An Exploration of Factors Influencing Teachers' Attitudes toward the Use of Information and Communication Technology (ICT) in Classroom Practice

A Case Study of Secondary School EFL Teachers in the Western District of Chlef , Algeria

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ABSTRACT

The use of Information and Communication Technology (ICT) in the teaching and learning process has been the subject of extensive research in the past few decades. Many studies have discussed the benefits of ICT for teachers and learners. However, little is known about the main factors that influence teachers' attitudes toward the use of ICT in their teaching practices. This study aimed to explore the attitudes of secondary school EFL teachers in the Western District of Chlef toward ICT use in Algeria. Additionally, the study attempted to investigate the relationship between teachers' computer attitudes and five independent variables: personal characteristics, computer attributes, cultural perceptions, computer competence, and computer access. Mixed methods research was used to combine both quantitative and qualitative research methods. A questionnaire and semi-structured interview were used in order to collect the data. Both descriptive and inferential statistics as well as content analysis were conducted to analyse the data. The findings indicated that EFL teachers held positive attitudes toward ICT in education. There were statistically significant positive correlations between teachers' attitudes toward ICT and the five aforementioned independent variables. It was also found that age and academic qualification had negatively correlated with attitudes. The results of this study give meaningful insights for educational practitioners and policy-makers in relation to the implementation of ICT for teaching and learning in the classroom. Finally, the study presented some implications for policy and practice and recommendations for further research that will enhance teachers' use of ICT in their teaching practices.

INTRODUCTION

The continuous and increasingly rapid development and implementation of computers and other information technologies over the last decades is a distinct feature of modern societies. In the digital age, Information and Communication Technology[1] (henceforth, ICT) has been playing a key role in creating and exchanging knowledge and information around the globe and is affecting citizens' everyday lives in many areas – at school, in the workplace, and in the community (Fraillon, Ainley, Schulz, Friedman, & Gebhardt, 2014). Hence, many countries globally now regard the acquisition of ICT skills as part of their 'core education' alongside reading, writing and numeracy (Srivastava, 2016) Furthermore, the advent of the digital age has dramatically transformed every aspect of human life – the way we work, the way we play, the way we live and the way we learn. The ability to use ICT has become the new literacy for the 21st century (Levin & Wadmany, 2008). However, computers were provided with no supplementary measures to enable educators to develop positive attitudes toward the new tools and to use

them. This has often resulted in ad hoc approaches to implementation (Albirini, 2006).

Houcine (2011) points out that technological equipment and connectivity without human implication is not sufficient to improve teaching and learning; to be considered as an efficient tool, ICT requires an actual engagement of the teacher as well as defined pedagogical project. That is, teachers should become effective agents to be able to make use of technology in the classroom. However, the most important aspect of ICT in education is not governmental policy but teachers themselves; their attitudes toward ICT and its use in their lessons, their competencies to work with it and to involve it into teaching and learning, their willingness to further education in this field (Malinina, 2015). Unfortunately, the zealous entry of technology into the schools and the subsequent change demands have little considered teachers' attitudes toward innovation (Harper, 1987). The result has often been noticeable in teachers' passivity toward the use of technological tools. Unless teachers develop positive attitudes toward the new tools, they may simply ignore them.

The delicacy of this situation calls for an investigation of teachers' attitudes.

Statement of the Problem

An accumulating body of research has produced useful conclusions concerning the importance of studying teachers' attitudes (e.g. Abu-Samak, 2006; Albirini, 2004). Thus, an individual's behaviour—in the case of the current study, the use or rejection of ICT— is determined by his or her intentions to perform the behaviour, and this intention is influenced jointly by the individual's "attitudes and subjective norms" (Dillon & Morris,1996, cited in Abu-Samak ,2006 , p. 6). Attitudes cover three components: affective, cognitive, and behavioural (Ajzen & Fishbein, 1980). *Cognitive* refers to the perceptions of the attitude object; *affective* refers to feelings towards the attitude object; and *behavioural* refers to the response to the attitude object.However, there has been a more significant challenge to identify the different factors that may have produced these attitudes. Research has shown that attitudes are themselves an outcome of different factors.For instance ,Rogers(2003) points to the attributes of the technology itself as a primary influence. He claims that some innovations may be considered harmful, inefficient, uneconomical, or complicated so that adopters may refrain from them.

The sub-theory of Innovation Attributes (Rogers, 2003) states that potential adopters judge an innovation based on their perceptions in regard to five main characteristics of the innovation: (1) relative advantage, (2) compatibility,(3) complexity, (4) trialability, and (5) observability .Hence, the theory holds that an innovation will experience an increased rate of diffusion if potential adopters perceive that the innovation: (1) has an advantage over previous innovations, (2) is consistent with the existing values, past experiences, and needs , (3) is not difficult to understand and use, (4) shows visible results to others, and (5) can be experimented with on a limited basis before adoption. Trialability was excluded from the analysis since EFL teachers in Algeria did not have the chance to experiment with ICT and make a decision about adoption prior to its implementation by the Algerian Ministry of National Education in the Western District of Chlef.

According to Rogers' (2003) model, many factors contribute to whether an individual develops favourable or unfavourable attitudes toward an innovation, and consequently either adopts or rejects it. In the context of innovations designed for educational systems, teachers are assumed to be major stakeholders in making such adoption decisions. Potential adopters may resist a technological tool because it may not fit within their micro- or macro-cultures. Other researchers have identified additional factors, such as computer competence, computer access, computer training, and demographic characteristics, to be associated with teacher attitudes towards ICT (e.g. Abu-Samak ,2006;Berner, 2003 ; Pelgrum ,2001; Na, 1993; Zyad, 2016).Thus, research has highlighted that successful implementation of ICT requires a better understanding of the factors that may influence teachers' attitudes toward the use of ICT in classroom practice.

Despite the growing number of studies dealing with teachers' attitudes and factors related to them, the complex relationship between these variables and teachers' attitudes has not always been clear .Teachers in Algeria may have differing experiences with ICT due to the recent presence of ICT in their schools and their distinct cultural backgrounds. This calls for a study that focuses specifically on Algerian EFL teachers. The current study was based on this pressing need.

Significance of the Study

Teachers' attitudes are considered a major predictor of the use of new technologies in educational settings in the process of technology implementation in schools. Undeniably, it is teachers who determine when, where and how to use these tools in the classroom environment. The energy and investment put forth in implementing ICT can be unproductive unless teachers develop positive attitudes toward new technologies (Albirini, 2004). For change to occur, identifying teachers' attitudes would be the first natural step. This explains the recurrent calls for conducting more studies on teachers' attitudes (e.g. Bostrom & Olfman, 1990, as cited in Morris, 2002).

The present study is significant as it raised the importance of considering how teachers perceive the implementation of ICT in their classroom practices. A strong emphasis has been found in the literature to examine the way teachers integrate ICT to assure that they integrate it effectively in their teaching practices. The effective implementation of ICT in education is key to obtaining the promising impacts of ICT to enhance teaching and learning processes. Previous research into the factors that affect teachers' use of ICT in the classroom has been conducted in more developed Western nations with high access to technology resources. Using ICT in education is a new issue for Algeria; thus there is a lack of relevant research on the subject of teachers' use of ICT. In addition, Algeria's culture, economy, educational system and ways of communicating to some extent differ from more developed Western nations. Therefore, further research needs to be conducted in order to understand the attitudes of teachers toward the use of ICT in Algeria and the factors that may influence their attitudes.

Purpose and Objectives of the Study

The overall purpose of the study was to explore the attitudes of secondary school EFL teachers in the Western Region of Chlef (Algeria) toward ICT use in teaching practices and then to investigate the relationship between teachers' attitudes and factors that are thought to influence them, including perceived computer attributes, cultural perceptions, computer competence, computer access, and teachers' personal characteristics. More precisely, the objectives of the current study were threefold:

1) To explore the attitudes of secondary school EFL teachers in Algeria toward ICT use in the classroom.
2) To identify the factors associated with the attitudes of Secondary School EFL teachers toward ICT.

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3) To find out the relationship between the attitudes toward ICT among Algerian EFL teachers and their perceptions of each of the independent variables involving teachers' characteristics.

Research Questions

To achieve the purpose and objectives of the study, the following research questions were posed:

RQ1: What are the attitudes of secondary school EFL teachers in Algeria toward ICT in education?

RQ2: What are the perceptions of Algerian EFL teachers with regard to:

- ICT Attributes?
- Cultural Perceptions of ICT?
- Computer Competence?
- Computer Access?

RQ3: What is the relationship between teachers' attitudes toward ICT in education and their perceptions of each of the above independent variables (including teachers' characteristics)?

REVIEW OF THE RELATED LITERATURE

Theoretical Framework of the Study

Though there are a number of frameworks and theories applied to the study of ICT adoption in education, the theoretical frameworks within which this study is situated are the Diffusion of Innovations Theory proposed by Everett (Rogers, 2003), which will explain the adoption process and influencing factors for the adoption of Information Technologies (IT) used by EFL teachers under study. The other framework is the Theory of Reasoned Action (TRA) proposed by Ajzen and Fishbein(1980), which explains the reinforcement of behaviour and attitudinal dispositions and how it affects the decision to adopt or not a technology.

Existing Studies on Teachers' Attitudes Toward ICT in Education

Teachers' attitudes are considered as a major predictor that affects the use of technology in educational contexts as teachers directly impact the learning and teaching processes substantially (Albirini, 2006; Isleem, 2003; Pelgrum, 2001; Tezci, 2009). Therefore, in order to ensure effective use of technology in education, teachers' perceptions should be taken into consideration meticulously (Tondeur, Valcke, & Van Braak, 2008). Without exploring the attitudes of teachers toward technology, it is almost impossible to realise the desirable implementation of technology in education. Correspondingly, a number of research studies were conducted to determine teacher attitudes toward computer use.

Sugar, Crawley, and Fine (2004) conducted a study in order to investigate teachers' beliefs about technology adoption in four schools located in the south-eastern region of the United States. To this end, they collected qualitative and quantitative data about current technology implementation in schools. The findings showed that teachers' attitudes are one of the several important human factors that have a significant impact on computer adoption and the implementation of the technology in the classroom. Veen(1993) conducted a study that described the daily pedagogical practices of four teachers in the midst of implementing ICT in their classrooms in Dutch, and found that the most important factor affecting teachers' use of ICT was teachers' attitudes regarding what should be taught and the way it should be taught. Computer-related technical skills were found to be less important than skills related to teachers' competence in managing activities and communicating lessons. Bullock (2004) asserts that the attitude of teachers is a major enabling/disabling factor in the amalgamation of technology into teaching.

Many other researchers from different parts of the world have observed that teachers' attitudes are the driving force for the successful integration of technology in the classroom (e.g. Al-zaidiyeen, Mei, & Fook, 2010; Albirini, 2006; Birkollu, Yucesoy, Baglama, & Kanbul, 2017; Isleem, 2003; Mustafina, 2016). Therefore, teachers' attitudes are considered a major predictor of the use of new technologies in educational settings (Al-zaidiyeen et al., 2010; Albirini, 2006; Isleem, 2003). Accordingly, Saye (1998) stated that as teachers play a key role in classroom change, teachers tend to accept only changes that they perceive facilitate their work, exploring teachers' attitudes toward technology integration is necessary.

METHODOLOGY

Research Design

To answer the research questions of the current study, a sequential mixed method design was adopted in order to collect, analyse, interpret and report data. This approach starts with a quantitative data collection stage and is followed by a qualitative inquiry stage. This project was theoretically driven by a quantitative method, incorporating a complementary qualitative component as elaboration (Houtz, 1995). The results of the quantitative first phase were used to plan the qualitative second phase. Both methods met the appropriate criteria for rigour, as if that method stood alone. 'Methodological triangulation is a method of obtaining complementary findings that strengthen research results and contribute to theory and knowledge development' (Morse, 1991).

Study Population and Sample

The target population for this study was English as a Foreign Language (EFL) teachers from twenty-three secondary schools in the Western District of Chlef in the west of Algeria. The researcher chose to focus on this district because it encompasses the urban, suburban and rural schools in which the ICT infrastructure has been installed nearly at the same time. Also, this district was more convenient in location to the researcher in terms of access and delivery of the survey.

As for sampling, the questionnaire informants were 50 secondary school EFL teachers working in the Western District of Chlef (20 male and 30 female) while the interview participants (n = 6) were selected on the basis of reputational sampling. Reputational sampling was used to select only

those teachers who had a reputation of implementing ICT in their classrooms (Denscombe, 2010 as cited in Zyad, 2016).

Research Tools

The research methodology applied in this study is a mixed-method approach including both quantitative (survey) and qualitative (interview) methods whereby the strengths of one method can compensate for the weaknesses of the other. According to Creswell (2013), a mixed method approach is an approach to inquiry that combines or associates both qualitative and quantitative forms. This approach helps the researcher to come up with findings that are more comprehensive, holistic and integrates various aspects of the problem investigated. As Gay, Mills, & Airasian (2011) suggest, the purpose of mixed methods research is to build on the synergy and strength that exists between quantitative and qualitative research methods to understand a phenomenon more fully than is possible using either quantitative or qualitative methods alone.

The development of the questionnaire was guided by an extensive review of the literature and scales used in different educational backgrounds (Abu-Samak, 2006; Al-Oteawi, 2002; Albirini, 2006; Isleem, 2003). However, some of the questionnaire survey items were adapted to suit the context of the current study and inappropriate items were also omitted and replaced by items relevant to the Algerian participants and educational setting. The questionnaire survey consisted of six sections with a total of eighty-two individual items that correspond to the main variables of the study. The first section requested the informants' demographic information. The second section contained questions regarding teachers' attitudes toward ICT. The third section examined EFL teachers' perceptions of computers' attributes. The fourth section investigated EFL teachers' cultural perceptions of the use of computers. The fifth section examined how competent EFL teachers considered themselves to use computers for educational purposes. The sixth section explored EFL teachers' perceptions of their level of access to computers.

As regards the semi-structured interview, it consisted of 13 questions attempting to obtain additional information and clarifications from teachers. The interview participants were selected on the basis of reputational sampling Denscombe (2010 as cited in Zyad, 2016) to gain greater insight into the EFL teachers' attitudes toward ICT.

RESULTS

Quantitative Data Analysis

This section presents the findings of the quantitative part represented by the informants' responses to the questionnaire items, statistically analysed using the Statistical Package for the Social Sciences (SPSS, V.22), in light of the three research questions as shown below:

Research question 1: teachers' attitudes toward ICT in education

For the purpose of answering question number one, informants were asked to respond to 20 Likert-scale (1: strongly disagree – 5: strongly agree) statements dealing with

their attitudes toward ICT in secondary education. The first six items were designed to measure the affective domain of computer attitude (what do teachers feel about computers?). The next nine items were designed to measure the cognitive domain (what do teachers think computers are?). The last five items were designed to measure the behavioural domain (what teachers would like to do with computers?).

Computer attitudes of EFL teachers were represented by a mean score on a five-point scale, where 5 (Strongly Agree) represents the maximum score of the scale and 1 (Strongly Disagree) represents the minimum score. Higher scores indicate more positive attitudes, while lower scores indicate less positive attitudes.

As illustrated in Table 4.1, EFL teachers' attitudes toward ICT were positive with an overall mean score of 3.87 and a standard deviation of .45. After reversing the negatively stated items, the mode score for the Attitude Scale was 'Agree' (4). The range of informants' mean scores was between 4.26 and 3.04. Informants responded most favourably to item 8 (mean=4.26), and least favourably to item 9 (mean=3.04). The informants' positive attitudes were apparent within the affective (mean = 3.99), cognitive (mean = 3.92) and behavioural (mean = 3.62) domains.

In the affective domain, the mean score of informants' responses was 3.99 (SD = 0.5), indicating a positive attitude toward ICT (Table 4.1). The majority of the respondents agreed or strongly agreed that they felt comfortable with the use of computers (84%), were glad about the increase of computers (92%), felt that all secondary school teachers should be encouraged to use computers, and felt using them enjoyable (86%). In addition, most of the teachers disagreed or strongly disagreed with the negative stated item 2. This means that they were not fearful about computer use (76%), and preferred delivering lessons using computers (64%).

Concerning the cognitive domain, the mean score was 3.92 (SD= 0.5), indicating a positive cognition of ICT. The majority of the informants agreed or strongly agreed that computers save time and effort (86%), must be used in all subject matters (36%), motivate students to study more (80%), are fast and efficient means of getting information (88%), and make the academic climate in school more intellectually stimulating (78%). In addition, most of the informants thought that computers would make schools a better place (88%), are worth the time spent on learning them (84%), are needed in the classroom (88%), and do more good than harm (80%).

As for the behavioural domain, the mean score was 3.62 (SD= 0.4), indicating positive behavioural intentions toward ICT (Table 4.1). The majority of the informants intended

Table 4.1. Distribution of mean scores on the attitude toward ICT Scale

Computer Attitude Scale	Mean Score	Std. Deviation	Mode Score
Affective	3.99	0.536	4
Cognitive	3.92	0.517	4
Behavioural	3.62	0.498	4
Overall Attitude	3.87	0.453	4

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to learn about computers (82%). Also, most of the teachers disagreed or strongly disagreed with the three negatively stated items 17, 18 and 20. In other words, they preferred doing things by computers instead of doing them by hand (52%), were willing to use computers (88%), and had the intention to use them in the near future (84%). However, a moderate level of agreement (30%) went to the informants' ability to use computers to decrease their usual workload.

Research question 2: Teachers' Perceptions in Terms of Factors Related to Attitudes Toward ICT

• *Computer Attributes*

Informants were asked to respond to 18 Likert-type items that measured their perceptions of the attributes of computers. The scale was divided into sub-scales as follows: relative advantage (items 1–5), compatibility (items 6–10), complexity (items 11–14), and observability (items 15–18). Teachers' perceptions of computers' attributes were somewhat positive with an overall mean score of 3.8 (SD= 0.44). After reversing the negatively stated items, the mode score for the overall Computer Attribute scale was 'Agree' (4) (Table 4.2).

As Table 4.2 illustrates, informants had positive perceptions of the relative advantage of computers, with a mean score of 4.01 (SD = 0.59). The majority of the informants agreed or strongly agreed that computers will improve education (82%), offer real advantages over traditional methods of instruction (76%), and make the subject matter more interesting in the classroom (94%). Also, most of the teachers disagreed or strongly disagreed with the two negatively stated items 3 and 5. Therefore, they considered that computers could improve the quality of students' learning (76%) and are also useful for language learning (92%).

Teachers' perceptions of the compatibility of computers with their current practices were midway between neutral and positive with a mean score of 3.56 (S.D. = 0.49) (Table 4.2). A high percentage of the informants agreed or strongly agreed that computer use suits their students' learning preferences and level of computer knowledge (66%) and is also appropriate for many language learning activities (86%). The majority of teachers (90%) disagreed or strongly disagreed that computers have no place in schools. Sixty-two percent (62%) of the informants agreed or strongly agreed with whether computer use fits well in their curriculum goals. A striking low percentage was obtained on the issue of teachers' time limitation for computer use (18%).

Teachers' perceptions of the complexity of computers (i.e. 'simplicity' before the negative items were reversed) were

somewhat positive with a mean score of 3.66 (SD = 0.64) (Table 4.2). Over half of the respondents (64%) agreed or strongly agreed that they had no difficulty in understanding the basic functions of computers. A high percentage of them (70%) reported that everyone can easily learn to operate a computer. Also, most of them disagreed or strongly disagreed with the two negatively stated items 11 and 13, suggesting that it is easy to use computers in teaching (78%) and that computer does not complicate the teachers' task in the classroom (74%).

As for teachers' responses to the observability sub-scale, the mean score was 4.15 (SD= 0.54), indicating positive perceptions (Table 4.2). A high percentage of the informants agreed or strongly agreed that computers have proven to be effective educational tools worldwide (84%) and that they had seen other Algerian teachers use computers for educational purposes (88%). Also, most of the respondents disagreed or strongly disagreed with two negatively stated items 15 and 17, indicating that they had seen computers at work (92%) and as an educational tool (88%). To this end, one can easily conclude that EFL teachers in this study have a strong willingness to adopt computers in the classroom once they are given the opportunity.

• *Cultural Perceptions*

Informants were asked to respond to 16, Likert-type statements dealing with their perceptions about computers' cultural adequacy to and impact on the Algerian society and schools. Cultural perceptions of EFL teachers toward the use of computers were represented by a mean score on a 5-point scale, where 5 (Strongly Agree) represents the maximum score of the scale and 1 (Strongly Disagree) represents the minimum score. Table 4.3 illustrates the frequency of informants' responses to the 16-item Cultural Perceptions scale.

Teachers' perceptions of the cultural relevance of computers were somehow midway between neutral and positive. The overall mean score on the Cultural Perceptions Scale was 3.49 with a standard deviation of 0.41 (Table 4.3).

Overall, the majority of the informants had positive (60%) perceptions about the relevance of ICT to the Algerian society and schools. Notably, most of the respondents indicated that students need to know how to use computers for their future jobs (96%). Furthermore, most of them indicated that computers will improve their standard of living and that knowing about computers earns one the respect of others and guarantees privileges not available to others.

However, most of the informants agreed or strongly agreed (66%) that there is a need for computers that better suit and reflect the Arabic culture and identity. The majority of the informants (84%) stated that computers are proliferating too fast. Moreover, over half of the respondents (56%) stated that there are other social issues that need to be addressed before implementing computers in education.

Table 4.2. Distribution of mean scores on the computer attributes scale

Computer Attributes Scale	Mean Score	Std. Deviation	Mode Score
Advantage	4.01	0.594	4
Compatibility	3.56	0.492	4
Complexity	3.66	0.642	4
Observability	4.15	0.543	4
Overall Attributes	3.85	0.443	4

Table 4.3. Distribution of mean scores on the cultural perceptions scale

Cultural Perceptions Scale	Mean Score	Std. Deviation	Mode Score
Cultural Perceptions	3.49	0.415	3

- *Computer Competence*

Participants were asked to respond to 15 statements to indicate their level of computer competence. Computer competence of EFL teachers was represented by a mean score on a 4-point scale ranging from 1 (No Competence) to 4 (Much Competence).

Over half of the informants (52%) indicated that they were much more competent at the use of keyboards, the printer (48%), and accessing the Internet for communication and searching for different types of information (48%). Other ways in which informants used computers with much competence included: for word processing program (46%), creating and organising computer files and folders (42%), in Excel (30%), in Access (30%), and for PowerPoint presentations (28%). Overall, most of the informants indicated that they had 'moderate' to 'much' competence in using computers. The mean score of the Computer Competence Scale was 2.73, with a standard deviation of .70 indicating that the majority of the informants felt that they had moderate competence in handling most of the computer tasks as presented in Table 4.4.

- *Computer Access*

Informants were asked to identify how often they have computer access in five contexts including the computer lab (laboratory), library, classroom, home, and Internet cafes (Table 4.5). The access questions covered: (a) the location of computers used by the EFL teachers, and (b) the frequency of access (never, rarely, sometimes, often, and very often). The informants' responses are represented in Table 4.5.

As Table 4.5 shows, 'Home' was the most frequent place of computer access with 100% of respondents having access to computers either 'very often' (70%), 'often' (18%), 'sometimes' (8%), or 'rarely' (8%). Computer laboratory was the second most frequently cited place (26%) where teachers have access to computers. The classroom was the third most frequent place of computer access by teachers (18% 'Often' and 'very often'). The most frequent perceptions of lack of access to computers were similar in both Internet Cafes and library (72% 'never' and 'rarely').

This descriptive analysis suggests that a small proportion of teachers do not have access to computers in their classrooms (18%) and very limited access to computers in the library of their schools (10%). The mean score on the Computer Access Scale was 2.54 (SD =0.70), which implies that EFL teachers had access to a computer.

Research Question 3: Relationship between Teachers' Attitudes and Independent Variables

The Pearson Product Moment and Spearman rank correlation coefficients were performed to quantify the relationship between Teachers' attitudes and the selected independent variables of this study. Pearson Product Moment correlation was employed to describe the relationship between the

informants' attitudes toward ICT as a dependent variable and perception of ICT attributes, cultural perception of ICT, perceived computer competence, and computer training as independent interval variables. Furthermore, Spearman Rank Order correlation was conducted to determine the relationship between the informants' attitudes toward ICT and ordinal and nominal independent variables (i.e. demographic variables with the exception of computer training). The correlation matrix shows a number of significant relationships between attitudes and the independent variables (Table 4.6).

As Table 4.6 illustrates, there was a positive correlation between EFL teachers' attitudes toward ICT and ICT attributes, culture perceptions, competence, access, and training. There was a substantial positive relationship between informants' attitudes toward ICT and their cultural perceptions (r = .575, p <.01). There was a low positive association (r = .26, p <.01) between teachers' attitudes and their level of computer competence. Also, there was a low positive association (r = .26, p <.01) between teachers' attitudes and their level of computer access. Finally, the weakest relationship was found between teachers' attitudes toward ICT and the length of computer training they received (r = .10, p <.01). This suggests that as teachers receive more training, their attitudes toward ICT become more positive. Overall, the above associations were significant at the .01 level of significance (and also at the .05 level of significance).

The Spearman rank-order correlation is interpreted like the Pearson Product Moment: a correlation of -1.00 is a perfect negative relationship, a correlation of 1.00 is a perfect positive relationship, and a correlation of zero means that no linear relationship exists. As shown in Table 4.7, a weak negative relationship exists between teachers' age and their attitudes toward ICT (*r* = -.239, *p* <.01). Also, a weak negative relationship exists between teachers' educational qualifications and their attitudes toward ICT (*r* = -.280, *p* <.01). Such a negative correlation indicates that as a teacher's age decreases, his or her positive attitudes toward ICT increase. On the other hand, it was shown that gender (r = .088, p <.01), school location (r = .117, p <.01), and teaching method (r =.147, p <.01) had no significant relationship with teachers' attitudes toward ICT.

Qualitative Data Analysis

The qualitative data (Interviews) provided key cues for understanding the positive attitudes of EFL teachers toward ICT in education that were reported in the quantitative survey data. According to the results of interviews, all the participants who have been interviewed consider ICT as a means of paramount importance to the awakening and continuous prosperity of the country in the information era. Responses such as 'It is promising to better schooling in our country', 'an invaluable asset in this era of globalisation', 'an icon and emblem for the innovation of education', 'an unavoidable tool for development in all domains of life' were the common comments made by the six interviewed teachers. Therefore, the reasons that the participants provided to justify such positive attitudes can be categorised into personal, educational, and technological.

Table 4.4. Distribution of mean scores on the computer competence scale

Computer Competence Scale	Mean Score	Std. Deviation	Mode Score
Computer Competence	2.73	0.700	3

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Table 4.5. Distribution of mean scores on the computer access scale

Computer Access Scale	Never	Rarely	Sometimes	Often	Very often	Mean Score	SD
	1	2	3	4	5		
			Percent (%)				
Computer Lab	50.0	12.0	12.0	16.0	10.0	2.24	1.46
Library	68.0	4.0	4.0	10.0	00.0	1.56	0.97
Classroom	18.0	48.0	16.0	14.0	4.0	2.38	1.06
Home	00.0	8.0	8.0	18.0	70.0	4.54	0.81
Internet Cafes	54.0	18.0	18.0	8.0	6.0	1.98	1.27
Overall Access Level						2.54	0.70

Table 4.6. Pearson product-moment correlation matrix of attitudes and independent variables

Variable	Attitude	Attributes	Culture	Competence	Access	Training
Attitudes	1.00					
Computer Attributes	0.479**	1.00				
Cultural Perceptions	0.575**	0.564**	1.00			
Comp. Competence	0.269**	0.439**	0.402**	1.00		
Comp. Access	0.268**	0.453**	0.341**	0.643**	1.00	
Training	0.103*	0.111	-0.014	0.166	0.175	1.00

** Correlation is significant at the 0.01 level (1-tailed)/p <.01
* Correlation is significant at the 0.05 level (1-tailed)/p <.05

Table 4.7. Spearman correlations between attitude and teachers' characteristics

Variable	Attitude	Gender	Age	School Location	Degree	Teaching Experience	Teaching Method
Attitude	1.00						
Gender	0.088	1.00					
Age	-0.239*	-0.021	1.00				
School Location	0.117	-0.240*	-0.388**	1.00			
Degree	-0.280*	-0.105	0.002–	-0.079	1.00		
Teaching Experience	-0.183	-0.033	0.864–	-0.434**	0.017	1.00	
Teaching Method	0.147	0.076	0.009.	0.054	0.020	-0.132	1.00

At the personal level, the teachers suggested that ICT was very important in granting opportunities for self-development, professional development and as a pivotal means for increasing knowledge in all facets of life and an open gate for staying up to date with what is going on globally just with a finger touch from any place at any time. From the educational level, there was an agreement among the majority of the interviewees that the positive attitude they had about ICT in education emerged from the confidence they had in the capacity of ICT in enhancing the quality of the teaching/learning process. As one teacher stressed, 'the fact that I strongly believe that computers can make the difference, encouraged me to promote their use in my classroom'. As for the technological level, for successful adoption of ICT into teaching, most of the interviewees perceived technology as better than previous practice, consistent with their existing values, experiences and needs, ease of use, could be experimented with, on a limited basis before making a decision to adopt and finally the results of the innovation would be

visible to others. As one teacher unequivocally emphasised, 'the biggest problem that a teacher is confronted with is the routine per se. That is why he feels the need to change things into the better via the use of technology.'

Informants' positive perceptions of the attributes of computers were clearly stated in their responses to an interview question asking them about how they would design a computer if they were given the chance to do that. Most of them focused on the interface of computers such as culturally specific icons, symbols, and keyboard configuration. As one interviewee stated, 'Such features mirror the Arab Culture and Identity'. One of the interviewees focused on the change in the functionality of the software. She proposed, 'Computer should be supplied with special software that blocks all pornographic [Immoral] websites.

Concerning cultural perceptions, the majority of the informants were aware that ICT was bringing about noticeable changes in the character of the Algerian school and society. These changes were viewed with a mixture of hope

and discomfort on the part of the participants. In addition, administrative support could have a key responsibility toward ICT integration in all subject matters in schools. In this respect, one of the respondents emphasised that 'school administration should build "a culture of innovation and collaboration" among the teachers … which promotes the large use of computers. In the same vein, one teacher proposed,'… I believe that administrative incentives have the power to facilitate the use of computers by more teachers.' Additionally, most of the respondents expressed their big concern in relation to the issue of ethicalities and values that the Internet is bringing into the Algerian culture. One of the respondents reported that:

> *Saying that ICT's use is unethical and immoral means by sense that the one who said it suffers from a terrible ignorance because computers or whatever are only means and tools between our hands and human beings are equipped with minds to discriminate between what is right or wrong and what is ethical and unethical. To sum up, we as teachers and parents should stand against such claims and seek development for our children as they are future citizens under the light of ICT.*

Interviews were very important elements in shedding some light on the reasons that stood behind participants' low level of computer competence. Most of the interviewees ascribed this phenomenon to the paucity of training opportunities offered by the Ministry of National Education in Algeria for the benefit of teachers. For example, one of the interviewees stated that she gave a lot of importance to the integration of ICT in the classroom and would like to develop her technological skills. In the same vein, another teacher said, 'I am not totally satisfied with my ICT knowledge or put it in another way Computer skills … I feel that I am in a great need for training to develop my knowledge about ICT skills in order to effectively integrate it into my classroom practices.' However, one of the interviewees gave different reasons for having low level of computer competence:

> *The biggest enemy of a teacher is time. Since I feel secure for what I do, I have no intention to experiment and change things… I have loads of stuff to do every day. But I care a lot for developing my skills in the use of computers in my career.*

According to the qualitative data, most of the teachers who had been interviewed attributed their low level of access to the lack of time and technological tools. Many teachers indicated that they did not have time even to think about integrating ICT into their classroom practices. For example, one of the interviewees referred to this as a 'time issue' suggesting that she could not cover the required syllabus content if she made use of technology. The majority of the interviewees stated that one of the influential factors that impede the implementation of computer technology in language teaching and learning processes is the lack of technological tools at schools. Also, another obstacle that has been identified by the teachers is 'the demanding official curriculum that puts significant stress on teachers'. Since teachers feel stressed with the national curriculum, it is doubtful that they will try

to integrate ICT in their classroom practice because, as mentioned before, it is a time-consuming process.

Most of the interviewed teachers indicated that they had never undertaken any professional development from the Ministry of National Education though they had about 5–15 years of teaching experience. However, some of the interviewees stated that the quality of the training courses provided seemed to focus more on teachers' technical proficiency as opposed to pedagogy. Thus, all the participants recognised that the offering of in-service training sessions on ICT for all the teachers is one of the most important factors that could promote ICT integration in schools. As one interviewee finalised his talk, 'When it comes to the use of computers, it becomes compulsory for the Ministry of National Education in this era of high tech to update teachers' behaviour, attitudes and performance through continuous training.' Therefore, nearly all the interviewed teachers expressed their strong desire and eagerness to attend training sessions organised either by the Ministry of National Education or through Vocational Training Centers to deepen their computer competence. Interestingly, most of the interviewees indicated that they would prefer improving their competencies in using computers in the teaching-learning process rather than simply increasing their overall computer literacy.

DISCUSSION

The main purpose of this study was to explore the attitudes of secondary school EFL teachers in the Western District of Chlef toward ICT in Algeria and to investigate the relationship between teachers' attitudes and factors that are thought to influence them, including perceived computer attributes, cultural perceptions, perceived computer competence, perceived computer access, and demographic characteristics (including training background).

Both the quantitative and qualitative data yielded invaluable findings regarding English teachers' attitudes toward ICT in education. According to the results of the quantitative questionnaire, it was found out that all the teachers that participated in the study had positive attitude towards the use of ICT. This finding supports other studies (Albirini, 2006; Isleem, 2003; Pelgrum, 2001) which found attitudes of teachers towards technology greatly influence adoption and use of computers into their teaching. The informants' positive attitudes were evident within the affective, cognitive and behavioural domains. Not only did the data from the interview reiterate the positive attitude reported in the questionnaire but it also provided explanations for why teachers held such an attitude. This symbiotic relationship between attitudes toward ICT and its use in the classroom has been widely reported in the literature. Moreover, the majority of the EFL teachers enjoyed using computers and felt comfortable about ICT. Almost all teachers expressed their happiness about the increasing number of computers in the Algerian Secondary Education. Thus, most of the informants stated that they had a willingness to incorporate ICT in classrooms without any anxiety. The survey conducted by Abu-Samak (2006) drew the same conclusion about EFL teachers' readiness to use technology in Jordan.

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The results of the study indicated a positive correlation between teachers' attitudes toward ICT in education and their perceptions of computer attributes. The results are consistent with Rogers' Innovation Attributes sub-theory. The informants' positive perceptions varied across the four computer attributes examined in this study. The informants were most positive about the observability of computers. This result indicates that the degree to which the advantages of an innovation, ICT in this case, are observable by EFL teachers in Algeria is very high. The majority of the informants stated that they had seen computers at work and that they had seen Algerian teachers using computers for educational purposes. This was consistent with the qualitative results which showed that the interviewees knew all of these advantages through direct experience and by observing or hearing about other teachers using computers. As Rogers (2003) suggests, most individuals rely on the subjective accounts of other individuals who may have experienced or came in contact with the new media. Also, the Algerian EFL teachers' perceptions of the relative advantages of ICT had the second highest mean score of 4.01. This is a clear indication that the informants were most positive about the relative advantage of computers. This confirms Rogers (2003)' theory through the attributes of relative advantage and compatibility. When teachers see a relative advantage in computer use for educational purposes, their attitudes are generally positive toward computers as tools. In the interviews, informants were also keen to highlight the advantages of computers at the expense of other computer attributes. Teachers seemed to endorse the idea that ICT improves education, offers real advantages over traditional methods of teaching, enhances the quality of students' learning, makes the subject matter more interesting, and is useful for language learning. This agrees with the findings of Slaouti and Barton (2007), who reported that ICT can motivate students in their learning by bringing variety into the lessons, and, at the same time, sustaining teachers' own interest in teaching.

Teachers' perceptions of the compatibility of ICT with their current teaching practices ranged between neutral and positive (mean=3.56). The majority of informants thought that computer use suits their students' learning preferences and level of computer knowledge, is appropriate for many language learning activities, and should be accommodated by schools. This finding is consistent with the results of a comparative international study by Pelgrum (2001), in which the difficulty in integrating ICT in teaching was reported to be a major barrier worldwide. In general, teachers' perceptions of the overall attributes of computers were somewhat positive with a mean score of 3.85. The findings of the current study indicated a moderate positive correlation between teachers' attitudes toward ICT in education and their perceptions of computer attributes (r=.47, p <.05). In addition, significant positive relationships existed between teachers' attitudes and the first three sub-scales of computer attributes: relative advantage (r=.43, p <.05), compatibility (r=.32, p <.05), simplicity/non-complexity (r=.50, p <.05). However, teachers' perceptions of the compatibility of ICT with their current teaching practices were less positive

(r=.19, p <.05). These findings are consistent with those of Rogers' (2003) Innovation Attributes sub-theory in which observability was the most influential factor related to teachers' attitudes toward ICT in education. Hence, the findings of this study reaffirmed the continuous applicability of Rogers' (2003) Theory of Diffusion of Innovations. Rogers' work suggests that in order for ICT to be effectively used by EFL teachers in Algeria, teachers first need to see visible benefits of the use of ICT in the classroom. Second, they need to see the relative advantage of ICT. Third, they need to feel that the use of ICT is less complex and makes their work easier. Fourth, they need to believe that ICT can be compatible with existing sociocultural structures. The results of the current investigation were also consistent with previous studies in which Diffusion of Innovation was examined (Abu-Samak, 2006; Albirini, 2004).

Interestingly, teachers' substantial positive cultural perceptions of the relevancy of ICT to the Algerian society and schools were found as the best predictor of computer attitudes in the current study. This conclusion points to the need for considering cultural factors in studies conducted in developing countries. The overwhelming majority of the interviewees were content with the use of ICT. Through computer technologies, people have the chance to communicate with people from all walks of life who talk different languages. They formed intercultural communications and learned each other's cultures and languages. Thus, the qualitative data showed mixed views concerning the cultural perceptions of ICT integration in education. On the one hand, the interviewees were slightly positive about the cross-cultural and cultural effects of technology. On the other hand, they were worried about the morally and culturally inappropriate aspects of ICT, especially the Internet. This result showed an apparent discrepancy with the quantitative survey data, which showed that most of the informants disagreed that computers encourage unethical practices. For instance, Al-Oteawi (2002), in his study, revealed that Saudi teachers desist from using the Internet in the classroom because of their notable conservatism and the fear of encountering unethical material. It was for the above reason that most of the respondents were hoping for the creation of 'cultural and ethical' awareness programs to alleviate the effect of immoral and culturally inappropriate material found on the Internet. The alarmist outlook through which a few respondents saw the effects of such websites was expressed in a fear of cultural invasion and cultural imperialism. From the findings of both the surveys and interviews, most of the EFL teachers responded that they were less concerned about the computer itself and more about its related software that would better serve the Algerian identity and culture. They enthusiastically showed their eagerness to use Arab-made software that integrates the values, ethics, and customs of the Arab people. This conclusion points to the need for considering cultural factors in studies conducted in the Arab world countries.

Previous research has pointed to teachers' lack of computer competence as a major hindrance to their acceptance and use of ICT in developing countries (Al-Oteawi, 2002; Na, 1993; Pelgrum, 2001). The findings of the current study

support and extend the findings from previous research. The majority of the EFL teachers in this study reported that they had moderate competence in handling most of the computer functions needed by educators, including software installation, basic hardware, productivity software, telecommunication resources, basic troubleshooting, graphic application, grade keeping, educational software evaluation, organisation tools, and virus handling. However, this finding did not support the assumption that teachers with low level of computer competence usually have negative attitudes toward computers (Summers,1998 , cited in Albirini, 2006 , p.385). One of the most important findings of the interview data is that the majority of the teachers attributed their moderate computer competence to their lack of training opportunities, lack of time, and scarcity of ICT resources. These constraints have been reported by several researchers in studies carried elsewhere (Al-Oteawi, 2002). Therefore, all interviewees expressed their strong desire and willingness to promote their computer competence. Notably, some interviewees considered computer competence an integral part of their overall professional competence. This enthusiasm for developing technological skills seems to be common among teachers in different parts of the world nowadays (Al-Oteawi, 2002; Albirini, 2004; Boukadi, 2014; Pelgrum, 2001).

The correlation analysis pointed to the existence of a low, positive correlation between teachers' attitudes toward ICT and their computer competence level (r = .269, p <.01). This finding did not support the assumption that teachers with low levels of computer competence usually have negative attitudes toward computers (Al-Oteawi, 2002). In this study, computer competence was the third most significant predictor of teachers' attitudes toward ICT in education – a finding that supports the theoretical and empirical arguments made for the importance of computer competence in determining teachers' attitudes toward ICT (Abu-Samak, 2006; Albirini, 2004; Berner, 2003; Na, 1993).

Computer access has often been regarded as one of the most notorious hindrances to the acceptance and use of technology worldwide (Abas, 1995a; Pelgrum, 2001). Findings from the current study substantiate this globally felt barrier. The qualitative data showed that a high proportion of teachers in the study reported that insufficient technological tools, lack of time and administrative support, and concern with syllabus coverage were crucial hurdles that caused a low-level access to computers in the teaching profession. Interviewees affirmed that access to computers is a must for 21st-century teachers and students. Hence, most respondents suggested that the Ministry of National Education should help them obtain better access to computers in the school. As noted above, the lack of computer resources available for teachers has been widely recognised in the literature as a major barrier to technology integration in education (e.g.Na, 1993).

The Pearson correlation analysis showed the existence of a low, positive relationship between teachers' attitudes toward ICT and their computer access level (r =.268, p <.05). This result supports the findings of (Na, 1993), and Pelgrum (2001). However, computer access was not a significant predictor of teachers' attitudes toward ICT. Although the shortage of computers did not seem to have a notable influence on the teachers' attitudes toward ICT in this study, it may theoretically have its effects on their future uses of ICT in the classroom.

Furthermore, a large number of other studies have reported that teachers' use of ICT into teaching is also influenced by training(e.g. Al-Oteawi, 2002 ; Zyad ,2016). Most of the survey informants (76%) stated that they had received computer training. Fifty-two percent (52%) of the teachers had between 1 and 20 days of training, 6% had between 21 and 40 days, 2% had between 41 and 60 days, and 16% received more than 61 days of computer training. However, 24% of the informants had had no computer training at all. The highest frequency of training among Algerian EFL teachers was 52%, and they took part in 1–20 days of training.

It is worth noting that the findings of the current study highlight the active role that the Ministry of National Education and the Ministry of Higher Education and Research both played and are still playing in providing professional development for teachers in Algeria. This work is in line with the Ministry philosophy that teachers are the 'most important' agents in the educational process. However, interviewees ascribed their lack of training to the limited opportunities offered by the Algerian Ministry of National Education for training teachers. A great majority of EFL teachers indicated that computer training is needed for promoting their overall teaching abilities. This demand has been noticed in various educational settings (e.g. Al-Oteawi, 2002; Albirini, 2004; Na, 1993; Zyad, 2016) in other countries such as Saudi Arabia, Syria and Morocco. Other interviewees suggested different reasons that hampered their inadequate training, such as the lack of time, and insufficient technological resources.

The Pearson Product-Moment correlation was used to investigate the relationship between teachers' attitudes toward ICT and training. It was found that there was a weak relationship between the length of computer training and attitudes toward ICT (r = .10, p <.01). This result is consistent with the findings of previous studies on computer training (Abu-Samak, 2006; Albirini, 2004). Nevertheless, the correlation was positive, implying that as teachers received more training, their attitudes toward ICT increased positively.

Previous research has produced conflicting results regarding the impact of teachers' demographic characteristics on their attitudes toward ICT. As expected, not all of the demographic variables were significantly correlated with teachers' attitudes toward ICT. This result downplays the importance of some of the personal characteristics in adopting new technologies. When compared to the findings concerning cultural perceptions, this conclusion shows that the formation of computer attitudes is influenced much more by the collective culture than by personal characteristics. This result does not agree with Rogers' supposition that the adoption of technology is influenced by both the individual's characteristics and the social system in which he or she lives.Furthermore, the current study found that there was no relationship between

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gender and EFL teachers' attitudes toward ICT in Algeria (r =.08, p <.05). Zyad(2016) came to the same conclusion regarding the relationship between gender and Moroccan EFL teachers' attitudes. This may be interpreted as a reflection of the democratisation process of ICT with men and women having equal chances of accessing the computer and the Internet, thus allowing them to develop positive attitudes toward ICT. Besides, the study revealed that age was negatively correlated with EFL teachers' attitudes toward ICT in Algeria (r = -.23, p <.01). This result demonstrated that as the age of the teachers decreased, their positive attitudes toward ICT increased. In other words, younger EFL teachers in Algeria had more positive attitudes toward ICT than older teachers. Support for this result also comes from a study conducted by Na (1993) in Korean Vocational Agriculture High Schools, demonstrating a significant negative relationship between attitudes toward ICT and age.

Additionally, school location and teaching methods that EFL teachers often use were not found to be significant characteristics that might affect teachers' attitudes toward ICT. The findings of the present study corroborate the findings of some previous studies (e.g.Na ,1993).With an alpha level at p <.05 and a Spearman correlation coefficient at -.183, there was no significant relationship between teaching experience and attitude. Na (1993) found the same pattern between attitude and teaching experience in the Korean context. Also, it was found that educational background correlated negatively with the Algerian EFL teachers' attitudes toward ICT (r = -.28, p <.01). This finding confirms Abu-Samak's (2006) study, which reported a significant relationship between the educational background of Jordanian teachers and their attitudes toward computers.

CONCLUSION

Findings from both questionnaire and interview data unravelled that secondary school EFL teachers demonstrated positive attitudes toward the use of ICT in education. Moreover, the participating teachers appeared to have somewhat positive perceptions of the attributes of computers. Teachers' substantial positive cultural perceptions of the relevancy of ICT to the Algerian society and schools were found as the best predictor of the effectiveness of ICT integration. Further analysis of the interview data indicated that EFL teachers had a moderate level of computer competence, access and training which was linked to a number of barriers. These barriers included the lack of ICT resources, unavailability of ICT policy and planning including motivation process, and the need for structured professional development, time constraints, and lack of training opportunities.

Data analysis pointed out that there were statistically significant positive correlations between teachers' attitudes toward ICT and five independent variables, including computer attributes, cultural perceptions, computer competence, computer access, and computer training. It was also found that age and academic qualification had a negative correlation with attitudes, whereas school location and teaching methods that EFL teachers use most often, were not found to be significant characteristics that might affect teachers'

attitudes. Teaching experience was found not to significantly correlated with attitudes toward ICT. Such findings may well provide useful insights for decision makers to deal with the barriers that impede teachers' use of technology in their teaching practices.

RECOMMENDATIONS

In view of the findings derived from this study and the conclusions arising from them, the following implications for policy and practice and recommendations for further research are presented. They are mainly related to strategies that can be implemented by policy-makers to ensure the success of ICT integration in education.

Implications for Policy and Practice

1. It is essential for policy-makers to sustain and promote teachers' attitudes as a prerequisite for deriving the benefits of costly technology initiatives.
2. Policy masterminds and decision makers need to allocate adequate funds to equip schools with both hardware (computers, head projectors, and broadband Internet connection) and software (educational programs and learning systems).
3. Policy-makers should provide additional planning time for teachers to experiment with new ICT-based approaches. This may be attained by reducing the teaching load for teachers.
4. The higher authorities should ensure that all teachers receive adequate training. This measure would be part of human professional development, which is essential for the successful implementation of technology.

Recommendations for Further Research

1. This study mainly aimed to investigate the attitudes of in-service EFL teachers toward ICT use in secondary education. It is recommended that future research needs to examine the barriers that impede the integration of ICT by English teachers in a more in-depth manner.
2. Since this study used a mixed paradigm research, by employing both a questionnaire and semi-structured interview for data collection, it is suggested that future research could employ other data collection instruments like focus groups and classroom observations to collect more in-depth information regarding teachers' attitudes.
3. Given the high contribution of computer attributes to teachers' attitudes toward ICT in education, future studies need to consider the role of single computer attributes (e.g. relative advantage and complexity) in predicting attitudes.

END NOTE

1. Information and Communication Technology or Technologies (ICT) is an umbrella term that includes any communication device or application, encompassing: radios, televisions, cell phones, computers and network

hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning (Mustafina, 2016; Ofodu, 2007). Therefore the word 'computers' in the present study refers to ICT in general.

REFERENCES

Abu-Samak, Z. T. (2006). *An exploration of Jordanian English language teachers' attitudes, skills, and access as indicator of information and communication technology integration in Jordan*. Unpublished PhD dissertation, Florida State University.

Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, N.J.: Prentice-Hall.

Al-Oteawi, S. M. (2002). *The perceptions of administrators and teachers in utilizing information technology in instruction, administrative work, technology planning and staff development in Saudi Arabia*. Unpublished doctoral dissertation, Ohio University, United States.

Al-zaidiyeen, N. J., Mei, L. L., & Fook, F. S. (2010). Teachers Attitude Towards Ict. *International Education Studies*, *3*(2), 211–218. https://doi.org/10.5539/ies.v3n2p211

Albirini, A. (2004). *An exploration of the factors associated with the attitudes of high school EFL teachers in Syria toward information and communication technology*. Unpublished doctoral dissertation, the Ohio State University.

Albirini, A. (2006). Teachers' attitudes toward information and communication technologies: the case of Syrian EFL teachers. *Computers & Education*, *47*(4), 373–398. https://doi.org/10.1016/j.compedu.2004.10.013

Berner, E. J. (2003). *A study of factors that may influence faculty in selected schools of education in the Commonwealth of Virginia to adopt computers in the classroom*. Unpublished doctoral dissertation, George Mason University.

Birkollu, S. S., Yucesoy, Y., Baglama, B., & Kanbul, S. (2017). Investigating the attitudes of pre-service teachers towards technology based on various variables. *TEM Journal*, *6*(3), 578. https://doi.org/10.18421/TEM63-20

Boukadi, S. (2014). Critical approach to integrating ICT into second language learning. In R. AL-Mahrooqi & S. Troudi (Eds.), *Using Technology in Foreign Language Teaching*. Newcastle upon Tyne: Cambridge Scholars Publishing.

Bullock, D. (2004). Moving from theory to practice: An examination of the factors that preservice teachers encounter as the attempt to gain experience teaching with technology during field placement experiences. *Journal of Technology and Teacher Education*, *12*(2), 211–237.

Creswell, J. W. (2013). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (4th ed.). SAGE Publications.

Fraillon, J., Ainley, J., Schulz, W., Friedman, T., & Gebhardt, E. (2014). *Preparing for life in a digital age: The IEA International Computer and Information Literacy Study international report*. Springer Nature. https://doi.org/10.1007/978-3-319-14222-7

Gay, L. R., Mills, G. E., & Airasian, P. W. (2011). *Educational Research: Competencies for Analysis and Applications* (10th ed.). Boston: Pearson.

Harper, D. O. (1987). The creation and development of educational computer technology. In R. M. Thomas & V. N. Kobayashi (Eds.), *Educational technology – its creation, development and cross-cultural transfer* (pp. 35–63). Amsterdam: Pergamon. https://doi.org/10.1016/B978-0-08-034993-0.50008-3

Houcine, S. (2011). The effects of ICT on learning/teaching in a foreign language. *International Conference "ICT for Language Learning,"* 4. Retrieved from http://www.pixel-online.net/ICT4LL2011/common/download/Paper_pdf/IBL69-437-FP-Houcine-ICT4LL2011.pdf

Houtz, L. E. (1995). Instructional strategy change and the attitude and achievement of seventh- and eighth-grade science students. *Journal of Research in Science Teaching*, *32*(6), 629–648. https://doi.org/10.1002/tea.3660320608

Isleem, M. I. (2003). *Relationships of selected factors and the level of computer use for instructional purposes by technology education teachers in Ohio public schools: A statewide survey*. Unpublished doctoral dissertation.

Levin, T., & Wadmany, R. (2008). Teachers' views on factors affecting effective integration of information technology in the classroom: Developmental scenery. *Journal of Technology and Teacher Education*, *16*(2), 233–263.

Malinina, I. (2015). ICT Competencies of Foreign Languages Teachers. *Procedia – Social and Behavioral Sciences*, *182*, 75–80. https://doi.org/10.1016/j.sbspro.2015.04.740

Morris, T. R. (2002). *College students' attitudes about computers related to gender-identity and learning-style interactions*. Unpublished doctoral dissertation, University of Central Florida.

Morse, J. M. (1991). Approaches to qualitative-quantitative methodological triangulation. *Nursing Research*, *40*(2), 120–123. https://doi.org/10.1097/00006199-199103000-00014

Mustafina, A. (2016). Teachers' Attitudes toward Technology Integration in a Kazakhstani Secondary School. *International Journal of Research in Education and Science (IJRES)*, *2*(2), 322–332. https://doi.org/10.21890/ijres.67928

Na, S. Il. (1993). *Variables associated with attitudes of teachers toward computers in Korean vocational agriculture high schools*. Unpublished doctoral dissertation, The Ohio State University.

Ofodu, G. O. (2007). Nigeria literacy educators and their technological needs in a digital age. *Education Focus*, *1*(1), 22–30.

Pelgrum, W. J. (2001). Obstacles to the integration of ICT in education: results from a worldwide educational assessment. *Computers & Education*, *37*(2), 163–178. https://doi.org/10.1016/S0360-1315 (01)00045-8

An Exploration of Factors Influencing Teachers' Attitudes toward the Use of Information and Communication Technology (ICT) in Classroom Practice

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Rogers, E. M. (2003). Diffusion of innovations. (5th ed.). New York: Free Press.

Saye, J. W. (1998). Technology in the classroom: The role of dispositions in teacher gatekeeping. *Journal of Curriculum and Supervision*, *13*(3), 210–234.

Slaouti, D., & Barton, A. (2007). Opportunities for practice and development: newly qualified teachers and the use of information and communications technologies in teaching foreign languages in English secondary school contexts. *Journal of In-Service Education*, *33*(4), 405–424. https://doi.org/10.1080/13674580701687807

Srivastava, S. (2016). ICT implementation for Education and Learning. *IOSR Journal of Research and Method in Education (IOSR-JRME)*, *6*(4), 40–44.

Sugar, W., Crawley, F., & Fine, B. (2004). Examining teachers' decisions to adopt new technology. *Educational Technology and Society*, *7*(4), 201–213.

Tezci, E. (2009). Teachers' effect on ICT use in education: the Turkey sample. *Procedia - Social and Behavioral Sciences*, *1*(1), 1285–1294. https://doi.org/10.1016/j.sbspro.2009.01.228

Tondeur, J., Valcke, M., & Van Braak, J. (2008). A multidimensional approach to determinants of computer use in primary education: Teacher and school characteristics. *Journal of Computer Assisted Learning*, *24*(6), 494–506. https://doi.org/10.1111/j.1365-2729.2008.00285.x

Veen, W. (1993). The role of beliefs in the use of information technology: Implications for teacher education, or teaching the right thing at the right time. *Journal of Information Technology for Teacher Education*, *2*(2), 139–153. https://doi.org/10.1080/0962029930020203

Zyad, H. (2016). Integrating Computers in the Classroom: Barriers and Teachers' Attitudes. *International Journal of Instruction*, *9*(1), 65–78. https://doi.org/10.12973/iji.2016.916a