TESOL in-Service Teachers' Attitudes towards Computer Use

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Abstract

The way education is being delivered has been altered via the rapid development of computer technology. This is especially the case in the delivery of English language teaching where the combination of various variables is pertinent to computer attitudes to enhance instructional outcomes. This paper reports the study undertaken to elucidate whether the correlation exists between TESOL in-service teachers' attitudes towards computer and their computer attributes scale and to explore the proportion of variance in TESOL in-service teachers' attitudes towards computer that can be explained by their cultural perception scale and computer competence scale. A questionnaire (ATCT) was utilized to obtain the necessary information about teachers' characteristics, their computer attributes, cultural perceptions, computer competence and attitudes of the sample (45) TESOL in-service teachers at Universiti Sains Malaysia. The results revealed that there was a significant correlation between teachers' computer attitudes and computer attributes. A further finding revealed that both of cultural perception scale and computer competence scale were predictors of teachers' computer attitudes; yet, cultural perception scale was the best predictor. Suggestions based on these outcomes have been offered in this paper.

Keywords: Teachers' computer attitude, Cultural perception scale, Computer competence scale, Computer attribute, Rogers' diffusion of innovations theory

1. Introduction

The last two decades have witnessed the global adoption of information and communication technology (ICT) while considering it as the landmark of the educational scene (Albirini, 2004). In the field of education, especially within this century, technology has even a greater impact on the educational process (Birisci, Metin, & Karakas, 2009). Computers are progressively more widespread, affecting many aspects of our social and even private lives. Moreover, they have offered a large number of leisure activities. Pelgrum (2001, p. 163) has realized that ICT is "not

only the backbone of the Information Society, but also an important catalyst and tool for inducing educational reforms that change our students into productive knowledge workers".

Recently, computer technology has started to play a more significant role in human lives. Shelly, Cashman, Gunter, and Gunter (2004, p. 2) assert that "a computer is an electronic machine, operating under the control of instructions stored in its own, meaning that it can accept data (input), manipulate the data according to specified rules (process), produce results (output), and store the results for future use."

Due to the fact that computers are becoming more widespread, occupational and personal successes have become more positively correlated with both computer skills and knowledge. Commonly, teachers act as the key to effective implementation of the use of computers in the educational system holding the belief that computers possess tremendous potential to transfer beliefs and values to students. It is worth noticing the biases and stereotypes that teachers may cleave to the use of computers and the factors that perform as facilitators in teachers' positive computer usage (Teo, 2008). Obviously, teachers think of the computer as a tool to achieve housekeeping tasks, to run their students more efficiently, and to be in touch with parents more easily. Basically, the attitudes of teachers and their willingness to integrate with the technology have a great impact on the success of students' learning. (Teo, 2006). Effectiveness, disturbance and control are the three conditions which ought to be fulfilled for teachers to be motivated in using ICT in their practice (Zhao & Cziko, 2001).

2. Review of the Related Literature

Teachers shoulder the intense and severe responsibility of assuring that students experience a meaningful learning environment. Generally, information and communication technologies and particularly computers have been suggested as a strategic tool for improving this learning process. Teacher as educators are the front liners of the teacher preparation process and should be well-prepared in the fields of integrating computers into the learning processes (Ridzuan, Sam, & Ahmad, 2001). The most convincing reason for examining teachers' attitudes towards computer is that it is a major predictor of future computer use in the classroom (Myers & Halpin, 2002). From the teacher educators' perspective, there is a necessity to understand the factors that affect teachers' attitudes towards computers as a method for effective development of teacher training curriculum. This will, in turn, train teachers to face the challenges in the Information Age (Fisher, 2000).

Due to the fact that merits of technology in language teaching are becoming more preferable worldwide, its use in teaching language has been increasing dramatically over recent decades (Liu, 2009). One of the factors that is to be investigated in this study as a predictor of teachers' attitudes is cultural perception since it is a relevant factor in predicting students' and teachers' acceptance and application of ICT in English learning. Rogers (1995) emphasizes the importance of the cultural and the social norms of a given country to the acceptance of technology among its people. The second factor that is also examined is computer attributes. Rogers (1995, p. 23) argues that "the perceived attributes of an innovation are one important explanation of the rate of adoption of an innovation". Finally, teachers' competence scale was tested. Pelgrum (2001) proposes that the success of educational innovations depends greatly on equipping teachers with the competencies required to make them function. Knezek and Christensen (2002) finds out that teachers' competence with computer technology is the principal determinant of effective classroom use by students. Earlier correlation studies forecasted that the use of computers in education would depend greatly on how teachers integrate the above stated factors in everyday teaching activities. Therefore, the question of teachers' attitude towards computers is vital to any successful use of computers in education (Yuen & Ma, 2001; Yushau, 2006).

Diffusion of Innovations Theory (DIT) has been utilized by a wide range of researchers over time to clarify the adoption of innovations such as information technology, and is used to guide this study illustrating that teacher adoption of information technology could be better explained in the context of Diffusion of Innovations' Theory. According to Fraze, Fraze, Baker, and Kieth (2002), the innovation-decision process is "an information-seeking and information-processing activity in which an individual obtains information in order to decrease uncertainty about the innovation." Rogers' Innovation Decision Process Theory (RIDPT) states that an innovations' diffusion is a process that occurs over time through five stages:

- Knowledge Stage of the innovation via several communication channels;

- Persuasion Stage in which values of innovation are persuaded;

- Decision Stage for making decisions to adopt it;

- Implementation Stage where the innovation ought to be implemented; and

- Confirmation Stage in which the decisions made are reconfirmed or abandoned.

The literature demonstrates that advances in computer technology have drawn the attention of many educators and researchers. One of the researchers is Albirini (2004) who conducted a study to investigate the attitudes of EFL teachers in Syrian high schools towards ICT in education and to explore the relationship of teachers' attitudes with computer attributes, cultural perceptions and computer competence. The findings showed significant positive correlations between teachers' attitudes towards ICT and computer attributes, cultural perceptions and computer competence. Moreover, multiple regression analysis illustrated that these variables had a significant predictive value of computer attitudes towards ICT.

In the same respect, Sooknanan (2002) found a significant correlation between computer   attributes and computer attitudes. Furthermore, Berner (2003) and Huang (2003) reported that teachers' and faculty's cultural perceptions of the value of technology have been systematically documented as a predictor of their use of computers in the classroom. Another research was carried out by Li (2002) who investigated the effects of national culture perceptions on Chinese and British students in terms of using of the Internet. The results of the study exhibited differences in attitudes, Internet and competence between Chinese and British students that were pertinent to students' national culture.

At the same time, Liu (2009) conducted a study to investigate college non-English majors' attitudes, at Yangquan College/Taiyuan University of Technology, towards the integration of Information and Communication Technologies into English learning and factors such as students' ICT competence, ICT attributes together with cultural perceptions of ICT to see if they are correlated with students' attitudes towards ICT. The findings of the study demonstrated that there were significant correlations between students' attitudes and the factors mentioned above; however, students' cultural perceptions were found to be the most important predictors.

In a research conducted on Ohioan technology education teachers, Isleem (2003) confirmed that computer competence was the strongest predictor of attitudes towards computer use. Similarly, another research by Berner (2003) which was supportive of the theoretical and empirical arguments was carried out for the importance of computer competence in determining teachers' attitudes towards ICT. The results confirmed that computer competence was the most significant predictor of teachers' attitudes towards ICT in education.

Many studies have investigated the effects of computer ownerships on the teachers' perceived computer competence and concentration on improving computer attitudes. Briefly, the results consistently correlate with attitudes towards computers and positive effects for preparing teaching and learning materials (Monk, Swain, Ghrist, & Riddle, 2003; Roussos, 2007; Sadik, 2006).

On the part of the Malaysian government, the importance of information technology has been gaining full consideration. The launching of the Vision 2020 Program by the former Prime Minister in 1990 reflected his hope for constructing an industrialized country whose community is rich in information technology by the year 2020 (Nasir, 1996).

In spite of the relative increase in the number of studies tackling teachers' attitudes and factors related to them, the relationships among teachers' attitudes, cultural perception scale and computer competence scale have not been clearly shown to be adequate and systematic. Moreover, there are a few adequate current researches regarding these variables. Even when some relationships have been reported, the results have been mostly related to the specific context because of population, sampling, and/or design limitations (Al-Oteawi, 2002; Sooknanan, 2002). Consequently, this calls for a study that focuses specifically on TESOL in-service teachers' attitudes towards using computers. Thus, the purpose of this study is to examine the profile of a sample of TESOL in-service teachers to explore the relationships between teachers' attitudes and computer attribute, cultural perception scale and computer competence scale.

3. The Present Study

The present study has two objectives one of which is to examine the correlation between TESOL in-service teachers' attitudes towards computer and their computer attributes scale and the other one is to explore the proportion of variance in TESOL in-service teachers' attitudes towards computer that can be explained by their cultural perception scale and computer competence scale. Thus, the study addresses two questions:

1. Is there any significant correlation between TESOL in-service teachers' attitudes towards computer and their computer attributes scale?

2. Is cultural perception scale or computer competence scale a significant predictor of TESOL in-service teachers' attitudes towards computer?

3.1 Participants

The population of the study represents TESOL in-service teachers in the School of Educational Studies at the Universiti Sains Malaysia (USM) who are enrolled in masters program. A purposive sampling technique was

employed and 52 students were included in this study. The study was limited only to the quantitative method by distributing a questionnaire to measure TESOL in-service teachers' attitudes towards computer. Only 45 respondents filled in the questionnaires completely. These students made the sample participants in the study. The respondents were 13 males and 32 females whose ages ranged from 20 to 59 years. Among these 45 participants, 9 of them (20%) were between 20-29, 24, i.e., 53.3%, were between 30-39, 11 students (24.4%) were between 40-49, and 1 person, that is, 2.2%, was between 50-59 years old. The average age of the participants was 35.4 years. The experience of the participants varied from 1 till over 20 years of teaching. Moreover, 35 of the respondents were Malaysians and the other 10 were international students. Regarding the type of school, the results revealed that 21 participants teach in urban areas, 15 of them teach in suburban areas whilst 9 teach in rural areas. Besides, 40 participants attended computer training courses whereas 5 of them had not attended any.

3.2 Instrument

The current descriptive study employed a questionnaire which was intended to ask about the participants' Attitude Towards Computer Technology (ATCT) adopted from Albirini (2004). This measure was developed according to the findings of previous studies and is a mean for the purpose of collecting self-reported data from the participants. The use of both positive and negative items was balanced. The questionnaire contained six sections with 80 items in which the items 1-72 are based on a Likert scale. In the remaining 8 items (items 73-80), the participants were required to tick the appropriate box. In terms of validity, the developer asserts that both face and content validity had been established by a panel of experts. Regarding reliability, the developer pilot tested the questionnaire and conducted a factor analysis as well. Moreover, it was the serious concern of the researchers to make sure about the validity and reliability of the instrument. Therefore, they checked the validity by having it reviewed by an expert at USM. The reliability of the questionnaire was established by piloting it by five participants who had been selected randomly. The Cronbach's Alpha coefficient was calculated to be 0.853 which was considered ideal (Pallant, 2005).

4. Results

Descriptive statistics provided information about the participants' age, gender, teaching experience and types of school. In order to achieve the objectives of the study, inferential statistics tests were employed. To fulfil the first objective, Pearson product-moment Correlation coefficient was run after meeting the assumptions of normality, linearity, independency of observations and random sampling. The scatterplot graph illustrates that there is a positive linear relation between the computers attribute scale and attitudes because the points are clustered around a line pointing upward (Figure 1).

The relationship between computer attribute scale and attitudes was examined by the finding out the Pearson product-moment correlation coefficient. There was a large positive and significant correlation between computer attribute scale and attitudes (r (45) = .877, p=0.00). The strength of association r^2=0.769 showing that 76.9% of the variance in attitudes is due to a linear relationship with computer attribute scale. The statistical analysis showed that the output p=0.00 is smaller when the level is set at p<0.01. Thus, it can be concluded that there is relationship between computer attribute scale and the participants' attitudes. It was found that there was a large positive and significant correlation between TESOL in-service teachers' attitudes towards computer use and computer attribute scale.

Next, an analysis of Multiple Regression was performed to accomplish the second objective of the study. Assumptions for this particular test have already been met which are normality, linearity, homoscedasticity, independence of residuals and sample size. The summary of the multiple regression results are shown in Table 1 and Table 2 in which 54.2% of the variance in computer attitude was explained by the independent variables (cultural perception scale and computer competence scale) included in this study (Table 1). Table 2 indicates that the test statistic was significant at the 0.05 level of significance (F (2, 42) = 27.055; *p*=000). Thus, either cultural perception scale or computer competence scale is a significant predictor of TESOL in-service teachers' attitudes towards computer.

As Table 3 illustrates, the results of multiple regression indicate that only cultural perception scale affects TESOL in-service teachers' attitudes towards computer use at the 0.05 level of significance. The following are the absolute values of the standardized estimate (b) of these factors: cultural perception scale (b= .69, t=5.8, *p*=.000), computer competence scale (b=.099, t= .83, *p*=.411). The analysis suggested that only cultural perception scale explained the greatest amount of variance in computer attitudes. Thus, it can be concluded that cultural perception scale is the best predictor of TESOL in-service teachers' attitudes towards computer use.

5. Conclusions and Discussions

The current study was conducted to elucidate whether the correlation exists between TESOL in-service teachers'

attitudes towards computer use and their computer attributes scale and to explore the proportion of variance in TESOL in-service teachers' attitudes towards computer use that can be explained by their cultural perception scale and computer competence scale. It is worth remarking that the current study has contributed to the body of research concerns the importance of TESOL in-service teachers' attitudes in computer integration.

The present study was an attempt to investigate the relationships between TESOL in-service teachers' attitudes at Universiti Sains Malaysia (USM), Penang, Malaysia and a selected set of independent variables (computer attributes, cultural conception scales and computer competence scale). Teachers' attitudes towards computer use have been universally acknowledged as a vital factor for the success of technology integration in education (Rogers, 1995). Findings for the first test of Pearson correlation coefficients in this study reported a statistically large positive and significant correlation existing between TESOL in-service teachers' attitudes towards computer use and computer attribute scale. This implies that having high computer attitudes towards computer use brings about a high positive attribute. This finding was in line with Albirini (2004) in whose study a significantly positive correlation existed between teachers' attitudes toward ICT and computer attributes. In the same respect, the finding was also in accordance with Sooknanan (2002) who found a significant correlation between computer attitudes and computer attributes. Moreover, the outcome of the first test was also consistent with Liu (2009) who demonstrated that there was a significant correlation between students' attitudes and computer attributes.

On the other hand, the second research question was answered by employing Multiple Regressions Analyses where the outcome suggested that the cultural perception scale was the best predictor of TESOL in-service teachers' attitudes towards computer use. This finding was similar to Albirini (2004) whose findings showed a substantial relationship between teachers' attitudes and their cultural perceptions. Likewise, Berner (2003) and Huang (2003) reported findings that teachers' and faculty's cultural perceptions of technology was a significant predictor of their use of computers in the classroom. This result is in agreement with Liu (2009) who found that cultural perceptions of ICT significantly affects learners' ICT attitudes. In accordance with the above outcome, Li (2002) accomplished that significant differences existed in attitudes between Chinese and British students and their national culture.

However, computer competence scale was not a significant predictor of TESOL in-service teachers' attitude (b=.099, t= .83, p=.411). This means that computer competence scale did not predict TESOL teachers' attitudes towards computer use. This finding supported Zhang's study (2007). Yet, earlier researches were generally consistent on the positive effects of computer competence on participants' attitudes towards technology use (e.g., Liu, 2009; Albirini, 2004; Isleem, 2003; Brener, 2003; Monk, et al., 2003; Roussos, 2007; and Sadik, 2006). A potential explanation is that participants in this study do not have equal knowledge of computer use. A second account may be that if the sample had been larger, the finding might have been significant. This can suggest conducting further studies on the case.

Given the recent presence of technology in schools, the responsibility does not merely lie on providing computers for schools, but also fosters a culture of acceptance amongst the end-users of these tools. Therefore, the study of TESOL pre-service teachers' attitudes becomes essential to the technology execution plans since the challenge of technology integration into education is more human than technological (NCREL, 2003).

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Table 1. The results of the multiple regression

R	R^2	Adjusted R^2	Std. Error of the Estimate
0.750(a)	0.563	0.542	0.26947

a. Predictors: (Constant), Computer Competence Scale, Cultural Perceptions Scale

b. Dependent Variable: Attitudes

The summary of the multiple regression results are shown in Table 1 and Table 2 in which 54.2% of the variance in computer attitude was explained by the independent variables (cultural perception scale and computer competence scale) included in this study (Table 1).

Table 2. The results of the ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	3.929	2	1.965	27.055	0.000(a)
Residual	3.050	42	0.073		
Total	6.979	44			

a. Predictors: (Constant), Computer Competence Scale, Cultural Perceptions Scale

b. Dependent Variable: Attitudes

Table 2 indicates that the test statistic was significant at the 0.05 level of significance (F (2, 42) = 27.055; p=000). Thus, either cultural perception scale or computer competence scale is a significant predictor of TESOL in-service teachers' attitudes towards computer.

Table 3. The correlation between cultural perception scale and computer competence scale

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta	B	Std. Error
(Constant)	.748	.403		1.853	.071
Cultural Perception Scale	0.772	0.133	0.694	5.795	0.000
Computer Competence Scale	0.083	0.100	0.099	0.831	0.411

a. Dependent Variable: Attitudes

Table 3 illustrates the results of Multiple Regression Analysis. It indicates that only cultural perception scale affects TESOL in-service teachers' attitudes towards computer use at the 0.05 level of significance. The following are the absolute values of the standardized estimate (b) of these factors: cultural perception scale (b=0.69, t=5.8, p=.000), computer competence scale (b=0.099, t=0.83, p=0.411). The analysis suggested that only cultural perception scale explained the greatest amount of variance in computer attitudes. Thus, it can be concluded that cultural perception scale is the best predictor of TESOL in-service teachers' attitudes towards computer use.
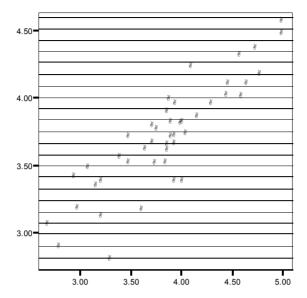
Figure 1. Scatterplot graph for Attitudes and Computer Attribute Scale

The scatterplot above illustrates that there is a positive linear relation between the computers attribute scale and attitudes because the points are clustered around a line pointing upward.