

Factors Affecting Pre-service TESOL Teachers' Attitudes towards Using CD-ROM Dictionary

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Abstract

Rapid technological advances in communication technologies and computational power are altering the nature of knowledge, skills, talents and the know-how of individuals. A CD-ROM dictionary is an interesting and effective teaching tool, which captures pre-service teachers' interest and does much more than just translates especially with the availability of a variety of resources to support language learning and teaching. This research reports on the study undertaken to determine whether some factors (gender and year of study) affect pre-service TESOL teachers' attitudes towards using CD-ROM dictionaries. The theoretical framework for the study is drawn from Diffusion of innovations' theory by Rogers (1995) and TAM model by Davis (1986; 1989). A modified questionnaire is employed to obtain the necessary information on pre-service TESOL teachers' backgrounds, their attitudes towards using CD-ROM dictionaries, and certain factors. A total of (80) pre-service TESOL teacher at a Malaysian higher educational institution was purposively selected for the quantitative data. The findings exhibit that the respondents' gender does not affect their attitudes towards using CD-ROM dictionaries. However, a significant difference is revealed, through employing one-way analysis of group variance (ANOVA), in the mean scores of pre-service TESOL teachers' attitudes among the first, second and third year. Finally, it is concluded that the CD-ROM dictionary is a way of encoding all relevant information associated with lexical entries in a manner easily accessible to users.

Keywords: Pre-service TESOL teachers, CD-ROM dictionary, Factors, Attitudes

1. Introduction

The last two decades witnessed the introduction of different forms of information and communication technologies (ICTs) in English as a second language (ESL) in classrooms such as electronic dictionaries, CD-ROM dictionaries or online dictionaries. CD-ROM dictionaries, as forms of ICT, are great tools to help with students' comprehension and enhance acquiring new vocabularies (Loucky, 2002; 2005). Advances in technology and learning in the information age are changing the nature of learning in general and language learning in particular, providing a wider selection of resources. Recently, learning English via computer assisted instruction and becoming computer literate through learning English is the trend in many ESL/EFL learning and teaching programs. In fact, proficiency in English, for higher education, proves very handy and those who have a good command over the language do very well.

It is worth noting that CD-ROM dictionaries and dictionaries embedded in desktop word-processing programs like spell checker can also be classified as electronic dictionaries (Kusmayanti & Hendryanti, 2008). Thus, it is

important that electronic dictionaries and especially CD-ROM dictionaries are now being used in conducting English lessons whether at schools, universities or training centres (De-Schryver, 2003; De-Schryver & Joffe, 2004). Therefore, learners should use them as helping key tools in learning and development since they help increase their interest in a subject, break the mundane cycle in certain settings, such as in classrooms, and enhance learning by reinforcing the material learned. Additionally, CD-ROM dictionaries compensate for the waste time in turning over pages looking up new words.

Pre-service Teacher Education represents the education and training provided to students' teachers before they have undertaken any teaching. Students ought to obtain a previous degree in a subject of their choice, (e.g. English, Math, Science, and Religion) before entering into any pre-service education. During the pre-service education program, candidates will be given opportunities to develop skills through lesson plans, teaching lessons and classroom management (Le Cornu & Ewing, 2008). Brog (2007) asserts that pre-service teaching is a process that benefits teachers' professional growth and pedagogical activity; it is a period of supervised and guided teaching. Shelley, Cashman, Gunter and Gunter (2007), state that pre-service teachers are expected to progressively adapt themselves from being knowledge receivers into knowledge presenters and ultimately into knowledge facilitators in technology based classroom and hence teachers will have new roles to play that are different from the conventional classroom teaching practices that they were used to.

In the Malaysian context, there are only two studies conducted on electronic dictionaries but none on the CD-ROM dictionary. The first study is carried out by Tan (2003) aiming to compare the efficiency of print and hand-held electronic Learners' dictionary in assisting learners of English as a Second Language (ESL). The other study is also conducted by Tan but this time with Woods (2008) tackling the development and use of hand-held electronic dictionaries in language learning with focusing on the identification and examination of dictionary features perceived as helpful by ESL learners.

Studies on CD-ROM dictionaries are very little in general and studies on pre-service TESOL teachers' attitudes towards this specific type of ICT have seldom been researched in particular. In other words, a substantial amount of research and several survey instruments exist on students' attitudes towards technology at elementary and beginner levels whereas little is available for community college. Therefore, exploring factors (gender and year of study) affecting pre-service TESOL teachers' attitudes towards using CD-ROM dictionaries is needed since dictionaries are helpful tools assisting with acquiring the target language (Cotter, 2009). Hence, the study seeks to achieve two specific objectives; firstly, to compare males and females pre-service TESOL teachers' attitudes towards using CD-ROM dictionaries, and secondly, to compare attitudes towards using CD-ROM dictionaries among pre-service TESOL teachers from the first, second and third years.

2. Materials and Method

Attitudes become an essential component of second language learning pedagogy. According to Sevim et al. (2003), the interaction between language learning and the environmental components, in which the student grew up, is clear and both negative and positive attitudes have a strong impact on the success of language learning. People might simultaneously possess both positive and negative attitudes towards one item. Thus, most attitudes are the result of either observational learning from the environment or direct experience (Ziegler, 2001). In fact, the field of social psychology has considered in depth attitude as a concept; the construct of attitude is complex and multi-dimensional. Although lots of researches have been done on learners' attitudes towards language learning and some towards using electronic dictionaries but little research can be found on pre-service teachers' attitudes towards using CD-ROM dictionaries especially in the Malaysian context. Gaining understanding about pre-service teachers' attitudes towards using CD-ROM dictionaries and the factors that influence those attitudes, have merits as education works towards meeting the needs and demands of students and society (Fleming, 2007).

A dictionary represents a link between words and their conceptual units that reflect standardised and specific meanings. Not surprisingly, accessibility, cost, and size are important factors that differentiate the types of dictionaries. For instance, Nesi (1998; 2000) categorises dictionaries according to the type of user for whom they are designed, their purpose, coverage, organizing principles and the medium in which information are exhibited. Each type has its advantages and disadvantages. There is the monolingual dictionary for foreign students (i.e. non-native speakers) which is often called learner's dictionary and it is the type that teachers often prefer students to use. This type of dictionary is often aimed at a specific language level and may also target specific age groups such as children and junior dictionaries for younger learners, elementary dictionaries, intermediate and advanced learners. The most important differences are in the number of words which can range from a few thousand for beginners to 80-100,000 words and expressions in the case of advanced learner's dictionaries. Furthermore, the language of definitions and explanations is tailored to the level of the learners.

All good dictionaries use a language for the explanation which is as simple and transparent as possible so that it makes it easy for students when look up words. The electronic dictionary offers many of the advantages of modern technology and is becoming increasingly popular. Computer-based dictionaries, unlike Paper-based learners', can hold all the information they need to provide and store existing information in a sufficiently accessible way. There are three types of electronic dictionaries: dictionaries on CD-ROM, hand-held electronic dictionaries, and dictionaries on the internet. The principles of electronic storage are fundamentally the same whether combinations of reference works are stored on computer hard disk or CD-ROM, or just one dictionary is held in a pocket-sized device, or hundreds of dictionaries are available for comprehensive searching on the Internet. The difference among a PC, an electronic notebook, or the World Wide Web is really just one of size; therefore, the quality of information and the range of search routes in all three storage systems are expected to be the same with the promise of increased multimedia capacity at all levels as technology advances (Nesi, 1996; 1998; Pasfield-Neofitou, 2009). Firstly, the hand-held versions contain a great deal of information. Besides, they can make use of sound and perform searches and other scanning operations much faster than we can turn pages. Secondly, dictionaries on CD-ROM are more powerful versions which are becoming a standard feature of many institutions. They will doubtless become increasingly popular as they develop their full potential (Wright, 1998). Thirdly, online dictionaries lie outside the control of the pedagogues and in this they are like hand-held dictionaries. Online dictionaries are usually free to use and considered as searchable dictionaries accessible via the internet (Pasfield-Neofitou, 2009).

The theoretical framework for this study is drawn from Diffusion of Innovations' theory by Rogers (1995). Over time in order to elucidate the adoption of innovations such as information technology, Rogers' theory has been utilised by a wide range of researchers and is employed to steer this study illustrating that teacher's adoption of information technology could be better explained in the context of Diffusion of Innovations' Theory. Besides, this theory describes the innovation-decision process as 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 documents that an innovations' diffusion is a process that happens over time via five stages: knowledge, persuasion, decision, implementation and confirmation. First in the knowledge stage, after an initial exposure to innovation potential adopters ought to be knowledgeable about the innovation via several communication channels; next in the Persuasion Stage those individuals are interested in the innovation and actively seek detailed information about the innovation (i.e. they ought to be persuaded of the value of the innovation). Later in the Decision Stage, they take the concept of the innovation and weigh the advantages/disadvantages of using the innovation and decide whether to adopt or reject the innovation. Due to the individualistic nature of this stage, Rogers realised that it is the most difficult stage to acquire empirical evidence. Consequently in the Implementation Stage, the individual employs the innovation to a varying degree depending on the situation; during this stage the individual determines the usefulness of the innovation and may search for further information about it. Finally in the Confirmation Stage, the individual finalises their decision to continue using the innovation and may use the innovation to its fullest potential (i.e. the decision ought to be reconfirmed or abandoned).

Studies in literature about CD-ROM dictionaries are very few in comparison to the number of studies that tackled hand-held electronic dictionaries, paper dictionaries or even PDAs (Personal Digital Assistance). In fact, the research that was performed by Winkler (2001) is the only study in which he compared between an English Learner's dictionary on CD-ROM and an ordinary reference work. It was found out by conducting two empirical studies that an English Learner's dictionary on CD-ROM is much more than an ordinary reference work for its facilities which are not available in a book. Classroom activities, according to Winkler (2001), can help learners become more comfortable with using dictionaries on their own since learners won't make full use of their dictionaries unless they know how to use them and are motivated to do so. In the same respect, Liou (2000) writes that little is known about how learners make use of dictionaries to understand texts.

Moreover, studies on pre-service TESOL teachers' attitudes reported in the literature towards technology in general are limited. Factors cited as having an effect on attitudes towards technology and computers included: gender; age; presence of a computer at home; completion of a formal technology course and comfort with technology. A doctoral thesis was conducted by Fleming (2007) to investigate the factors that influence community college students' attitudes towards technology in both teaching and learning experiences. The findings demonstrated that neither age nor gender had a significant effect on the community college students' attitudes towards technology. Females were reported being as comfortable with technology in teaching and learning experiences as males. Similarly, Teo (2008) performed a study to examine the attitudes towards the use of computers via utilising a sample of (139) pre-service teachers assessing for their computer attitudes using a Likert type questionnaire with four factors: affect (liking), perceived usefulness, perceived control and behavioural intention to use the computer. The results of this study exhibited no gender or age differences among pre-service teachers on computer attitudes. In the same respect, Spotts

Bowman and Mertz (1997) investigated technology use by faculty at a public university in the Midwestern United States. Results showed that knowledge and experience with some innovative technologies for males were higher than females. No significant differences were found for frequency of use, with the exception of video, where females indicated slightly more frequent use. Both considered technologies of importance to instruction. Besides, females rated factors influencing technology use: time to learn a technology; increased student learning; ease of use; training and available information in discipline as more important than did males.

Likely, Arning and Ziefle (2007) addressed in their study two basic determinants of technology utilisation: the attitude towards a certain technology and the performance when using it especially interacting with a computer simulated PDA device. Certain variables like age, gender, subjective technical confidence, and computer expertise in the relationship between technical performance and acceptance were analysed. The results illustrated that gender had a significant effect on technical self-confidence and TAM factors. Likely, Wong and Hanafi (2007) conducted a quantitative study on gender differences in attitudes towards the usage of Technology at Universiti Putra Malaysia, Malaysia, with 73 female and 29 male student teachers involved as participants. A questionnaire was used to find out attitudes towards technology in terms of three dimensions: usefulness, confidence, and aversion. The results showed that the exposure to information technology (IT) did not contribute to any significant gender difference.

The current study was a descriptive research which employed a quantitative method by using a modified questionnaire to determine whether some factors (gender and year of study) affecting pre-service TESOL teachers' attitudes towards using CD-ROM dictionaries. Purposive sampling technique was used in this study since the selection was based on the researcher's experience and knowledge of the individuals being sampled. Moreover, the participants were already in a specific setting when conducting the research (2003). The researcher used the entire population of (111) pre-service TESOL teachers; however, only (80) participants handed in complete questionnaires. Ten per cent of the respondents were males whereas ninety per cent were females. Regarding year of study, twenty per cent represented the 1st year students, whilst 2nd year students represented twenty two point five per cent. However, the majority were 3rd year students with fifty seven point five per cent. The participants' age ranged as 2.5% of them were 17-19 years old, 66.3% were 20-22 years old, 30% were 23-25, and 1.3% were 26 and over. In terms of ethnicity, the majority was Malay students with 45%, Chinese students represented 37.5%, and Indians represented 13.8% whereas other ethnic groups represented 3.8%. Concerning the mother tongue, it was revealed that Malay as a mother tongue constituted 42.5%, Chinese 37.5%, Tamil 13.8%, English 3.8%, and other languages 2.5%.

Based on the research objectives of this study, there were two hypotheses tested at the significance levels of 0.05 ($\alpha = .05$):

H⁰1: There is no significant difference in the mean attitudes scores for male and female pre-service TESOL teachers towards using CD-ROM dictionaries.

H⁰2: There is no significant difference in the mean attitudes scores among pre-service TESOL teachers from the first, second and third years.

For the purpose of this study, the researcher adapted from 4 questionnaires in an attempt to modify a questionnaire mainly used for collecting data about attitudes towards using CD-ROM dictionaries among pre-service TESOL teachers at a Malaysian higher educational institution. The first questionnaire was used by Winkler (2001) aimed at finding out the actual use of dictionaries by English Learners and their attitudes towards dictionaries in printed and electronic forms. The second questionnaire was used by Yoon and Hirvela (2004) about using the Collins COBUILD Corpus by students in ESL writing. The third questionnaire was used by Weschler and Pitts (2000) about the use of electronic dictionary. The fourth and last one was used by Sobkowiak (2002) about post graduate students' attitudes and beliefs concerning the structure and function of certain features of English electronic dictionaries. All statements were adapted from previous research based on their relevance to the current study.

Regarding validity, the modified questionnaire was validated by a panel of experts represented by three university lecturers whose major specialisation was teaching English to speakers of other languages and one of them minor specialisation was Information and communication Technology. Reliability, on the other hand, was achieved by conducting the pilot study and factor analysis. Hence, the questionnaire was piloted before the actual collection of data by randomly selected 30 students (respondents) to fill in the questionnaire. To examine the internal consistency, Cronbach's Alpha coefficient of a scale should be above 0.7 (Pallant, 2005). The results in the pilot study for this instrument, as shown in Tables 1 and 2, indicated an overall reliability for Cronbach Alpha coefficient 0.878 which was considered ideal (Nunnally, 1978, Pallant, 2005).

On the other hand, factor analysis is frequently used to develop questionnaires attempting to identify underlying variables, or factors, which explain the pattern of correlations within a set of observed variables (Connolly, 2007).

The 20 items of attitudes were subjected to principal components analysis (PCA) using SPSS version 15. Prior to performing PCA the suitability of data for factor analysis was assessed. The Kaiser-Meyer-Olkin value was 0.81, (see Table 3), exceeding the recommended value of 0.6 (Kaiser, 1970; 1974) and the Barlett's Test of Sphericity (Barlett, 1954; Dongsheng, Jiahua, Peide & Yaohua, 2005) reached statistical significance, supporting the factorability of the correlation matrix. Therefore, the results of this analysis support the use of items about attitudes.

The process of data collection took two weeks and it was in two stages. The first stage represented distributing the questionnaires to the selected sample. Three lecturers handed the participants over the questionnaires with brief descriptions on the questionnaire topic. Thus, the researcher received the collected questionnaires from the lecturers of the targeted sample. Among (111) pre-service TESOL teachers, the researcher managed to gather data from (80) teachers because some of them did not return the questionnaires and some handed in incomplete ones.

3. Results

Descriptive and inferential statistics were employed to analyse the collected data by utilising the Statistical Package for the Social Sciences (SPSS) version 15. Descriptive statistics was employed to describe and summarise the properties of the mass of data collected from the respondents, whereas inferential statistics was used to infer the properties of the population from the properties of the sample (Best & Kahn, 2006; Gay, Mills & Airasian, 2009). An independent-samples t-Test and One way analysis of variance (One-Way ANOVA) were used for the purpose of testing the research hypotheses. The scoring of all negatively stated items was reversed for the purpose of conducting the analysis. Taking into consideration that attitudes represent the dependent variable, whilst gender and year of study symbolise the independent variables.

Descriptive statistics was employed to provide information about the sample's participants, the type and nature of dictionary used. It showed that the majority used printed dictionary with a per cent of fifty six point twenty five, whereas the minority three point seventy five per cent of the students used pocket electronic dictionary. Twenty per cent of the students used CD-ROM dictionaries which was similar to the per cent of students used online dictionary. Concerning the nature of dictionary used, it was found that the majority of the students used monolingual dictionary forty seven point five per cent, whereas bilingual dictionary was used by twenty seven point five per cent. Specialised dictionary was the least used among the others with one point twenty five per cent. Moreover, thesaurus was used by thirty two point seventy five per cent of the students. It was also revealed that twenty five per cent of the participants considered the relevance of the CD-ROM dictionary to the learning needs, twenty three per cent of them viewed it as convenient to carry out, a less per cent of eighteen point three per cent considered the reasonable price as their priority, whereas fifteen point four per cent of the respondents considered the number of words as a priority in buying a new CD-ROM dictionary.

Besides, ten point eight per cent of the participants' choices based on the name of the publisher, whilst seven point five per cent on the number of examples. Answering the question about the best criterion in the CD-ROM dictionary, the participants' responses were almost close except four per cent who chose multimedia contents; whereas twenty five per cent of the respondents chose speed of use; and similarly twenty five per cent chose ease of use. On the other hand, a bit higher per cent of respondents twenty six per cent chose functions.

An independent-samples t-Test was employed to answer the first research question. For the purpose of getting accurate results a number of assumptions have to be met before conducting the test. One of which is that there should be only two groups independent of each other. Another one is the distribution of scores of the dependent variable should be normal or symmetrical (i.e. bell-shaped curve). Third, scores in each group must have the same variance (Gravetter & Wallnau, 2000). Table 4 shows that 80 students took part in the study in which 8 of them were males and 72 females respectively. Hence, the first assumption met here because of the two different and independent groups.

Figure 1 represents the test of normality between attitudes towards using CD-ROM of male and female students. According to the Histogram graphs, all the male and female students are normally distributed to some extent. The normality was indicated by the bell shaped curve. Thus, the second assumption met here too. Similarly, attitudes are normality distributed too.

Table 5 shows that the significance level for Levene's Test for equality of variances is 0.286 which is greater than the cut-off .05. Therefore, the assumption of equal variance has not been violated. In this case the first row of the table which refers to Equal Variances assumed should be used (Pallant, 2005). After meeting the assumptions, an independent-samples t-Test was conducted to compare the attitude scores for male and female pre-service TESOL teachers. Table 4 shows that there is no statistically significant difference in scores of males ($M=3.3000$, $SD=0.295$) and females [$M=3.389$, $SD= 0.492$; $t(78) = -0.502$, $p = 0.617$]. Since $p=0.617 > 0.05$, so the first hypothesis was failed to be rejected.

The effect size, calculated using eta squared, was 0.003 (see Structural Equation 1) which means that only 0.3 per cent of the variance in attitudes is explained by gender. Thus, the magnitude of the difference in the means was very small (Cohen, 2007).

$$\text{Eta squared} = \frac{t^2}{t^2 + (N1 + N2 - 2)}$$

$$\text{Eta Squared} = \frac{(-.502)^2}{(-.502)^2 + (8 + 72 - 2)} \quad (1)$$

$$\text{Eta Squared} = 0.0032204$$

Next, one-way analysis of variance (ANOVA) was employed to answer the second research question. Three assumptions should be considered in using this type of inferential statistics in order to get correct results. First, one-way analysis of variance (ANOVA) is used only when there is one nominal independent variable with 3 groups or above (i.e. observation should be independent of each other) and one continuous dependent variable. Second, a population from which samples are obtained should be normally distributed. Last, scores in each group must have the same variance (Pallant, 2005; Tabachnick & Fidell, 2007). All the assumptions were fulfilled in the fact that the independent variable (year of study) has 3 groups which are independent of each other as shown in Table 6.

Furthermore, the Figures 2(a) and (b) represent normality of distributions for the samples since the reasonably straight line in Q-Q Plot suggests a normal distribution and similarly the bell shape in the histogram (Pallant, 2005). Besides, Levene's test for homogeneity of variances (see Table 7) shows that the significance value (Sig.) is greater than 0.05 since $P = .264$. As a result, the assumption of equal variance has not been violated. In this case the first row of the table which refers to Equal Variances assumed should be used. Thus, the third assumption also met. Since the assumptions met, proceeding with the hypothesis test became possible. Next, a one-way between group analysis of variance (ANOVA) was carried out. Table 8 makes it clear that there was a statistically significant difference in the mean attitudes scores among pre-service TESOL teachers from the first, second and third years [$F(2, 77) = 4.230, p = 0.018$]. Thus, the second null hypothesis is rejected since the p value is smaller than 0.018. Therefore, it is concluded that there is a significant difference in the mean attitudes scores among pre-service TESOL teachers from the first, second and third years.

The effect size, calculated using eta squared, was 0.1 (see Statistical Equation 2) which means that only 10 per cent of the variance in attitudes is explained by year of study. Hence, the magnitude of the differences in the means was large (Cohen, 1988).

$$\text{Eta Squared} = \frac{\text{Sum of Squares between-groups}}{\text{Total sum of squares}}$$

$$\text{Eta Squared} = \frac{1.773}{17.907} \quad (\text{values taken from Table 8}) \quad (2)$$

$$\text{Eta Squared} = 0.09901$$

$$\text{Eta Squared} = 0.1$$

Post-hoc comparisons using the Tukey HSD test showed that the mean score for the 1st year students ($M = 3.128, SD = 0.41$) was significantly different from the 3rd year students ($M = 3.498, SD = 0.515$) since $p = .018 < 0.05$. However, the 1st year students did not differ significantly from the 2nd year students ($M = 3.3028, SD = 0.31177$), nor did 2nd year students differ significantly from the 3rd year students since p value is greater than 0.05 (see Table 9).

4. Discussion

First, findings for the Independent sample t-Test revealed that there was no statistical significant difference in the mean attitudes scores for male and female pre-service TESOL teachers towards using CD-ROM dictionaries after failing to reject the 1st null hypothesis. Therefore, it was concluded that gender as a factor did not affect attitudes. A potential explanation could be because males represented only 10% of the sample, whereas females constituted the majority with 90%. This finding was in line with previous researches: Fleming (2005), Teo (2008) and Wong and Hanafi (2007). The results in Fleming's thesis (2005) revealed that there was no significant effect for gender on the post-secondary students' attitudes towards technology. Similarly, the results in Teo's study (2008) exhibited no gender differences among pre-service teachers on computer attitudes. In the same respect, the results in Wong and

Hanafi's study (2007) showed that the exposure to information technology (IT) did not contribute to any significant gender disparity. However, the finding of this study regarding gender was inconsistent with Arning and Ziefle (2007) where gender was found to be significantly affecting on technical self-confidence and TAM factors.

Consequently, the finding for the second test One-Way between group analysis of variance (ANOVA) exhibited that there was a significant difference in the mean attitudes scores among pre-service TESOL teachers from the first, second and third years since the second research hypothesis was rejected. More specifically, the mean score for the 1st year students ($M = 3.128$, $SD = 0.41$) was significantly different from the 3rd year students ($M = 3.498$, $SD = 0.515$) after employing post-hoc comparisons utilizing the Tukey HSD test. The relevance of this finding was not only because the result was significant; however, what was more crucial that it exposed the novelty of the research in the sense that previous studies by Arning and Ziefle (2007), Fleming (2005) and Teo (2008) examined the impact of age as a factor in determining attitudes towards technology and not year of study. Due to the fact that the ages of the participants were very close varied from late eighteens till early twenties, the researcher did not consider age as an influencing factor but regard year of study instead. Hence, year of study was revealed to have a role in affecting pre-service TESOL teachers' attitudes.

5. Summary and Concluding Remarks

Using CD-ROM dictionaries in acquiring the new language is believed to be beneficial because it allows individual mental resources to develop and provides opportunities for language learners to explicitly focus on forms while expressing their intended meaning as accurately and coherently as possible (Fleming, 2007). Regarding the recent existence of technology in schools, the duty does not merely lie in equipping schools with different ICT forms, but also fostering a culture of acceptance amongst the end-users of these tools. Therefore, the study of pre-service TESOL teachers' attitudes becomes crucial to the technology execution plans since the challenge of technology integration into education is more human than it is technological.

A CD-ROM dictionary is an interesting and effective teaching tool which captures pre-service teachers' interest and does much more than just translates especially with the availability of a variety of resources to support language learning and teaching. Hence, the fear of inadequacy in language usage is removed and the panic of being-on-the-spot is ameliorated especially with the rapid development of information technology.

To sum, the findings indicate that CD-ROM dictionaries can be used in more flexible, novel and extended ways for English as a foreign/second language vocabulary teaching/learning in both formal and informal learning environments in higher education and schools as well. Hence, the CD-ROM dictionary is a way of encoding all relevant information associated with lexical entries in a manner easily accessible to users.

6. Recommendations for Further Studies

Based on the results of this study future research recommendations address the respective groups for whom the findings may be relevant to enrich the existing knowledge in the area being investigated. Founded on the data analyses and findings, the following recommendations are demonstrated for consideration:

- i. Since the current study is the first of its kind in the Malaysian context, similar studies are needed to generate more understanding in this area. Such studies may consider changing the setting, population, sampling procedures, or data collection methods employed in the current study. For example, future researchers may examine the attitudes of in-service teachers in other educational institutions or in other states as well.
- ii. Future research should be conducted in developing countries where introduction of the CD-ROM dictionary is still in its initiatives and the importance of such research will be in exploring learners' and teachers' attitudes towards this relevant type of ICT.
- iii. Future research should focus on training formats for pre-service teachers on using the CD-ROM dictionaries which facilitate a successful interaction with technical devices.
- iv. While the current study found that gender was not significant in determining pre-service TESOL teachers' attitudes towards using CD-ROM dictionaries, following research may focus on other factors such as presence of computer at class/home or CD-ROM negatives. Besides, age could be a factor for investigation as well especially among samples that vary in age like for instance in schools to determine whether age makes a difference in attitudes towards using CD-ROM dictionaries.
- v. Given the substantial weight of year of study in determining attitudes, future studies should examine the effect of this factor in different educational settings. This factor is particularly important in primary, elementary and secondary school as well.

vi. Findings indicate that pre-service TESOL teachers have already gone through the Knowledge, Persuasion and decision stages of adoption. Further research should be done to identify the future adoption stages specific to the Malaysian pre-service teachers.

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Table 1. Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded(a)	0	.0
	Total	30	100.0

Table 2. Reliability Statistics for Attitude

Cronbach's Alpha	No. of Items
.878	37

Table 3. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling		.813
Bartlett's Test of Sphericity	Approx. Chi-Square	968.336
	df	190
	Sig.	.000

Table 4. Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean	Percent	Valid Percent	Cumulative Percent
Attitudes	Male	8	3.3000	.29520	.10437	10.0	10.0	10.0
	Female	72	3.3896	.49276	.05807	90.0	90.0	100.0
	Total	80				100.0	100.0	

Table 5. Independent Sample t-Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
		Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
Attitudes	Equal variances assumed	1.154	.286	-.502	78	.617	-.08958	.17828	-.44451	.26534
	Equal variances not assumed			-.750	11.893	.468	-.08958	.11944	-.35007	.17091

Table 6. Descriptives (Attitudes per Year of Study)

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
	Lower Bound	Upper Bound	Lower Bound	Upper Bound	Lower Bound	Upper Bound	Lower Bound	Upper Bound
1st year	16	3.1281	.41027	.10257	2.9095	3.3467	2.45	3.70
2nd year	18	3.3028	.31177	.07348	3.1477	3.4578	2.65	3.70
3rd year	46	3.4989	.51548	.07600	3.3458	3.6520	1.90	4.60
Total	80	3.3806	.47611	.05323	3.2747	3.4866	1.90	4.60

Table 7. Test of Homogeneity of Variances

Levene Statistic	df1	df2	Sig.
1.357	2	77	.264

Table 8. One-Way ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.773	2	.886	4.230	.018
Within Groups	16.135	77	.210		
Total	17.907	79			

Table 9. Post Hoc Tests Multiple Comparisons among Year of Study Groups (Dependent Variable: Attitudes Tukey HSD)

(I) Year	(J) Year	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
		Lower Bound	Upper Bound	Lower Bound	Upper Bound	Lower Bound
1st year	2nd year	-.17465	.15728	.511	-.5505	.2012
	3rd year	-.37079(*)	.13286	.018	-.6883	-.0533
2nd year	1st year	.17465	.15728	.511	-.2012	.5505
	3rd year	-.19614	.12727	.278	-.5003	.1080
3rd year	1st year	.37079(*)	.13286	.018	.0533	.6883
	2nd year	.19614	.12727	.278	-.1080	.5003

* The mean difference is significant at the .05 level.

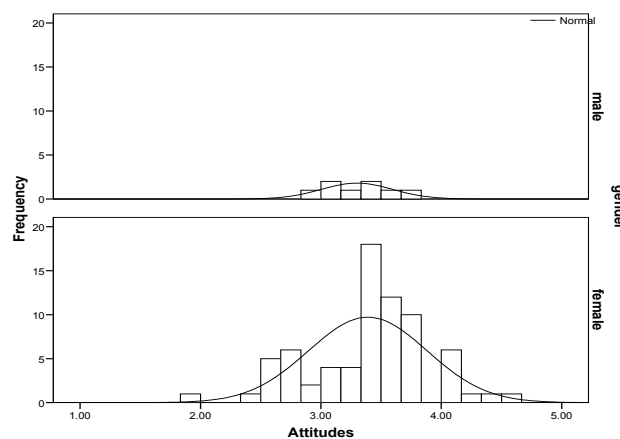


Figure 1. Histograms of Gender and Attitudes

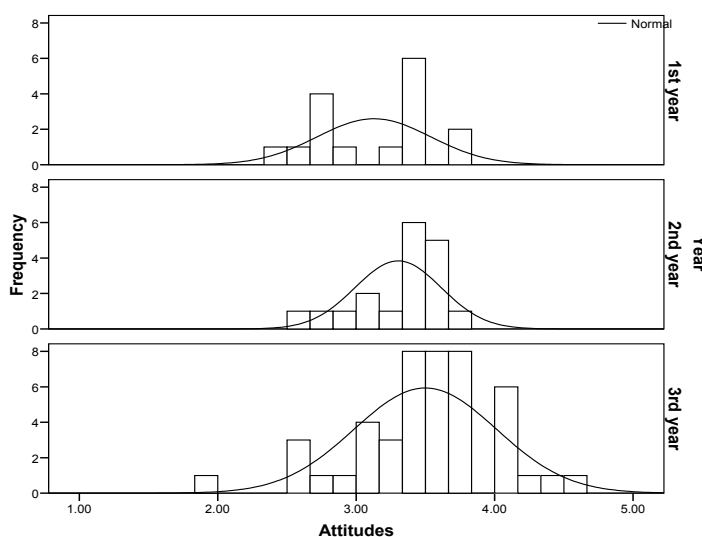


Figure 2. Histograms of Year of Study and Attitudes

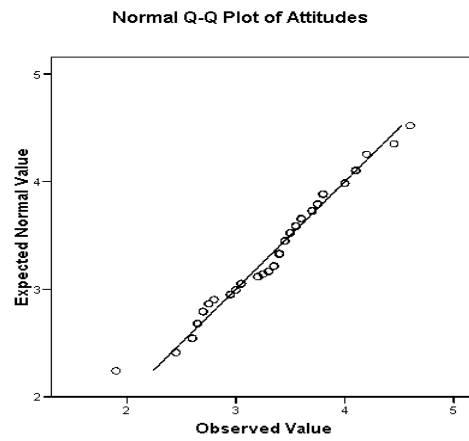


Figure 3. Normal Q-Q Plot of Attitudes