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ESL Teachers' Computer Self-Efficacy, Attitudes Toward Computer and Classroom Computer Use

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ABSTRACT

Although computers play a vital role in the field of education, teachers remain as one of the key determinants of the success of any technology innovation and initiative in education. Specifically, teachers' computer self-efficacy and attitudes towards computers are posited as having an influence on computer use for classroom teaching. A survey method is used in this study to determine ESL or English as a Second Language teachers' level of computer self-efficacy, attitudes towards computers and classroom computer use, in addition to investigating gender differences and relationships between the three variables. A questionnaire is administered to 102 ESL teachers in ten urban secondary schools in Kuching, Sarawak, Malaysia. The findings of this study show that the ESL teachers have moderate level of computer self-efficacy, attitudes towards computer use and computer use in the English classroom. Male teachers have a significantly higher computer self-efficacy than the female. In terms of teachers' attitudes towards computers and computer use, there is no significant difference among teachers of different genders. There is a significant low positive relationship between teachers' self-efficacy and teachers' attitudes towards classroom computers. It indicates that if the teachers' computer self-efficacy increases, their attitudes towards classroom computers will also increase. The results indicate that there is a low but positive significant relationship between teachers' computer self-efficacy and their computer use in Malaysian classrooms. Thus, if the teachers' computer self-efficacy increases, their use of classroom computers will also increase. However, there is no relationship between teachers' attitudes towards computers and actual classroom computer use. The findings of the study

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indicate that computer self-efficacy of ESL teachers is an important factor to consider in enhancing their attitudes towards computers and computer use in the classroom.

Keywords: Teachers' Computer Self-Efficacy, attitudes towards computers, computer use

INTRODUCTION

Development and innovation of computer technologies have transformed the way education is structured, organized and delivered. Furthermore, the integration of computers in the curriculum is a continuous process (Kiridis, Drossos, & Tsakiridou, 2006). Topkaya (2010) states that there is a strong interest to integrate computers in the teaching and learning of languages especially in the teaching of ESL. Several studies have shown that the use of computers have a positive effect on the achievement of language learners (Lai & Kritsonis, 2006) and in promoting students' learning motivation (Lee, 2000). Its use also enhances the four language skills of speaking (Becta, 2003), writing (Tozcu & Coady, 2004), reading (Al-Jarf, 2004) and vocabulary (Tozcu & Coady, 2004). In general, the use of computers enables teachers and ESL teachers, in particular, to address different learning styles and enhance teachers' abilities to effectively handle instructional activities, facilitate the transformation of teacher-centred to student-centred instruction (Hennessy, Ruthven, & Brindley, 2003; Groff & Mouza, 2008). The utilization of computers can also minimize students' fears and pressures, increase their motivation to learn and enhance their social development (Topkaya, 2010). Furthermore, ESL educators in Malaysia are actively exploring the potential of computers to enhance the teaching and learning processes in the ESL classrooms (Melor Md Yunus, 2007).

However, Bitner and Bitner (2002) states that the successful integration of computers in the classroom depends on a number of factors such as availability of funds, dynamic lesson plans and decisions on hardware and software. They further remarked that these factors nonetheless are not the key determinants as success or failure of computer use in the classroom usually lies with the teachers. It is the teachers' skills, beliefs, attitudes, perceptions, opinion, personalities, and knowledge, among others that influence the choices they make about what, when, where, and how to teach using computers (Bitner & Bitner, 2002). Likewise, Kumar, Raduan Che Rose and Lawrence (2008) recognize that there are factors other than technical knowledge and skills which contribute to teachers' success at technology integration in their teaching. Supporting Bitner and Bitner's and Kumar *et al*.'s views, Groff and Mouza (2008) reiterate that teachers' attitudes and beliefs are dominant factors in determining actions and professional practices in the classroom in the implementation of new technologies. Studies such as Seferoğlu (2007) and Teo (2008) also empirically support the conclusions that teachers' computer self-efficacy and their attitudes may possibly make an impact on their

computer use in the classroom. Thus, it is apt to conclude that factors such as attitudes, values, and self-judgments can exert a profound effect on behaviours for teachers to be effective computer users. It is essential that teachers possess positive attitudes and high self-efficacy perceptions in using the technological tools (Milbrath & Kinzie, 2000). Indeed, a teacher is one of the important reasons contributing to the failure or success of integrating ICT in teaching and learning (Lim & Khine, 2006).

Research on teachers' computer use in the classroom indicates that gender differences remain an issue that has yet been conclusively studied. Some studies show that female teachers tend to exhibit lower computer self-efficacy, more negative attitudes towards computer usage and lower levels of computer use for teaching and learning (e.g. Enoch & Soker, 2006; Koohang, 2004; Von Braak, 2001; Whitley, 1997). Nonetheless, there are studies such as Davis and Davis (2007) and Teo (2008) that report no gender difference in technology use among teachers. Thus, gender remains an important independent variable in studies related to computer use in ESL classroom.

PURPOSES OF THE STUDY

The studies and reports discussed in the previous section highlight the need to address the attitudes and self-efficacy of the teachers in enhancing computers integration in the teaching and learning of English Language. Specifically this study investigates the following research questions:

- What are the ESL teachers' levels of computer self-efficacy, attitudes towards computers and computer use?
- Are there gender differences among ESL teachers' level of computer self-efficacy, attitudes towards computers as well as their computer use?
- Are there relationships between the ESL teachers' computer self-efficacy, attitudes towards computer and computer use?

REVIEW OF RELEVANT LITERATURE

The following sections discuss some literature relevant to the study.

Computer Self-Efficacy, Attitudes Towards Computers and Computers Use in Classroom

Self-efficacy is an individual's conviction in his capability to organize and complete a course of actions in order to accomplish a specific task (Eggen & Kauchak, 2007). It is not related to one's skills; more accurately a self-perception of one's ability to perform (Bandura, 1982). Individuals' ideas, be it positive or negative, about behaviour affects their course of action (Albion, 2001). Thus, self-efficacy influences their goals, amount of effort and time willingly spent on persevering and rising above hurdles and difficulties (Khorrami-Arani, 2001). Teachers' self-efficacy has been reported as contributing to students' academic performances in schools (Pajares, 1992). Tschannen-Moran, Woolfolk and Hoy (1998). It is also considered as one of

the factors that may positively influence teaching behaviour, classroom management and students' outcomes.

Specifically, computer self-efficacy is defined as a judgment of one's ability to use a computer (Compeau & Higgins, 1995). It is generally believed that individuals with high computer self-efficacy will be more willing to learn and do new things using computers (Kinzie, Delcourt, & Powers, 1994). Teachers who are confident in their capabilities of using computers will be more likely to utilize the tools more often in performing classroom tasks (Potosky, 2002; Ozcelik & Kurt, 2007). Thus, teachers' computer self-efficacy is a strong determinant in studying teachers' behaviour with respect to teaching with computers (Cassidy & Eachus, 2002; Seferoğlu, 2007; Topkaya, 2010).

Past studies have reported that ESL teachers tend to have moderate level (Topkaya, 2010) or low level (Saadiyah Darus & Ho, 2008) of computer self-efficacy. Several factors may possibly influence a teacher's computer self-efficacy. Their knowledge of ICT and relevant skills, reluctance to abandon their existing pedagogy, attitudes, perception, accessibility to ICT, age, area of specialization and ICT training may possibly also play a role in determining teachers' conviction of his or her capability of using computers (Groff & Mouza, 2008; Lim & Khine, 2006).

On the other hand, according to Fishbein and Ajzen (1975), attitude is a mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related. In the classroom, teachers' attitudes towards the use of computers play a major role in the acceptance of computers as it may possibly influence students' initial acceptance of computers and their future behaviour regarding computers. In general, teachers and ESL teachers, in particular, are deemed as role models to the students; their attitudes play a major role in affecting the society's attitudes towards the role of computers (Robinson & Zaitun Abu Bakar, 2006; Rosnaini Mahmud & Mohd Arif Ismail, 2008; Teo, 2008).

There have been different studies on attitudes in the educational arena in relation to the integration of classroom computers involving teachers and ESL teachers (Abang Ahmad Ridzuan, Hong, & Aliza Ahmad, 2001; Abbitt & Klett, 2007; Groff & Mouza, 2008; Hong & Koh, 2002; Lim & Khine, 2006; Rosnani binti Mahmud & Mohd Arif Hj Ismail, 2008), students (Bebetsos, Kouli, & Antoniou, 2007), trainee teachers (Arishi, 2012; Deniz, 2007; Teo, 2008) and school administrators (Ahmad Rafee Che Kassim & Hatim Mohamad Tahir, 2000). A number of studies have reported that teachers have positive attitudes towards computers (Hong & Koh, 2002, Juanna Risah Sa'ari, Wong & Samsilah Roslah, 2005; Nurul Atikah *et al*., 2006; Seferoğlu, 2007; Teo, 2008). On the other hand, there are also studies that indicate teachers having feelings of uncertainty, anxiety, lack of confidence and negative attitudes that may possibly hinder the successful integration of computers in

the classroom (Finley & Hartman, 2004; Fullan, 2001; Groves & Zemel, 2000; Saadiyah Darus & Ho, 2008).

In the aspect of computer use, Blankenship (1998), Fakeye (2010) and Latio (2009), report that generally only few teachers are actively integrating computers in their classroom teaching. Similarly, Saadiyah Darus and Ho (2008) find that ESL teachers in Malaysia indicate low level of integrating computers in their instructional activities.

Gender Differences in Computer Self-Efficacy, Attitudes Towards Computer and Classroom Computer Use

While the integration of computers in classroom creates opportunity for learning enhancement, not all teachers take advantage of the affordance provided by the technology. Some may feel more comfortable using computers than others. Many factors may possibly contribute towards teachers' computer self-efficacy, attitudes towards computers and decisions to use technology such as gender, age, teaching styles, and personalities. Von Braak (2001) suggests that gender is significantly related to attitudes towards computer and computer use in his study among secondary school teachers. Von Braak (2001) reports that female teachers have more negative attitudes towards computers and lower computer use. Whitley (1997) also reports that male teachers have higher computer self-efficacy, more positive attitudes towards computers and more likely to use computers. Other studies such as Enoch and Soker (2006), Koohang (2004) and Whitley (1997) suggest that females have lower comfort level with computers and attributes the difference to males usually spending more time with computers. Nonetheless, there are studies that observe no significant gender difference in computer use among teachers (Davis & Davis, 2007; Teo, 2008).

Relationships Between Teachers' Computer Self-Efficacy, Attitudes Towards Computers and Classroom Computer Use

Studies by Albion (2001) and Wang, Ertmer, and Newby (2004) suggest that computer self-efficacy is a determining factor in predicting the effectiveness of an ESL teacher in utilizing computers for teaching and learning. Likewise, teachers' attitudes towards computers can also affect the computer use in classroom (Ajzen, 1991). Hong and Koh (2002). Both studies discover that there is a significant relationship between computer anxiety and attitudes towards computer. Zoraini Wati Abas (1995) also notes that teachers with positive attitudes and confidence can use computers effectively. Moreover, Jegede (2007) and Topkaya (2010) report that there is a positive relationship between computer self-efficacy and attitudes towards computers.

On the other hand, Cassidy and Eachus (2002) suggests that computer self-efficacy plays a major role in determining the regularity and success of computer use. It is suggested that the manner of computer experiences, be it positive experience or otherwise, may possibly affect one's computer self-efficacy. It is not the duration

of one's experience with the computers; it is the quality of the experience that later affects his or her computer self-efficacy. It concurs with Kiridis *et al*. (2006) who suggests that teachers' needed to be confident in their computer use in order to be successful in their teachings. Likewise, Seferoğlu (2007) believes that computer self-efficacy enables teachers to approach difficult tasks as challenges to be mastered rather than as threats to be avoided. Therefore, computer self-efficacy offers teachers the predisposed confidence in tackling complicated tasks, seeking ways to learn and mastering techniques to overcome the difficulty rather than shunning it. Topkaya (2010) suggests that high computer self-efficacy can lead to more computer use in classrooms. Consequently, it also affects the students positively. Seeing the teachers' capabilities in overcoming challenges in relation to classroom computer use shall motivate them to behave likewise.

According to Baylor and Ritchie (2002), teachers' attitudes towards computer can affect the degree and significance of classroom computer use. Past studies such as Kluever *et al*. (1994), Haney and Lumpe (1995), and Yuen, Law and Chen (1999) also support the finding. These studies identify teachers' attitudes towards computer as a key factor in the successful instructional use of computers. In the local scenario, Abang Ahmad Ridzuan *et al*. (2001) believes that teachers' attitudes toward computer can influence the level of computer utilization. Similar findings in another study by Nurul Atikah *et al*. (2006) reports that English language teachers with positive attitudes towards computer tend to use computers effectively for teaching and learning purposes. It is noted that positive attitudes towards computers correlate with higher rate of usage. Likewise, Saadiyah Darus and Ho (2008) in a study among Malaysian ESL teachers, discover that teachers rarely use computers for teaching and learning of English due to their negative attitudes towards the use of computers and low computer self-efficacy. On the other hand, Faseyitan and Hirschbuhl (1992), Fulton (1998) Geoff and Mouza (2008), Hong and Koh (2002) and Mumtaz (2000) feel that there may possibly be other important determinants of computer use in the classroom such as school support, technical support, teaching experiences and past experiences with computers.

Therefore, the literature review above suggests that computer self-efficacy and attitudes towards computers can be related to teachers, specifically ESL teachers' use of computers for teaching and learning purposes. In addition, gender remains an important demographic characteristic in determining teachers' level of computer self-efficacy and attitudes towards computers and use of computers in the classrooms.

METHODOLOGY

Research Design and Setting

This study uses survey method.. The target population of the study consists of ESL teachers in government-aided urban secondary schools in Kuching Division, Sarawak, Malaysia. Ten of the

24 government-aided, urban secondary schools in Kuching are randomly selected to participate in the study. The ESL teachers in these schools are provided with computer notebooks under the Government's policy to integrate computers in classroom teaching in order to keep abreast with the information era besides enriching teaching and learning activities. The participants of this study consist of 102 ESL teachers from the ten secondary schools, with 79 (77.5%) female and 23 (22.5%) male ESL teachers.

Instrumentation

1. The research instrument used in this study is a questionnaire which consists of four sections: Part A (Teachers' *Demographic Information*);
2. Part B (Teachers' *Computer Self-Efficacy*);
3. Part C (Teachers' *Attitudes toward Computers*); and
4. Part D (Teachers' *Classroom Computer Use*).

Part A of the questionnaire collects information on gender, age and qualifications.

Items in Part B that focus on teachers' computer self-efficacy are adapted from Compeau and Higgins (1995) and Cassidy and Eachus (2002). These items are found to be valid and reliable measures of computer self-efficacy. Further information regarding the validity and reliability of these items can be found in Compeu, Higgins and Huff (1999), Johnson and Marakas (2000) and Cassidy and Eachus (2002). Items in Part C that specify on the teachers' attitudes towards computers are based on the Teachers Attitudes towards Computers questionnaire developed by Knezek and Christensen (1997). The reliability and validity of the questionnaire is reported in Knezek, Christensen, Miyashita and Ropp (2000). Items in Part D that concerntrate on the teachers' classroom computer use are adapted from the instrument used in the study by Latio (2009). Latio (2009) also reports that the validity and reliability of the items for research purposes.

A 5-point Likert scale is used to measure the teachers' responses on their use of classroom computers for teaching purposes, computer self-efficacy and attitudes towards classroom computers. In addition, a pilot test are conducted to 37 ESL teachers from two urban secondary schools, located in Kuching, Sarawak, Malaysia, not involved in the actual study, in order to establish the reliability of the questionnaire. The pilot study data indicates that the questionnaire is reliable and appropriate for the intended study with Cronbach Alpha coefficients exceeding 0.8 as shown in Table 1.

TABLE 1
Reliability of the Questionnaire Based on Pilot Test

Scale	Cronbach Alpha Values
Teachers' *Computer Self-Efficacy*	0.834
Teachers' *Attitudes Toward Classroom Computers*	0.854

Note: >0.9 = Excellent, >0.8 = Good, 0.7-0.6 =Acceptable, < 0.5 = Unacceptable (George & Mallory, 2003).

Data Collection Procedures

Approvals for data collection is obtained from the relevant authorities including the Education Planning and Research Division (EPRD) of the Ministry of Education, state education department, school principals and participants. The questionnaires are distributed to the ten schools based on the number of participants available for the survey, as provided by the schools' authority. The senior assistant or the principal of the school is enlisted to ensure that all of the questionnaires are distributed and returned promptly. Participation from the ESL teachers in the ten schools is voluntary.

Data Analysis

The data collected is analysed using the Statistical Package for Social Science (SPSS) software. The statistical analyses involve descriptive and inferential statistics. Descriptive statistics such as the means and standard deviations are used to describe the participants and variables. The classification of scores for computer self-efficacy, attitudes towards computers and computer use are low (1.0-2.3), moderate (2.3-3.6) and high (3.6-5) levels. Pearson Product Moment Correlations are used to determine the significance of the relationships between the variables. The strengths of the Pearson Product Moment Correlations are determined based on Table 2. Independent t-tests are used to determine differences in computer self-efficacy, attitudes towards computers and computer use between male and female teachers.

TABLE 2
Interpretation of The Correlation Coefficient

Coefficient Value	Interpretation
0.00 to 0.30 (0.00 to -0.30)	Little if any correlation
0.30 to 0.50 (-.30 to -.50)	Low positive (negative) correlation
.50 to .70 (-.50 to -.70)	Moderate positive (negative) correlation
.70 to .90 (-.70 to -.90)	High positive (negative) correlation
.90 to 1.00 (-.90 to –1.00)	Very high positive (negative) correlation

Note: Based on Hinkle, Wiersma, and Jurs (2003)

RESULTS

The results of the reliability analysis for the questionnaire in the actual study are shown in Table 3. The results of the reliability analysis indicate that the research instrument is at an acceptable level of reliability with Cronbach Alpha coefficients exceeding 0.8.

TABLE 3
Reliability of the Questionnaire In Actual Study

Scale	Cronbach Alpha Values
	Actual Study
Teachers' *Computer Self-Efficacy*	0.872
Teachers' *Attitudes Toward Classroom Computers*	0.851

Note: >0.9 = Excellent, >0.8 = Good, 0.7-0.6 =Acceptable, < 0.5 = Unacceptable (George & Mallory, 2003).

ESL Teachers' Computer Self-Efficacy, Attitudes Towards Computers and Classroom Computer Use.

Table 4 shows the summary of the means and standard deviations for teachers' computer self-efficacy, attitudes towards computers and use of classroom computers.

TABLE 4
Level of Teachers' Computer Self-Efficacy, Attitudes Towards Computers and Classroom Computer Use.

Items	Mean	Std Dev
Part B: Computer self-efficacy	***3.37***	0.923
Item 1 – Difficulties encountered are usually dealt with	3.20	0.975
Item 2 – Confident of abilities to use computers	3.54	0.875
Item 3 – Easy to learn to use new courseware	3.40	0.847
Item 4 – Computers help to save time	3.45	0.908
Item 5 – Considered self a skilled computer use	3.28	1.009
Part C: Attitudes toward computer	***2.63***	***1.057***
Item 1 – Tired of using computers to teach English	2.49	0.992
Item 2 – Takes a long time to finish teaching with computers	2.90	1.010
Item 3 – Working with computers makes me nervous	2.53	1.123
Item 4 – Teaching with computers is very frustrating	2.58	1.103
Part D: Classroom computer use	***2.97***	1.237
Item 1 – I use computers to teach English	2.33	1.189
Item 2 - I use computers and projectors to play films	2.32	1.145
Item 3 - I have used computer software to demonstrate lesson contents	2.86	1.275
Item 4 - I download English Language Teaching and Learning resources to enhance students' learning	3.03	1.316
Item 5 - I use instructional software provided by the Education Department to teach English	2.60	1.180
Item 6 - I use computer - based technology to integrate English learning skills	2.80	1.267
Item 7 - I use the computers to assist students in their individual learning	2.52	1.288

Note: The 5-point Likert scale in Part B and C range from 1=Strongly disagree to 5=Strongly agree and in Part D, range from 1=Very infrequent to 5=Very frequent.

Generally, the teachers have moderate levels of computer self-efficacy. The teachers are able to deal with difficulties encountered when teaching English with computers (M = 3.20; SD = 0.975). They are confident of their abilities to use computers in teaching English in the classrooms (M = 3.54; SD = 0.875) and find it easy to learn a new courseware (M = 3.40; SD = 0.847). They find that computers save time when teaching English in the classrooms (M = 3.45; SD = 0.908) and consider themselves as skilled computer users when using the technology in teaching (M = 3.28; SD = 1.009).

Likewise, the teachers' attitudes towards computers are at the moderate level. They are not tired of using a computers to teach (M = 2.49; SD = 0.992) and are not nervous when using computers (M = 2.53; SD = 1.123). They do not feel frustrated teaching English with computers (M = 2.58; SD = 1.103). However, they do find using computers to teach consumes more time (M = 2.90; SD = 1.010)

The teachers moderately use computers in their classroom. Most teachers seldom use computers to teach English (M = 2.33; SD = 1.189) or use computers and

projectors to play films (*M* = 2.32; *SD* = 1.145). Similarly, they rarely use computer software to demonstrate lesson contents (*M* = 2.86; *SD* = 1.275). However, they moderately use computers to download English language teaching and learning resources to enhance students' learning (*M* = 3.03; *SD* = 1.316). The teachers, occasionally, use instructional software provided by the Education Department to teach English (*M* = 2.60; *SD* = 1.180), use computer-based technology to integrate English learning skills (*M* = 2.80; *SD* = 1.267) and use computers to assist students in their individual learning (*M* = 2.52; *SD* = 1.288).

Differences in ESL Teachers' Computer Self-Efficacy, Attitudes Towards Computers and Classroom Computers Use Based on Gender

Independent samples t-tests are carried out to examine the differences in the ESL teachers' computer self-efficacy based on gender. The findings are summarized in Table 5.

The results indicate that there is a significant difference in the ESL teachers' computer self-efficacy based on gender [t(100) = 1.990, p = 0.049]. The 95% CI is [-0.119, 2.699] with effect size, d = 0.457. The male teachers have higher computer self-efficacy (Mean = 15.24, SD = 2.976) than the female teachers (M = 13.95, SD = 2.662).

However, there is no significant difference in the ESL teachers' attitudes towards computers based on gender [t(100) = 0.274, p = 0.785]. The mean score for the male teachers (M = 8.71, SD = 3.076) does not vary much from the mean score of the female teachers (M = 8.53, SD = 2.705). Likewise, there is no significant difference in their use of computers for teaching based on gender [t(100) = 0.062, p = 0.951]. The mean score for the male teachers (M = 16.38, SD = 5.681) does not vary much from the mean score of the female teachers (M = 16.29, SD = 6.112).

TABLE 5
Differences in ESL Teachers' Computer Self-Efficacy, Attitudes Towards Computers and Computer Use Based On Gender

Demographic factors		N	Mean (M)	Std Dev (SD)	t	df	p
Computer self-efficacy	Male	23	15.24	2.976	1.990	100	0.049
	Female	79	13.95	2.662			
Attitudes towards computer use	Male	23	8.71	3.076	0.274	100	0.785
	Female	79	8.53	2.705			
Use of classroom computers	Male	23	16.38	5.681	0.062	100	0.951
	Female	79	16.29	6.112			

Note: The equal variances assumed independent t-tests were used in the analyses as the assumptions of equality of variances were satisfied.

Relationships between Computer Self-Efficacy, Attitudes Towards Computers and Classroom Computers Use.

The relationships between ESL teachers' self-efficacy, attitudes towards computers and classroom computer use are determined using Pearson's Product Moment Correlations. The preliminary analyses find that the assumptions of normality based on Skewness and Kurtosis values < 1, and linearity based on scatter plots, are not violated. Prior to the correlation analyses, the scores for the items related to attitudes towards computers (Part C) are re-coded. Thus, higher scores for these items indicate positive attitudes towards computers. There is a significant low, positive relationship between teachers' self-efficacy and teachers' attitudes towards computers ($r = 0.479$, $p < 0.0005$). It indicates that if the teachers' computer self-efficacy increases, their attitudes towards computers increases too. The results indicate that there is a significant low, positive relationship ($r = 0.399$, $p < 0.0005$) between computer self-efficacy and computer use. Thus, if the teachers' computer self-efficacy increases, their use of classroom computers increases too. However, there is no relationship between English language teachers' attitudes towards computers and actual classroom computers use ($r = 0.101$, $p = 0.311$).

DISCUSSION

The findings indicate that the ESL teachers have moderate level of computer self-efficacy and attitudes towards computer use. In addition, they moderately use computers in the English class instructions. Generally, these findings are similar to past studies that report moderate to low levels of computer self-efficacy (e.g., Saadiyah Darus & Ho, 2008; Topkaya, 2010), moderate attitudes to computers (e.g., Finley & Hartman, 2004; Saadiyah Darus & Ho, 2008), and lack of computers integration in the classroom instruction (e.g., Fakeye, 2010; Latio, 2009; Saadiyah Darus & Ho, 2008).

The results also indicate that male teachers have higher computer self-efficacy than the female teachers. This finding concurs with past studies such as Enoch and Soker (2006), Koohang (2004) and Whitley (1997). However, there is no difference in the teachers' attitudes towards computers and computer use based on gender. The finding of no gender differences supports the similar results reported by Davis and Davis (2007) and Teo (2008). Such finding may be due to less gender biasness in computer use in recent times in which both females and males having equal opportunities to spend time using computers (Davis & Davis, 2007).

The present study shows that there is a significant but low and positive relationship between teachers' self-efficacy and teachers' attitudes towards computers. In short, a teacher who has high level of computer self-efficacy may have positive attitudes towards computers. The result supports the findings of past studies. For example, Jegede (2007) and Topkaya (2010) find that there is a significant positive correlation between teachers' self-efficacy and teachers' attitudes towards computers. Nonetheless, Topkaya

(2010) cautions that the relationships may not be always positive as teachers need to adapt to their changing roles in the classrooms. It should be noted that other factors such as previous experiences with technology (Fulton, 1998), computer effectiveness (Faseyitan & Hirschbuhl, 1992) and school support (Hong & Koh, 2002) may possibly affect teachers' attitudes immensely. For instance, a teacher who is confident of his or her ability in using computers can have negative attitudes towards computers after experiencing negative experiences due to ineffective technology and unsupportive school administration.

Results from this study reveals that there is low, positive significant relationship between the teachers' computer self-efficacy and their computer use in the classrooms. This finding concurs with past studies which suggest that high computer self-efficacy can lead to more computer use (Cassidy & Eachus, 2002; Seferoğlu, 2007; Topkaya, 2010). Consequently, it is believed that a high level of computer use as a result of high level of computer self-efficacy will enable teachers to approach difficult tasks rather than avoid them (Potosky, 2002; Ozcelic & Hurt, 2007).

It is also discovered that there is no significant relationship between teachers' attitudes towards computers and their computer use in the classrooms. This finding concurs with the findings from past studies. Groff and Mouza (2008) lists legislative factors, district / school-level factors, students and technology, apart from the teacher factor, as important influences on actual computer use in the classrooms. Similarly, Mumtaz (2000) identifies a list of inhibitors that prevent the effective utilization of computers in the classroom. Among them are teaching experiences with computers, leadership supporting teachers using computers (Mumtaz, 2000), inadequate technical and administrative support (Lim & Khine, 2006). This finding does not support the assumption that teachers' attitudes towards computers are pivotal factors in the implementation of new technologies as argued by Haney and Lumpe (1995) and Yuen *et al*. (1999).

IMPLICATIONS FOR PRACTICE AND FUTURE RESEARCH

With the aim of achieving Vision 2020, the ability to successfully integrate computers in the classroom environment play a crucial role in the development of a group of technologically literate workforce that is competent in the borderless knowledge-based world (Melor Md Yunus, 2007). Hence, teachers in the Malaysian education system play a vital role in enhancing the usage of computers so that it shall bring forth a fresh look on instruction and learning. Teachers' active integration of computers in classroom instruction will not only enhance the learning environment but will also assist students to be familiar with using technology in other aspects of their lives.

The result of this study has implications on teacher educators. Teachers' computer self-efficacy, attitudes towards computers and computer use need to be taken into

consideration in implementation of computer integration in schools. Teachers need to have high level of computer self-efficacy to ensure positive attitudes towards the use of computers in the classrooms for teaching and learning purposes. The education policy makers as well as the school authorities need to look into these factors when designing computer courses or programmes to promote positive learning experiences and enhance the teachers' confidence. The teachers need pedagogical training on how to effectively use computers both during the lesson and also in the preparation of lessons with confidence rather than just training in the computer skills.

Future research should replicate this study to other types of secondary schools such as rural secondary schools, boarding schools and science colleges considering the present study is limited to urban secondary schools. Furthermore, in view of present study only utilizes the survey method, future studies may possibly consider using a mixed approach of combining quantitative data from questionnaires and qualitative data such as observations and interviews to enhance the understanding of issues and problems related to using computers for teaching and learning. In addition to computer self-efficacy and attitudes towards computers, other factors that can be looked into include the physical aspects of the school, teachers' additional responsibilities, educational changes and organizational behaviour.

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