

Examining High School Teachers' Attitudes towards ICT Use in Education

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Abstract

The present study aimed at examining high school teachers' attitudes towards ICT use in education. With this regard, we examined whether the teachers' attitudes significantly differ according to their gender, age, teaching experience, ICT experience, ICT skills and ICT training. The participants consisted of 353 teachers working in different high schools in Ankara in the academic year 2016-2017. Research results illustrated that teachers have a high level of positive attitude towards ICT use in their classes, yet there is no significant difference between teachers' ICT willingness by their gender, age, teaching experience, ICT experience, ICT skills and ICT training. However, they have significantly different negative attitude (ICT anxiety) towards ICT use in education by their ICT experience, ICT skills and ICT training.

Keywords: ICT attitude, ICT willingness, ICT anxiety, ICT integration, teachers' attitudes

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Introduction

Recent developments in Information and Communication Technologies (ICT) have brought significant changes in the field of education, just as in many other aspects of our daily lives. These developments have palpably had an impact on teachers, students, and schools particularly school curricula, including teaching and learning process. In line with these developments, more recently many developed and developing countries regarded the use of ICT in education as a prominent leverage to achieve educational transformation (Aydin, Gurol, & Vanderlinde, 2016; Cetinkaya, 2017), improve the quality of instruction (Almadhour, 2010; Buabeng-Andoh, 2012; Hew & Brush, 2007), overcome a number of critical problems that many educational systems face in the 21st century, such as educational equity and students' procurement of 21st century skills (Celik & Kahyaoglu, 2007; Prensky, 2006; Nutt, 2010). However, effective use of ICT in teaching and learning is a complex and multifaceted process that includes various teacher level and school level conditions (Aydin, Gurol, & Vanderlinde, 2016; Vanderlinde & van Braak, 2011).

Previous studies acknowledged that a number of teacher level factors influence teachers' ICT use in their classes. These include teachers' demographics (Bebell, Russell, & O'Dweyer, 2004; Inan & Lowther, 2010; Robinson, 2003; Seraji, Ziabari, & Rokni, 2017; van Braak, Tondeur, & Valcke, 2004), their ICT knowledge and skills (Eteokleous, 2008; Goktas, Gedik, & Baydas, 2013; Hew & Brush, 2007; Hohlfeld, Ritzhaupt, Barron, & Kemker, 2008), their motivation, workload and lack of time (Demiraslan, & Usluel, 2005; Ercelik, 2004; Galanouli, Murphy, & Gardner, 2004; Guoyuan, Valcke, van Braak, Tondeur, & Zhu 2011; Keengwe, Onchwari, & Wachira, 2008; Van Braak et al., 2004). In addition, some researchers focused on school level conditions, such as technology access, technical and institutional support, and ICT infrastructure (Bullock, 2004, Hohlfeld, et al., 2008; Inan & Lowther, 2010; Mumtaz, 2000).

Amongst all these conditions, teachers' ICT attitudes, ICT skills, and their ICT training have gained currency in regard to effective integration of ICT in today's educational settings. In this context, improving teachers' ICT skills and competences has become critical since teachers have a pivotal role in effective use of ICT in teaching and learning. In this vein, many countries are providing teachers with ICT training in order to improve their ICT skills and knowledge. These training activities not only foster teachers' ICT knowledge and skills, but also they can improve their beliefs and attitudes towards ICT use in education.

Previous research also indicated that another major factor influencing teachers' ICT use in their classes is their attitude towards ICT. Attitudes can be defined as an element that guides the behaviour of the individual, the integrity and consistency in the feelings, thoughts and behaviours of an object (Tavsancil, 2005). In this regard, teachers' attitudes towards ICT use are regarded as the driving force behind their ICT use behaviour in many studies (Aydin, & Semerci, 2017). Although teachers' attitudes play a major role in incorporation of ICT in their classes, there are few studies examining high school teachers' attitudes towards use of ICT in education. Thus, there is a need for further studies to examine teachers' attitudes towards ICT use in education. In view of this gap, the main objective of this research is to examine high school teachers' attitudes towards ICT use in education in terms of different variables. Framed by this aim, answers to the following questions were sought.

1. What are the attitudes of teachers towards ICT use in education?
2. Is there a significant difference between teachers' attitudes towards ICT use in education by their gender their gender, age, teaching experience, ICT experience, ICT skills and ICT training?

Method

Research Design

The current study employed a non-experimental descriptive survey design in order to examine teachers' attitude towards ICT use. In addition, we investigated whether their attitudes significantly differ through a number of conditions including gender, age, teaching experience, ICT experience, ICT skills and ICT training. Survey designs in educational research are very popular, practical, flexible, and low-cost, in addition to allowing to describe a situation by collecting large amount of data from natural context, not setting up an artificial cite like experimental designs (Muijs, 2004). In this regard, we utilized a survey design in our study.

Research Context

The first efforts pertinent to incorporation of computers into education in Turkey commenced in the 1960s (Keser, 2011). As of late 1970s, integration of new technologies in education system in Turkey has been accelerated in line with different political and strategic activities (Alkan, 1977). From the 1980s onward, a number of initiatives have been invested to improve ICT infrastructure of schools, provide educational and administrative personnel with ICT training, overhaul the curriculum and develop e-learning contents. From the beginning of new millennium up to date, bridging the digital divide across the regions and schools of Turkey, incorporation of ICT into teacher training programs, mapping and evaluating ICT integration have been paid more attention (Bardakci & Keser, 2017).

The most recent and ambitious of these efforts is the Movement of Enhancing Opportunities and Improving Technology (FATİH) project, announced by the Ministry of National Education (MoNE) in 2010. The FATİH Project was claimed to enable equality of opportunity in education regarding students' access to technology. In this vein, the FATİH project aimed to provide the necessary hardware and software infrastructure for all classrooms across Turkey to supply broadband internet connection, provide and manage e-content, in-service trainings for teachers to use ICT technologies effectively and efficiently, and establish the required web platforms. During the course of the project, each and every classroom in Turkish schools are projected to be equipped with technological devices such as PCs, projection, multi-function printer, camera, and interactive board, fast and secure internet connection.

Educational Information Network (EBA), where e-contents are created and shared amongst teachers and students was another important component of the FATİH project. Correspondingly, EBA has become an effective social education platform where interactive e-content, z-books, individual and classroom learning materials, simulations, animations, videos and visuals are produced and shared (MEB, 2015; 2017a).

Along with many other interrelated factors, successful ICT integration requires a sound technology infrastructure, convenient curriculum, professionally competent teachers, supportive administrative and technical staff and skilled students. Besides the mentioned factors, teachers' attitudes play a critical role for the success of ICT use in education (Keser, & Cetinkaya, 2013). Thus, high school teachers' ICT attitude have become under scrutiny in our study in a context of FATİH project.

Participants

The study group composed of 353 teachers working in different high schools in Ankara province of Turkey in the academic year 2016-2017. Given the impossibility of reaching all teachers in the population, a total of 19.684 high school teachers all around Ankara (MEB, 2017b), in the capital and second largest city of Turkey, the researchers had to sample the population. With this

regard, based on some criteria such as delivery of questionnaires to the participants who took part in the study on a voluntary basis, transportation costs and time use limitations have been taken into consideration. Consequently, we employed a convenience sampling technique (Creswell, 2012) and delivered 400 pen-and-paper questionnaires to high school teachers from four districts of Ankara (Cankaya: 3.180 teachers, Etimesgut: 1.524 teachers, Sincan: 1.686 teachers and Yenimahalle: 2.838 teachers). The return rate of valid questionnaires was 88.25% for a sample of 353 high school teachers working in public high schools in four districts of Ankara.

The demographics of the participants illustrated that 57.5% were females, 60% aged under 40, 65% with a teaching experience of more than 10 years, 51.5% with a good level perceived ICT skills, 62% with an ICT experience of more than 10 years, 63.5% attended at least 1-3 ICT training.

Data Collection Instruments

The research data were collected through TICTAS (Teachers' ICT Attitudes Scale) developed by Aydin and Semerci (2017). TICTAS consisted of two parts. The first part included six descriptive questions such as gender, age, teaching experience, perceived ICT skills, ICT experience, and ICT training. The second part consisted of five-point Likert type 16 items, scored as (1) "I completely do not agree", (2) "I do not agree", (3) "I am neutral", (4) "I agree" and (5) "I completely agree". Those 16 items factorized as two dimensions, namely ICT Willingness (11 items) and ICT Anxiety (5 items). In order to test the psychometric quality of the scale the Cronbach-Alpha coefficient was calculated as 0.74 for scale total, which showed an acceptable level of reliability.

Data Analysis

Data were analysed utilizing descriptive statistics, such as means, standard deviation, and reliability analysis including internal consistency coefficient (Cronbach Alpha) analysis, as well as univariate statistics, such as independent samples t-Test, one-way ANOVA and Scheffe as a post-hoc. Statistical Packet for Social Sciences 21.0 (SPSS) package program was used for all types of analyses in the study. With regard to the comparison of means in Likert-type scales, the scores were standardized based on the formula (highest score – lowest score: number of options: 5-1:5= 0.80). Based on the interval of 0.80, the mean scores between 1.00 to 1.80 were graded as “very low”, 1.81 to 2.60 as “low”, 2.61 to 3.40 as “modest”, 3.41 to 4.20 as “high”, and 4.21 to 5.00 as “very high”.

Results

Descriptive findings on teachers' attitude towards ICT use in education

The results of descriptive analysis on teachers' attitude toward ICT use in education, loaded in two factors, namely; ICT willingness and ICT anxiety, were presented in Table 1.

Table 1. Teachers' Attitude towards ICT use in Education

Item	<i>I believe ICT Use in Education...</i>	<i>M</i>	<i>SD</i>
1	increases the quality of teaching and learning process	4.16	1.03
4	is a fruitful means in attaining the educational targets	4.09	1.03
5	offers various teaching and learning opportunities	4.23	1.03
6	makes it easy for me to plan my teaching	4.20	.96
7	increases students' success in my class	4.00	.97
9	makes teaching easier for teachers	3.97	1.02

11	increases my students' involvement in my class	4.07	.98
12	offers alternative learning opportunities such as e-learning and mobile learning	4.07	.96
13	will be beneficial at each stage of teaching process	3.80	.99
15	plays a critical role in contemporary education	3.03	1.19
16	makes students' learning permanent	3.77	.99
ICT Willingness Overall		3.94	.75
Item	<i>I am afraid that ICT use in education...</i>	<i>M</i>	<i>SD</i>
2	leads to an underestimation of teachers' role	1.95	1.05
3	trivializes teachers	1.85	1.02
8	turns teaching into a monotonous and mechanical process	1.93	1.06
10	will take the place of teachers in the future	1.80	1.06
14	harms teachers' innovativeness	2.23	1.10
ICT Anxiety Overall		1.95	.78

As presented in Table 1, the teachers have a high level positive overall attitude (ICT willingness, $M= 3.94$, $SD= .75$) towards ICT use in education. However, the results also illustrated that they still have some anxiety towards ICT, yet at a low level (ICT anxiety, $M= 1.95$, $SD= .78$). In addition, the results also displayed that teachers believe that ICT use in education offers various teaching and learning opportunities ($M= 4.23$) and it also makes it easy for them to plan their teaching ($M= 4.20$). On the negative side, teachers are afraid that the use of ICT in education does harm on their innovativeness ($M= 2.23$).

Comparative findings on teachers' attitude towards ICT use by gender

The results of comparative analysis on teachers' attitude toward ICT use in education by their gender were presented in Table 2 below.

Table 2. Teachers' Attitude towards ICT Use by Gender

Factor	Groups	<i>n</i>	<i>M</i>	<i>SD</i>	<i>SE</i>	<i>df</i>	<i>t</i>	<i>p</i>
ICT Willingness	Male	150	3.93	.71	.05	351	-.305	.76
	Female	203	3.96	.79	.06			
ICT Anxiety	Male	150	1.90	.70	.05	351	-1.482	.15
	Female	203	2.02	.86	.07			

With a closer look at Table 2 that presents the mean scores and independent samples *t*-Test results regarding teachers' ICT attitude towards ICT use by gender, there is no significant difference between male and female teachers' ICT willingness [$t(351) = -.305$; $p > .05$], and their ICT anxiety [$t(351) = -1.438$; $p > .05$].

Comparative findings on teachers' attitude towards ICT use by age

In order to examine whether there is a statistically significant difference between the teachers' attitude towards ICT use by their age, we employed a One-way ANOVA and Scheffe as a post-hoc. Prior to ANOVA the homogeneity of the variance within the cases was tested with Levene's test. The Levene's test results (ICT willingness, $p = .301$; ICT anxiety, $p = .647$) illustrated that the distribution is parametric, thus the assumption of normality is not violated.

Table 3. Teachers' attitude towards ICT use by age

Factor	Groups	<i>n</i>	<i>M</i>	<i>SD</i>	<i>SE</i>	<i>df</i>	<i>F</i>	<i>p</i>
ICT Willingness	21-30	66	4.02	.82	.10	3-349	.770	.51
	31-40	145	3.97	.69	.05			
	41-50	124	3.87	.76	.07			
	51-60	18	3.95	.80	.18			
ICT Anxiety	21-30	66	1.20	.80	.10	3-349	1.538	.20
	31-40	145	1.86	.78	.07			
	41-50	124	2.00	.73	.07			
	51-60	18	1.95	.89	.21			

Given in Table 3, the One-Way ANOVA results displayed that there is no significant difference between teachers' ICT use regarding their ages [ICT willingness, $F(3-349) = .770$; $p > .05$; ICT anxiety, $F(3-349) = 1.538$; $p > .05$].

Comparative findings on teachers' attitude towards ICT use by their teaching experience

The comparative results regarding the difference between the teachers' attitude towards ICT use by their teaching experience were presented in Table 4 below. Prior to ANOVA the homogeneity of the variance within the cases was tested with Levene's test. The Levene's test results (ICT willingness, $p = .074$; ICT anxiety, $p = .648$) illustrated that the distribution is parametric, thus the assumption of normality is not violated.

Table 4. Teachers' Attitude towards ICT Use by Teaching Experience

Factor	Groups	<i>n</i>	<i>M</i>	<i>SD</i>	<i>SE</i>	<i>df</i>	<i>F</i>	<i>p</i>
ICT Willingness	1-5 years	57	4.00	.79	.11	3-349	1.098	.35
	6-10 years	65	3.84	.81	.10			
	11-15 years	78	4.04	.60	.07			
	16 and above	153	3.91	.77	.06			
ICT Anxiety	1-5 years	57	2.07	.81	.11	3-349	.974	.41
	6-10 years	65	1.92	.84	.10			
	11-15 years	78	1.84	.73	.08			
	16 and above	153	1.97	.76	.06			

The One-Way ANOVA results displayed in Table 4, illustrated that there is no significant difference between teachers' ICT use regarding their teaching experience [ICT willingness, $F(3-349) = 1.098$; $p > .05$; ICT anxiety, $F(3-349) = .974$; $p > .05$].

Comparative findings on teachers' attitude towards ICT use by their ICT experience

The comparative results regarding the difference between the teachers' attitude towards ICT use by their ICT experience were presented in Table 5 below. Prior to ANOVA the homogeneity of the variance within the cases was tested with Levene's test. The Levene's test results (ICT willingness, $p = .600$; ICT anxiety, $p = .038$) illustrated that the distribution is parametric, thus the assumption of normality is not violated.

Table 5. Teachers' Attitude towards ICT Use by ICT Experience

Factor	Groups	<i>n</i>	<i>M</i>	<i>SD</i>	<i>SE</i>	<i>df</i>	<i>F</i>	<i>p</i>	Scheffe
ICT Willingness	1-5 years	11	3.56	.68	.20	3-349	1.132	.34	
	6-10 years	87	3.91	.70	.08				
	11-15 years	128	3.97	.71	.06				
	16 and more	127	3.94	.82	.07				
ICT Anxiety	1-5 years	11	2.69	1.10	.33	3-349	3.962	.00	1 > 2, 3, 4
	6-10 years	87	1.98	.66	.07				2 < 1
	11-15 years	128	1.86	.71	.06				3 < 1
	16 and more	127	1.95	.86	.08				4 < 1

According to the comparative results given in Table 5, there is no significant difference between teachers' ICT willingness [$F(3-349) = 1.132; p > .05$]; by their ICT experience. Yet, the results also indicated that there is a significant difference between teachers' ICT anxiety [$F(3-349) = 3.962; p < .05$] by their ICT experience. For a deeper exploration of the significant mean scores across the categories of ICT experience, Scheffe was conducted as a post-hoc test. Scheffe results illustrated that the teachers with 1 through 5 year ICT experience feel significantly more anxious about use of ICT in teaching and learning ($M = 2.69, SD = 1.10$) compared with the teachers of other ICT experience categories [6-10 years, ($M = 1.98, SD = .66$); 11-15 years, ($M = 1.86, SD = .71$); 16 years and more, ($M = 1.95, SD = .86$)].

Comparative findings on teachers' attitude towards ICT use by their ICT skills

The ANOVA results regarding the difference amongst the teachers' attitude towards ICT use by their ICT skills were given in Table 6 below. Prior to the analysis, the homogeneity of the variance within the cases was tested with Levene's test. The Levene's test results (ICT willingness, $p = .051$; ICT anxiety, $p = .427$) illustrated that the distribution is parametric, thus the assumption of normality is not violated.

Table 6. Teachers' Attitude towards ICT Use by Perceived ICT Skills

Factor	Groups	<i>n</i>	<i>M</i>	<i>SD</i>	<i>SE</i>	<i>df</i>	<i>F</i>	<i>p</i>	Scheffe
ICT Willingness	Low	27	3.75	.56	.11	3-349	1.975	.12	
	Medium	144	3.87	.66	.06				
	High	131	4.01	.77	.07				
	Excellent	51	4.07	.95	.13				
ICT Anxiety	Low	27	2.33	.74	.14	3-349	3.028	.03	1 > 3
	Medium	144	1.99	.72	.06				
	High	131	1.88	.80	.07				3 < 1
	Excellent	51	1.82	.84	.12				

Given in Table 6, the comparative results indicated that there is no significant difference between teachers' ICT willingness [$F(3-349) = 1.975; p > .05$]; by their perceived ICT skills. However, regarding their ICT anxiety, there is a significant difference between teachers' ICT anxiety [$F(3-349) = 3.028; p < .05$] by their ICT skills as they perceived. For a further analysis of the significant mean scores across the levels of their perceived ICT skills, Scheffe and Dunnet C were conducted as a post-hoc test. Dunnet C results illustrated that the teachers with low level ICT skills feel significantly more anxious about educational use of ICT compared with the ones with high level ICT skills [low level ICT skill, ($M = 2.33, SD = .74$); high level ICT skills, ($M = 1.88, SD = .80$)].

Comparative findings on teachers' attitude towards ICT use by their ICT training

The results regarding the teachers' attitude towards ICT use by their ICT training experience were given in Table 7 below. Prior to the analysis, the homogeneity of the variance within the cases was tested with Levene's test. The Levene's test results (ICT willingness, $p = .028$; ICT anxiety, $p = .190$) illustrated that the distribution is parametric, thus the assumption of normality is not violated.

Table 7. Teachers' Attitude towards ICT Use by ICT Training

Factor	Groups	<i>n</i>	<i>M</i>	<i>SD</i>	<i>SE</i>	<i>df</i>	<i>F</i>	<i>p</i>	Scheffe
ICT Willingness	None	50	3.88	.73	.10	3-349	1.355	.26	
	1-3	224	3.92	.71	.05				
	4-6	54	4.12	.65	.09				
	7 and more	25	3.86	1.20	.24				
ICT Anxiety	None	50	2.18	.88	.12	3-349	4.447	.00	1 > 3
	1-3	224	1.98	.76	.05				
	4-6	54	1.67	.64	.09				3 < 1
	7 and more	25	1.79	.83	.17				

The comparative results presented in Table 7 illustrated that there is no significant difference between teachers' ICT willingness [$F(3-349) = 1.355$; $p > .05$] by the number of ICT training they involved. However, regarding their ICT anxiety, there is a significant difference between teachers' ICT anxiety [$F(3-349) = 4.447$; $p < .05$] by their ICT training experience. In order to analyse what mean scores significantly differ across the number of teachers' ICT training, Scheffe was administered as a post-hoc test. Scheffe results indicated that the teachers with no previous ICT training feel significantly more anxious about ICT use in teaching and learning compared with the teachers who previously attended 4 to 6 ICT training [no-ICT training, ($M = 2.18$, $SD = .88$); 4-6 ICT training, ($M = 1.67$, $SD = .64$)].

Discussion

The present study investigated the attitudes of teachers towards ICT use in education and whether their attitudes differ subject to the variables, such as gender, age, teaching experience, ICT experience, ICT competencies and ICT training. Effective incorporation of ICT in teaching and learning in an educational setting may be influenced by many interrelated factors, including teacher, school and national level conditions. Yet amongst all these conditions, teachers have a central role in integration of ICT in their classes. Thus, improving teachers' ICT skills, and their attitudes are critical to an effective integration of ICT in school settings.

The current study revealed invaluable results; however, it is important to note that some limitations still inherent. First, teachers' ICT attitudes are not the only, but one of the factors that have an influence on teachers' ICT use during teaching and learning process. Second, since the sample size is limited to the teachers, working at high schools in Ankara, the results of the study cannot be generalised to other schools from different levels of education. Third, the effects of different variables may vary subject to some other factors such as schools' ICT infrastructure, school managers' approach to use of ICT etc. The quantitative nature of the study is another factor that might affect the results; thus, further research is needed to employ both qualitative and quantitative methods to explore factors that affect teachers' ICT attitudes. Despite the abovementioned limitations, since our results are robust and promising, the present study will contribute to the literature and might be useful during teacher-training programme development process.

Research results revealed that the teachers have a high level positive overall attitude towards ICT use in education. This result overlapped with the findings that teachers displayed positive attitudes

towards ICT use in education (Eyyam, Menevis, & Dogruer, 2010; Lau & Sim, 2008; Özdamlı, Hürsen, & Özçınar, 2009). Yet, the results illustrated that teachers still have a low level anxiety towards ICT use in education. The findings also illustrated that there is no significant difference between teachers' attitudes towards ICT use regarding their gender. This result concurred with many previous research findings (Cavas, Cavas, Karaoglan, & Kislá, 2009, Cavas & Kesercioglu, 2003; Norris, Sullivan, Poirot, & Soloway, 2003).

Findings also indicated that there is no significant difference between teachers' ICT use regarding their age. However, some previous studies argued that there is a significant difference between age and teachers' attitudes towards ICT use (Cavas et al., 2009; Deniz, 2005; Seraji et al., 2017). These studies showed that young teachers have more favourable computer attitudes and lower computer anxiety than older teachers. Unlike the findings of the present study, Lau and Sim (2008) claimed that the higher age group teachers use computer technology more frequently than the younger teachers and are eager to adopt ICT in education. This is explained by the fact that the high age group of teachers can easily integrate ICT into the educational process because of their experience in teaching, classroom management and computer use.

Another finding indicated that there is no significant difference between teaching experience and teachers' attitudes towards ICT use in education, which concurred with the findings of a previous study (Bebell et al., 2004). On the other hand, Deniz (2005), and Inan and Lowther (2010) found that teachers with less teaching experience have more positive computer attitudes. These results can be interpreted as new graduate teachers have more and up-to-date knowledge about new technologies and technology integration besides being eager to use ICT. Similarly, the results of the research carried out by Karaca, Can and Yildirim (2013) indicated that teaching experience has a direct and negative influence on the technological competencies and the beliefs and the use of technology. This result is important for teachers who have more teaching experience to determine the training needs for technology use and to provide necessary education. Contrary to this research finding, the research conducted by Baek et al. (2008), and Russell et al. (2007) showed that teachers with less teaching experience are less likely to use ICT in their classes.

The research results also revealed that there is no significant difference between teachers' ICT willingness by their ICT experience. This result differed from a previous study conducted by Cavas et al. (2009), in which computer literacy experience is one of the most important factors affecting teachers' attitudes towards use of ICT. Aforementioned study showed that teachers with 5 years or more computer experience have a more positive attitude towards ICT use in education when compared to teachers with computer experience at other levels. Similarly, there are a number of studies illustrating that ICT experience positively affects teachers' attitudes toward ICT use in education (Karaca, Can, & Yildirim, 2013; Inan, & Lowther, 2010; Sadık, 2005; Ocak, & Akdemir, 2008; Seraji et al., 2017).

Even though, there is no significant difference between teachers' ICT willingness by their ICT experience, the current research disclosed that there is a significant difference between teachers' ICT anxiety and their ICT experience. Accordingly, teachers with 1 through 5 year ICT experience feel significantly more anxious about use of ICT in teaching and learning compared with the teachers of other ICT experience categories. This result is in line with the result of the study, conducted by Sadik in 2005 with 443 teachers, that teachers with higher levels of computer experience had a lower level of anxiety, higher confidence, positive emotions and a more positive attitude towards using computers in education. Research revealed that there is no significant difference between teachers' ICT willingness by their perceived ICT skills, yet there is a significant difference between teachers' ICT anxiety and their ICT skills. Results exemplified that teachers with low level ICT skills feel significantly more anxious about educational use of ICT compared with the ones with high level ICT skills. These results can be interpreted as the fact that the computer experience significantly reduces the teachers' resistance to ICT use in education (Gardner, Dukes & Discenza, 1993; Lau & Sim, 2008), which in return can

positively affect teachers' perceptions of self-efficacy and their attitudes towards use of ICT in education.

This study also displayed that there is no significant difference between teachers' ICT willingness by the number of ICT training they had experienced, yet there is a significant difference between teachers' ICT anxiety by their ICT training experience. Current research results illustrated that the teachers with no previous ICT training feel significantly more anxious about ICT use in teaching and learning compared with the teachers who previously attended 4 to 6 ICT training. Similarly, some previous studies also supported that there is a positive link between teachers' ICT attitude and their ICT training (Hew & Brush, 2007; Keengwe et al., 2008).

As a conclusion, since our results are robust and mostly supported by previous studies in the literature, they may shed light into ICT policy planners, ICT practitioners and ICT scholars in developing ICT training programs for teachers, prospective teachers and teacher training institutions.

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