powerful force in determining the direction of the school. The principal and the senior management play important roles in building a professional culture of teaching, which is responsive to change (Hargreaves & David, 1990) as these senior members of staff help to set the values for all and attributes such as commitment and hard work can be made to filter through all aspects of school life. On the other hand, according to Fullan and Hargreaves (1992), when experienced teachers

are subjected to changes, they may experience three particular clusters of feelings as follows: (a) loss of firmly held beliefs and ideas, established patterns and behaviours, comfortable habits and confidence and self-esteem; (b) anxiety about required levels of understanding, new skills, future prospects, being able to cope and being seen as different and; (c) struggle to survive intact, acquire new competence and gain respect and recognition.

In a report on the barriers that exist in schools that prevent teachers from making full use of ICT in teaching, Jones (2004: 3) has summarised some of the key findings as follows:

- (a) a very significant determinant of teachers' levels of engagement in ICT is their level of confidence in using the technology;
- (b) there is a close relationship between levels of confidence and many other issues which themselves can be considered as barriers to ICT;
- (c) levels of access to ICT are significant in determining levels of use of ICT by teachers;
- (d) inappropriate training styles result in low levels of ICT use by teachers;
- (e) teachers are sometimes unable to make full use of technology because they lack the time needed to fully prepare and research materials for lessons;
- (f) technical faults with ICT equipment are likely to lead to lower levels of ICT use by teachers;
- (g) resistance to change is a factor which prevents the full integration of ICT in the classroom;
- (h) teachers who do not realise the advantages of using technology in their teaching are less likely to make use of ICT;
- (i) there are close relationships between many of the identified barriers to ICT use; any factors influencing one barrier are likely also to influence several other barriers.

Many researchers from the U.K, U.S.A, Australia, Canada and the Netherlands have provided data for the review written by Jones (2004). Some of these sources are Harrison et al. (2002), Somekh et al. (2002), BESA (2002), Kirkwood et al. (2000), Office for Standards in Education (2002), Preston et al. (2000), Butler and Sellbom

(2002), Cuban et al. (2001), Granger et al. (2002), Russell and Bradley (1997) and Veen (1993).

The findings of another study by Mohd Yunus (2007: 93) regarding the main challenges to ICT integration perceived by ESL teachers who teach in Malaysian technical schools comes to the conclusion that ICT integration in teaching “...is dependent upon adequate access, adequate computer resources, teacher development opportunities, and onsite support – all of which require funding, thought, planning and support.”

Methodology

The respondents in the present study consisted of 18 secondary school teachers who teach English in a public school in a state of Selangor in Malaysia. All of the respondents were university graduates and had at least 5 years of teaching experience. In addition to teaching the English language, the majority of the teachers taught other subjects as well such as Moral Education, Physical Education, History, Art, English in Science and Technology, Living Skills and Geography. In Malaysia, it is quite normal for a teacher to teach many subjects.

A questionnaire was used to collect responses from these teachers. The questionnaires were distributed to the respondents. They were given a week to complete the questionnaire. Table 1 shows the main sections of the questionnaire.

Table 1. Main sections of the questionnaire

Section	Title of Section	Type of information requested	No. of Items
1	Personal details of teacher	Name, age, teaching experience, number of students taught, ownership of the personal computer at home	6

2	Teachers' usage of computers in teaching English	Frequency in using the computer to teach, types of PC software/programs teachers use, training/courses attended, sufficiency of courses, duration of training/courses, software used in school, confidence in using the computer to teach, advantages of using the computer to teach	6
3	Challenges faced by English teachers in using the computers to teach English	Possible reasons that could have discouraged a teacher from using ICT to teach English in a classroom	2
4	Ways to overcome challenges faced by English teachers in using the computers to teach	Suggestions on what can be done to encourage teachers to use the computers to teach	1
		Total items	15

Results and discussion

The majority of the teachers in this school were in their 30's. There were eleven teachers (61.1%) in this age group (teachers B–L). Only one teacher was below 30 years old (teacher A) and there were 6 teachers (38.8%) who were above 40 years old (teachers M–R). The majority of the teachers, twelve (66.6%), had at least ten years of experience (teachers F–P and teacher R). The mean years of working experience as a teacher was twelve years, which showed that most of these teachers were very experienced teachers. The youngest teacher was 29 years old, with five years of experience (teacher A) whilst the most senior teacher was 47 years old with 25 years of experience (teacher R). All of the teachers (94.5%) except C owned a computer at home.

Table 2 shows the level of students taught by each teacher and the frequency of the teachers' use of computers to teach English in the classroom. The results show that two teachers (11.1%) used the computer quite often for teaching English while eleven teachers (61.1%) rarely used the computer, and five teachers (27.8%) did not use the

computer at all. Only eight teachers (44.4%) were teaching two or more English classes in the current year (teacher A, C, J, K, M, O, P, and Q). From the eight teachers, only one teacher (K) was given the maximum of five English classes to teach. Ten teachers were actually teaching only one English class. The results do not conclusively show that if teachers have fewer classes, they will make use of the computers more in their teaching.

Table 2. Level of students taught and teachers' frequency of using computers

Teacher	Level of students being taught						Frequency of using computer					
	R	F1	F2	F3	F4	F5	very often	often	not so often	Rarely	very rarely	not at all
A	/	/						/				
B		/										/
C	/	/									/	
D		/									/	
E			/						/			
F			/								/	
G			/								/	
H				/					/			
I		/									/	
J					/	/						/
K		/			/	/					/	
L		/										/
M		/		/					/			
N		/									/	
O			/	/							/	
P			/	/							/	
Q			/	/								/
R		/										/

R=Remove class F1=Form 1 F2=Form 2 F3=Form 3 F4=Form 4 F5=Form 5

Table 3 shows the teachers' duration of training and adequacy of training that they had undergone. Only eleven (61.1%) out of eighteen teachers were trained in how to use computers to teach English, and the training period ranged from 1 day to 4 months. However, there was no positive correlation between usage of computer to teach and the duration of computer training. When we compare the results of Table 3 with Table 2, we can see that the trained teachers (A, C, E, F, G, H, K, L, N, Q and R) did not use IT in their lessons frequently. Only teacher A stated that she had often used the computer to teach regularly. As for those teachers who had had previous training in using ICT for teaching, five (45.5%) stated that the courses they had attended so far were not adequate to equip them with the necessary knowledge on how to use ICT in an English classroom. Teacher L who was sent to attend a course for 3 months did not use the computer at all while teacher N who was sent for 4 months used the computer very rarely. One possible explanation why this happened may be due to inappropriate training style that had led to very low level of usage of computers by the teachers.

Table 3. Teachers' duration of training and perceived adequacy of training

Teacher	Duration of training	Adequacy of training
A	1 day	No
B	None	-
C	2 days	Yes
D	None	-
E	3 days	No
F	1 day	No
G	1 day	Yes
H	5 days	Yes
I	None	-
J	None	-
K	3 days	No

L	3 months	Yes
M	None	-
N	4 months	Yes
O	None	-
P	None	-
Q	4 days	No
R	2 days	Yes

Table 4 shows teachers' confidence in using the computer. The results show that ten teachers (55.5%) were confident while eight teachers (44.4%) were not so confident to use computers in their lessons. It is interesting to note that when we compare the results from Table 4 with Table 2, we can see that although these teachers were confident in using the computer, they did not use the computer frequently.

Table 4. Teachers' confidence in using the computer

Teacher	Very confident	Confident	Not so confident
A		/	
B			/
C		/	
D		/	
E		/	
F			/
G		/	
H		/	
I		/	
J			/
K			/
L		/	

M			/
N	/		
O		/	
P			/
Q			/
R			/

Regarding PC software that the teachers used in school, there were five programs available, namely Microsoft Word, Excel, PowerPoint, Visio and Publisher. All of the teachers knew how to use at least one piece of software, in particular Microsoft Word. Ten teachers (B–E, G–H, M–O, Q) (55.5%) knew how to use Excel while another ten teachers (A–C, F, H–I, L, N, Q) (55.5%) were also familiar with PowerPoint. Only teacher H (5.6%) knew how to use Visio and two other teachers (L and O) (11.2%) knew how to use Publisher as well. The results revealed that the most common software that these teachers used were Microsoft Word, Excel and PowerPoint. One main reason why they were able to use this software was because the school management had insisted that all worksheets, test, examination questions, analysis for the monthly tests, and analysis of results for term examination must be typed using the computer.

Next, we turn to advantages of using computer to teach English (Table 5). When answering statement A, sixteen teachers (88.9%) agreed that using ICT improved their presentation of teaching material. Two teachers (11.1%), A and H, fully agreed with this statement. Teachers were well aware that computers did help make their presentation more interesting, lively and colourful. The majority of the teachers, which totaled up to thirteen teachers (72.2%), agreed with statement B that using ICT made lessons more fun and enjoyable for students. Four teachers (22.2%), A, H, K and P, fully agreed with this.

As regards statement C, seventeen teachers (94.4%) agreed that using ICT in their lessons had made lessons more interesting for them. Only one teacher (5.6%), R, disagreed totally. Seventeen teachers (94.4%) thought that using ICT in their teaching had given them a greater awareness of its use (statement D). Only one teacher (5.6%) disagreed with this statement.

Most teachers, seventeen (94.4%), were aware that using ICT made their lessons more diverse and interesting (statement e). Sixteen teachers (88.9%) agreed with statement F. However, two teachers (11.1%), K and Q, thought otherwise and disagreed. Ten teachers (66.7%), A, C, D, E, G, H, L, M, N and O, believed that using ICT in their teaching enhanced their career prospects. However, eight other teachers did not think so.

Two teachers (11.1%) agreed that ICT gave them more control in classroom while 16 teachers (88.9%) did not agree (statement H). Four teachers (22.2%) agreed that ICT gave them recognition in school, while the majority (77.8%) did not agree.

Table 5. Advantages of using ICT as a teaching aid

Statement	Agree	Totally Agree	Disagree	Totally Disagree
a. has improved presentation of teaching material	16 (88.9%)	2 (11.1%)	0	0
b. makes lessons more fun and enjoyable for students	13 (72.2%)	4 (22.2%)	1 (5.6%)	0
c. makes lessons more interesting for me	13 (72.2%)	4 (22.2%)	0	1 (5.6%)
d. has given me greater awareness of its use	14 (77.8%)	3 (16.6%)	1 (5.6%)	0
e. makes my lessons more diverse and interesting	13 (72.2%)	4 (22.2%)	1 (5.6%)	0
f. has given me more confidence using computers	13 (72.2%)	3 (16.7%)	2 (11.1%)	0
g. enhances my career prospects	9 (50%)	1 (16.7%)	8 (33.3%)	0

h. gives me more control in the classroom	2 (11.1%)	0	14 (77.8%)	2 (11.1%)
i. gives me recognition	4 (22.2%)	0	12 (66.6%)	2 (11.1%)

The next section of the questionnaire investigates teachers' challenges when using the computer to teach English. Table 6 shows whether the teachers agreed that using computers can be counter-productive. The results show that even those teachers who were confident in using the computer agreed that it could be counter productive. Seven confident teachers (38.9%) who agreed that using the computer to teach could be counter-productive were C, E, I, L, O and R.

Table 6. Using the computer to teach can be counter-productive

Teachers who are confident in using computer to teach		Teachers who are not confident in using computer to teach	
Agree	Disagree	Agree	Disagree
7 (38.9%)	4 (22.2%)	6 (33.3%)	1 (5.5%)

When asked whether using the computer was time-consuming and more difficult, thirteen (72.2%) teachers agreed that using the computer to teach made preparing for lessons more time-consuming. However, even though the teachers needed more time and effort to prepare their lessons, not all teachers found it to be overly tedious. Eight teachers (44.5%) agreed that lessons were more difficult for them if they used the computer. On the contrary, ten teachers (55.5%) did not find it to be so.

Figure 2 shows teachers' perception of using computers as a teaching aid. Seven teachers (77.8%) from the younger age range (29-38) disagreed that using the computer made their lessons more difficult, while only two teachers agreed. On the contrary, eight teachers (88.9%) from the older age range (39-47) agreed that preparing for lessons had become more difficult. It is also interesting to note that the majority (88.8%) of both the

older respondents as well as their younger counterparts thought that using ICT in their teaching made lessons fun for them and their students. Only 22.2% of the teachers agreed that lessons became less fun for them if they used the computer.

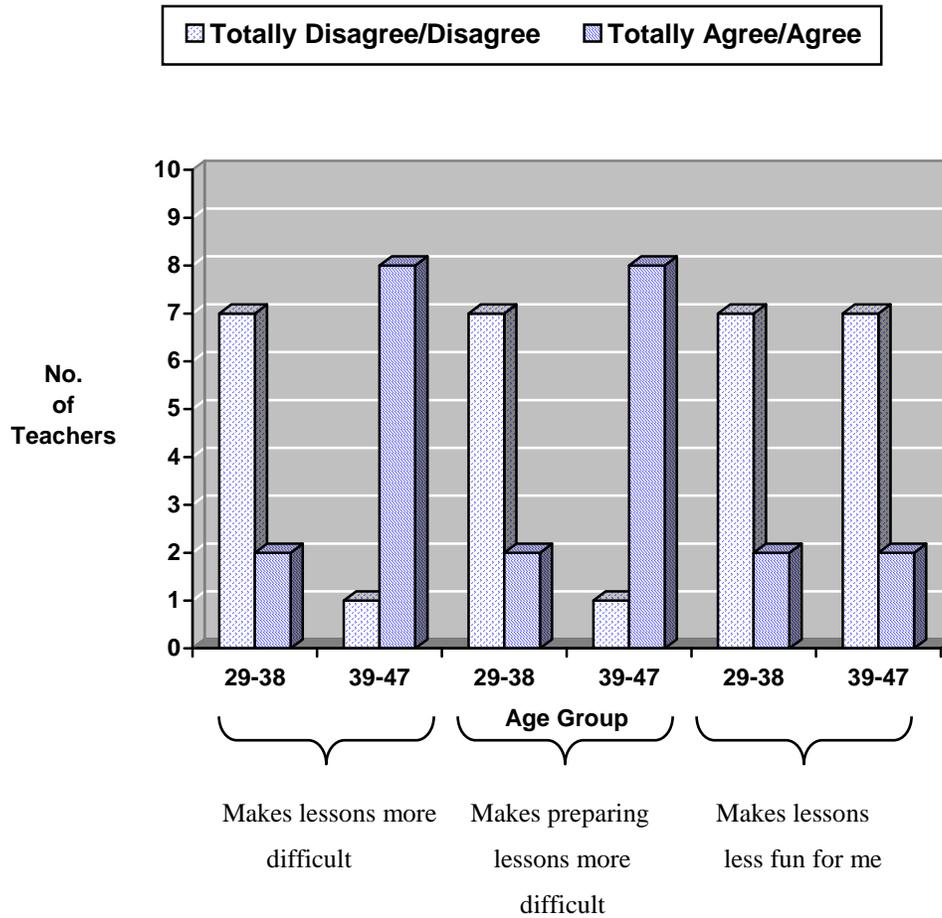


Figure 2. Teachers' perception of using computers as a teaching aid

The next challenge faced by the English teachers was the content of the lessons. Six teachers (3.3%) believed that using the computer to teach restricted the contents of their lessons. The reason could be because they had to prepare materials for teaching that follow the syllabus closely. However, twelve teachers (66.7%) did not think so.

All of the teachers believed that using the computer to teach in the classroom would be difficult without good technical support from the technicians. It seems that teachers were discouraged to use the computer to teach if they had to solve technical problems by themselves.

Other challenges encountered by the teachers were as follows:

- (a) availability of limited software in the school;
- (b) being stressed to use computers to teach English as they had difficulties locating the teacher in charge of the computers whenever they wanted to use them;
- (c) setting up the computer and LCD projector themselves before each lesson as well as putting them away properly after each lesson making a waste of precious time and;
- (d) malfunctioning of the computer which in turn will distract students' attention and disrupt lessons.

Suggestions for overcoming the challenges

The last section of the questionnaire required teachers to give suggestions on what can be done to encourage them to use computer to teach English in the classroom. Almost all the teachers except A and O suggested having a special computer room or a resource center where all the computers, LCD projectors, CDs as well as all other computer peripherals could be stored and available at all times. Other suggestions are listed below.

Teacher B: It would be good to have a special resource room with a full-time teacher operating the computers.

Teacher J: It would be useful and convenient if there were technical support at hand.

The teachers' comments suggest that if access to ICT resources was difficult, it will form a barrier for the teachers to use them in the classroom.

The majority of the teachers welcomed a permanent maintenance personnel or teacher who would be able to render any assistance needed by teachers who wished to use the room including the setting up of the computers.

Teacher K: There should be permanent personnel at the resource room at all times.

Teachers B, D, E, F, I, J, K, M, O, P, Q and R welcomed special but practical courses whereby teachers would be taught how to incorporate the use of computers in their teaching.

Teacher F: ...would like to be sent for practical computer courses.

Conclusion

The first research question of the study was “What are the teachers’ attitudes towards teaching English using computers?” The results of the study show that most of the teachers rarely used the computer to teach English. One major reason was, as many of the teachers were not adequately trained to use the computer to teach, that most of them were not very confident to utilize the technology in their teaching. They felt that they were incompetent and uncomfortable using the computer in the classroom. Generally, there was a lack of confidence in handling the computer in the classroom due to insufficient knowledge of ICT. Because of this, some of them may have a negative attitude towards the use of computer in the classroom especially among teachers who had lower perceived abilities of handling the computer. Another reason for these teachers’ attitude was there were no guidelines provided to them. All of these reasons make teachers quite unmotivated to use ICT in the classroom although they knew very well about its advantage.

As for the second research question, we have found that English language teachers in this school faced many challenges that deter them from fully utilizing the computer. These problems are availability of limited software in the school and lack of knowledgeable personnel or technician on-site for computer maintenance as well as provision of technical support to teachers.

Suggestions from the English language teachers for improving the situation include availability of an easily accessible resource room or centre that was manned by a full-time trained personnel who can be contacted at all times to assist the teachers when needed, and availability of more suitable and practical computer courses.

This study was carried out in one public school in the state of Selangor. Thus, the results obtained may not be generalised to other schools in the same state or in Malaysia. As further work, a nationwide study involving more schools and teachers should be

carried out to see whether Vision 2020 has achieved its objective whereby all primary and secondary schools in Malaysia will be Smart Schools by 2010.

References

- Ames, C. (1992). Classrooms: Goals, structures and student motivation. *American Journal of Distance Educational Psychology*, 84(3): 261-271.
- BESA (2002). ICT in UK state schools 2002: A summary report. <http://www.besonet.org.uk/ict2002/summary.htm>.
- Butler, D. & Sellbom, M. (2002). Barriers for adopting technology for teaching and learning. *Educause Quarterly*, 25(2): 22-28.
- Cuban, L., Kirkpatrick, H., & Peck, C. (2001). High access and low use of technologies in high school classrooms: explaining an apparent paradox. *American Educational Research Journal*, 38(4): 813-834.
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). *User Acceptance of Computer Technology: a Comparison of Two Theoretical Models*. Chicago: Management Science.
- Dawes, L. & Selwyn, N. (1999). Teaching with the dream machines: The representation of teachers and computers in information technology advertising. *Journal of Information Technology for Teacher Education*. 8(3): 289-304. EJ615809.
- Fishbain, M. & Ajzen, I. (1975). *Belief, Attitude, Intention and Behavior: an Introduction to Theory and Research*. Reading, MA: Addison-Wesley.
- Fullan, M., & Hargreaves, A. (1992). *New Meaning of Educational Change*. London: Carsell Education Ltd.
- Granger, C. A., Morbey, M. L., Lotherington, H., Owston, R. D. & Wideman, H. H. (2002). Factors contributing to teachers' successful implementation of IT. *Journal of Computer-Assisted Learning*, 18(4): 480-488.
- Gross, J. (1992). *Special Educational Needs and School Improvement: Practical Strategies for Raising Standards*. London: David Fulton Publishing.
- Hargreaves, A., & David, H. (1990). *The Empowered School: the Management and Practice of Development Planning*. London: Continuum.
- Harrison, C., Comber, C., Fisher, T., Haw, K., Lewin, C., Lunzer, E., McFarlane, A., Mavers, D., Scrimshaw, P., Somekh, B. & Watling, R. (2002). *ImpacCT2: The Impact of Information and Communication Technologies on Pupil Learning and Attainment*. ICT in Schools Research and Evaluation Series, No.7, DfES/becta. http://www.becta.org.uk/page_documents/research/ImpaCT2_strand1_report.pdf
- Jones, A. (2004). *A Review of the Research Literature on Barriers to the Uptake of ICT by Teachers*. British Educational Communications and Technology Agency. Version 1. <http://www.becta.org.uk>

- Kirkwood, M., Van Der Kuyl, T., Parton, N. & Grant, R. (2000). The New Opportunities Fund (NOF) ICT training for teachers programme: Designing a powerful online learning environment. Paper presented at the European Conference on Educational Research. Edinburgh, 20-23 September.
- Malhotra, Y. & Galletta, D. F. (1999). Extending technology acceptance model to account for social influence: Theoretical bases and empirical validation. *Proceedings of the 32nd Hawaii International Conference on System Sciences*. IEEE.
- Mohd Yunus, M. (2007). Malaysian ESL teachers' use of ICT in their classrooms: expectations and realities. *ReCALL*, 19(1): 79-95.
- Office for Standards in Education (2002). *ICT in Schools: Effect of Government Initiatives: Progress Report*, April 2002. <http://re-xs.ucsm.ac.uk/cupboard/ict/ofsted.pdf>.
- Preston, C., Cox, M. & Cox, K. (2000). *Teachers as Innovators: an Evaluation of the Motivation of Teachers to Use Information and Communications Technology*. MirandaNet.
- Russell, G. & Bradley, G. (1997), Teachers' computer anxiety: implications for professional development. *Education and Information Technologies*, 2(1): 17-30.
- Somekh, B., Lewin, C., Mavers, D., Fisher, T., Harrison, C., Haw, K., Lunzer, E., McFarlane, A., Scrimshaw, P. (2002). *Impact2: Pupils' and Teachers' Perception of ICT in the Home, School and Community*. ICT in Schools Research and Evaluation Series, No.9, DfES/Becta. http://www.becta.org.uk/page_documents/research/ImpaCT2_strand3_report.pdf
- Smart School Project Team (1997). *The Malaysian Smart School: A Conceptual Blueprint*. Kuala Lumpur: Government of Malaysia.
- Stoll, L., & Fink, D. (1996). *Changing Our Schools: Linking School Effectiveness and School Improvement*. Buckingham: Open University Press.
- The Malaysian Dream: Vision 2020. <http://www.themalaysiandream.net/documents/12/vision-2020>
- Veen, W. (1993). The role of beliefs in the use of information technology: implications for teacher education, or teaching the right thing at the right time. *Journal of Information Technology for Teacher Education*, 2(2): 139-153.
- Weiner, B. (1990). *Human Motivation Metaphors, Theories and Research*. Newbury Park: Sage Publications.
- Weiner, B. (1991). Metaphors in motivation and attribution. *American Psychologist*. 46(9): 921-930.
- Ya'acob, A., Mohd Nor, N. F., & Azman, H. (2005). Implementation of the Malaysian Smart schools: An investigation of teaching-learning practices and teacher-student readiness. *Internet Journal of e-Language Learning & Teaching*, 2(2), 16-25.