University Abou El Kacem Saâdallah , Algiers 2
Faculty Of Foreign Languages
Department Of English

An Exploration of EFL Teachers' Attitudes Toward Information and Communication Technology (ICT) in Algeria:

The Case Study of Secondary School Teachers in the Western District of Chlef

Dissertation Submitted in Partial Fulfilment of the Requirements for the Magister Degree in English Linguistics and Didactics

Submitted by:
Mr. Kouider MAKHLOUF

Supervised by:
Prof. Zoulikha BENSAFI

October 2017

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Declaration

I hereby declare that the substance of the dissertation entitled "An Exploration of EFL Teachers' Attitudes Toward Information and Communication Technology (ICT) in Algeria: The Case Study of Secondary School Teachers in the Western District of Chlef " is entirely the result of my investigation and that due reference or acknowledgment is made ,whenever necessary , to the work of other researchers.

Signature :______________________ ___________________

Mr. Kouider MAKHLOUF Date

Approved for final submission:

Signature : ______________________ ____________________

Supervisor: Date

Prof . Zoulikha BENSAFI

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Dedication

This work is dedicated to

My family

My Father and My mother

My beloved wife

My sisters and brothers

For their unfailing love, support, and prayers throughout the course of this dissertation

May God Bless You All

Abstract

This study aimed at exploring the attitudes of EFL teachers toward the integration of Information and Communication Technology (ICT) in the Algerian Secondary Schools. In addition, the study delved into the relationship between teachers' attitudes and five independent variables: personal characteristics (including computer training background), computer attributes, cultural perceptions, computer competence, and computer access. Teachers' attitudes were examined through the combination of two related theoretical frameworks: Rogers's (2003) Diffusion of Innovations and Ajzen and Fishbein's (1980) Model of Reasoned Action.

In order to ensure triangulation and complementarity, mixed methods research was used combining both quantitative and qualitative research methods. A questionnaire and semi-structured interview were used in order to collect data on the population of EFL teachers in the Western District of Chlef during the Academic Year 2016-2017 (N=79). A questionnaire was developed and distributed to 56 sample teachers selected randomly from the population. The survey stage was followed by semi-structured interviews with a reputational sample of 6 teachers. Both descriptive and inferential statistics as well as content analysis were conducted so as to analyze the data.

Findings from both questionnaire and interview data revealed that Secondary School EFL teachers demonstrated positive attitudes toward 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. The further analysis of the interview data indicated that EFL teachers had 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 need for structured professional development, time constraints, 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 the teachers' attitudes. Teaching experience was found not significantly correlated with attitudes toward ICT.

Based on the findings, it was recommended that policy-makers sustain teachers' positive attitudes toward ICT, offer them more training opportunities, and take steps to alleviate the concerns of some teachers about the culturally improper material on the web.

Keywords: Attitudes toward ICT, EFL Teachers, Secondary Education, Mixed Methods Research.

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List of Abbreviations

ADSL: Asymmetric Digital Subscriber Line

ALECSO: The Arab League Educational, Cultural and Scientific Organization

AMoNE: Algerian Ministry of National Education

BAC: Baccalaureate

BEM: Middle School Certificate

CALL: Computer-Assisted Language Learning

CERIST: Scientific and Technical Information Research Centre

CMC: Computer Mediated Communication

EFL: English as a Foreign Language

ELT: English Language Teaching

ENS: Teachers' Training Schools

ERIC: Education Resources Information Center

ICT: Information and Communication Technology / Technologies

ICTDAR: Information and Communication Technologies for Development in the Arab Region

IDT: Innovation Diffusion Theory

ISP: Internet Service Provider

IT: Information Technology

Lab: Laboratory

MENA: Middle East and North Africa

MoNE: Ministry of National Education

MPTIC : Ministry of Posts, Information Technology and Communications

RQ1: Research Question One

RQ2: Research Question Two

RQ3: Research Question Three

SD: Standard Deviation

TRA: Theory of Reasoned Action

UFC : University of Continuing Education

UNESCO: United Nations Educational, Scientific and Cultural Organization

UNCTAD: United Nations Conference and Development

UNDP: United Nations Development Program

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General Introduction

The continuous and increasingly rapid development and implementation of computer and other information technologies over the last decades is a distinct feature of modern societies. In the digital age, Information and Communication Technology (ICT, henceforth) has been playing a key role in creating and exchanging knowledge and information around the globe and is affecting citizens' everyday life in many areas—at school, in the workplace, and in the community (Fraillon et al, 2014).ICT has become, within a very short time, one of the basic building blocks of modern society. Many countries globally now regard the acquisition of ICT skills as part of their "core education" alongside reading, writing and numeracy (Daniels, 2002).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) and, around the globe, countries see ICT as both a necessity and an opportunity for improving and enhancing the education offered to citizens.

Educational systems around the world are under increasing pressure to use the new Information and Communication Technologies (ICTs) to teach students the knowledge and skills they need in the 21st-century" (UNESCO, 2002; p.10). Thus, the key concern driving policy and community interest in the pedagogical integration of ICT is the premise that ICT is important for bringing changes to classroom teaching and learning so as to foster the development of students' 21st-century skills.ICT is not only the backbone of the Information Society, but also an important catalyst and tool for inducing educational reforms that change our students into productive knowledge workers (Pelgrum, 2001).

Nowadays, knowledge about, access to, and use of ICT are vital for participating effectively in society in this information age. Acquiring and mastering ICT skills—Computer and Information Literacy (CIL)—has thus become a major component of the citizens' education, and many countries have accordingly recognized the importance of ICT in education. Harvey (1983) envisages that the effectiveness of the use of computers in education may be an important factor in determining which countries will succeed in the future. Central to this vision is the powerful metaphor of the “information age”, where media, business and industry become increasingly computer-reliant.

In developing countries in particular, the metaphor of the information age has generated a whole set of speculations about the necessity of educational reforms that will accommodate the new tools (Pelgrum, 2001). Governments in most developing countries have responded to the challenge by initiating national programs to integrate new technologies (computers, educational software, the Internet, and other computer-related technologies) into education. Young (1991, p. 144) remarked that in many cases computers were introduced into schools “not as a means, but as an end”. 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. However, As Houcine (2011, p. 11) points out “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 about ICT in education is not the governmental policy but teachers themselves; their attitudes towards ICT and its use at their lessons, their competencies to work with it and to involve it into teaching and learning, their willingness to further education in this field. To make the best use of ICT, teachers must be equipped with adequate ICT competencies. In the process of integrating ICT into education, both teachers’ICT competencies and how they perceive the role of ICT in their teaching/learning processes play key roles (Malinina, 2015). A factor that determines educational innovation in general is teachers, as they are the users of ICT resources for educational development. Since technology does not have an educational value in itself, it becomes important when teachers apply it in the learning-teaching process (Tezci, 2009).Moreover, ICTs at schools will have little impact if teachers are not actively involved in all phases of their integration to the curriculum .Therefore the role of teacher at this point is vital. Watson (2001) queries the automatic link made between the everyday and educational uses of technology, as it does not take into account the fact that technology often fits uncomfortably with teachers' professional judgments. In support of Watson's analysis, the evidence shows that technologies that move outside their comfort zone tend to have a slower take-up and high rejection rates. Hence, Watson (1998, p 191) warns against the severance of the innovation from the classroom teacher and the idea that "the teacher is an empty vessel into which this externally defined innovation must be poured". Unfortunately, however, the zealous entry of technology into the schools and the subsequent change demands has little considered teachers' attitudes toward the innovation (Harper, 1987). The result has often been palpable in teachers' passivity toward the new machines (Bush & Terry, 1997).

Studying teachers' attitudes is of paramount importance in developing countries where ICT is not usually part of the school culture. Due to its novel presence in society at large and in schools in particular, ICT may not be well received by developing-country teachers under various cultural influences. In his Theory of the Diffusion of Innovations, Everett Rogers (2003) indicates that an understanding of the culture and local environment in which a technology is introduced is a prerequisite to understanding how best to promote its adoption. The notion of attitudes is central to the concept of adoption, thus, culturally-related perceptions may have a strong influence on attitudes that ultimately lead to adoption decisions. Watson (1998) warns that the mismatch between the culture of technocentric mindedness and the teachers' pedagogic culture results in the alienation of the teachers from the use of technology. Hence, developing countries have the responsibility not merely to provide computers for schools, but also to foster a culture of acceptance amongst the end-users of these tools. Unless teachers develop positive attitudes toward the new machines, they may simply ignore them. The delicacy of this situation calls for an investigation of teachers' attitudes.

Many policymakers throughout the world consider the adoption and use of ICT by developing countries as integral to their progress and modernization (Al-Ammari, 2004;

Na, 1993; Pelgrum, 2001; Sooknanan, 2002). In the Middle East and North Africa (MENA), numerous international initiatives, such as the United Nations Development Program, have sought to help Arab countries embrace modernization by bringing about reforms in their educational systems (Information and Communication Technology for Development in Arab Region (ICTDAR, 2005). Hence, Algeria is regarded as one of the developing countries that is currently pursuing the technological track in education. Acknowledging the challenges of the "digital / information age", the Algerian Ministry of National Education has recently adopted a national plan to introduce computers and informatics into all levels of education. To this end, the Ministry inaugurated computer-equipped laboratories within Secondary Schools. It also connected many schools to the Internet, but so far little is known about the effectiveness and use of these technologies. These initiatives reflected recognition by the Algerian Ministry of National Education (hereafter,AMoNE) that human capital development, particularly through professional development for teachers and better education for students, was a basic step toward preparing Algeria to participate in future knowledge-based world economies (Hamdy, 2007). Similarly, the acquisition of English by Algerian students was seen by the AMoNE as integral to educational and economic development in Algeria (Ministry of National Education, 2006a). For this reason, in 2001, the teaching of English as a Foreign Language was also mandated within the recent Educational Reform in all Algerian schools beginning from the First Year of the Middle Schools (Hamdy, 2007).

The Algerian Government also opted for a thorough reform of its posts and telecommunications sector in order to face the challenges of the 21st century and to guide the country towards the information society. This reform was dictated by the necessity to ensure the competitiveness and diversification of the Algerian economy, and to promote the development of a competitive and dynamic telecommunications sector. The reform is taking place in the context of increased globalization and pending Algerian membership in the World Trade Organization (World bank, 2003, p. 36). Consistent with these efforts, in 2001 the President of the Algerian Republic emphasised on the strategic importance of ICT in Algeria's modernization and economic development policy throughout the whole country in an attempt to rebuild the "information society of Algeria" (World bank, 2003). Hence, the knowledge-based economy transformation requires a good education system and to make a better education system requires a distinguished teacher who is able to deploy technology properly (Pennington, 2016).

Undoubtedly, prevalence of ICT has far reaching effects in the education sector if it is integrated effectively in classroom teaching learning practices towards preparing and producing outstanding skilled professional cadres in different disciplines. Globally, language teachers and policy makers receive a strong and constant urge and call “to integrate new technologies into their teaching from the media, government, school administrators, colleagues, parents, and learners, and spite of these calls, the percentage of teachers who have effectively integrated new technologies into their curriculum is still relatively low” (Schmid, 2011, pp. 89-91). To date, no “published” study has been conducted to assess the current status of technology in the Algerian educational context. What is missing in particular are studies about of teachers’ reaction to the new tools. Such inattention to the end-users’ attitudes may engender unforeseen repercussions for ICT diffusion in Algerian schools.

The successful implementation of educational technologies relies heavily on the educators’ attitudes, who eventually determine how technologies are used in the classroom. Bullock (2004) asserts that educators’ attitudes are a major enabling /disabling factor in the adoption of technology.Similarly,as Pelgrum (2001) suggests, teachers are the most important agents of change on the educational work floor. Teachers in this case are key drivers who play crucial roles in technology integration in the schools and classrooms. Hence, any attempt to implement computers in education would need to address teachers’ attitudes toward computers as a perquisite for its success. In his theory of “Diffusion of innovations”, Rogers (2003) considers adopters’ attitudes indispensable in the innovation decision process. Because of their critical role in the innovation implementation process, educators’ attitudes toward ICT should be the focus of studies at the early stages of technology implementation. The current study was based on this pressing need.

Statement of the Problem

The global adoption of ICT by education has often been premised on the potential of the new technological tools to revolutionize an outmoded educational system, better prepare students for the information age, and/or accelerate national development efforts. It is observed that teachers and their psychological dimensions appear to be overlooked prior and in the aftermath of school reforms, which frequently undermines the implementation of school change and innovation (Bacher, 2013). The problem with the current technology-implementation plans is not only their focus on the potential of the technology per se, but also their failure to base their implementation efforts on research and enough information gathering. A key element seems to be left out in both the technology plans and their subsequent implementation processes: the attitudes of the end-users and the real agents of change within the classroom arena, namely, the teachers. It is widely accepted that unless teachers develop positive attitudes toward ICT, they will not use it in their teaching practice (Watson, 1998).

An accumulating body of research has produced useful conclusions concerning the importance of studying teachers' attitudes (Abu-Samak, 2006; Albirini, 2004).However, there has been a more significant challenge to identify the different factors that may have produced these attitudes. Thus, research has highlighted that successful implementation and use of ICT requires an understanding of the factors that may influence teachers'ICT adoption in the classroom. According to Rogers' model, many factors contribute to whether an individual develops favorable or unfavorable 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, and computer training. Teachers in Algeria may have differing experiences with ICT due to the recent presence of ICT in their schools and their distinct cultural background. This calls for a study that focuses specifically on the Algerian EFL teachers' attitudes toward ICT integration.

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 integration in the Algerian schools and then to investigate the relationship between teachers' attitudes and factors that are thought to be influencing them, including perceived computer attributes, cultural perceptions, computer competence, computer access, and teachers' personal characteristics. More precisely, the objectives of the study were as follows:

- To explore the attitudes of Secondary School EFL teachers in Algeria toward ICT integration in the classroom

- To identify the factors associated with the attitudes of Secondary School EFL teachers toward ICT

- 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

The study sought to answer the following research questions:

1) What are the attitudes of Secondary School EFL teachers in Algeria toward ICT in education?

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

a• ICT Attributes?
b• Cultural Perceptions of ICT?
c• Computer Competence?
d• Computer Access?

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

To address the questions above, a questionnaire and semi-structured interview have been conducted with a view of obtaining verifiable data.

Rationale for the Study

The initial impetus to conduct this study comes in line with my interest in education as a teacher in Algeria and the belief that such study will offer valuable information to Secondary School EFL teachers as well as to policy makers in education as to the nature of ICT integration to the teaching-learning process. Since the attitudes and perceptions of immediate stakeholders are critical to how effectively an innovation is implemented, it is important to gauge how teachers perceive this innovation and its efficacy as a tool for enhanced teaching and learning. It is also hoped that this study will contribute to the growing knowledge-base regarding the use of ICT in education in Algeria.

The current study aims to provide a significant contribution in terms of its scope. It gathers teachers' attitudes, ICT integration, English as a Foreign Language, and the Algerian context into one study. Where studies on teachers' attitudes were conducted in some Arab countries, such as Abu-Samak (2006) in Jordan, Albirini (2004) in Syria, Al-Mekhlafi & Almeqdadi, (2010) in the United Arab Emirates, Almaghlouth (2008) in Saudi Arabia , Sadik (2006) in Egypt , Al-Sharif (2003) in Palestine , Nejah (2010) in Algeria, Zyad (2016) in Morocco , no empirical studies on the attitudes of Algerian EFL teachers toward ICT integration in Secondary Schools seem, to my knowledge, to have been conducted . An Internet search in academic databases such as the Web of Science, Education Resources Information Center (ERIC), Scientific and Technical Information Research Centre (CERIST), Google Scholar, and electronic journals under the following key words "teachers' attitudes + ICT integration + Algeria+ Secondary Schools" generated no results. One recent study I was able to read was by Mohammed Djemoui SABER (2010) which investigated the Impact of Information and Communication Technology (ICT) on Teaching and Learning in Algerian Secondary Schools. However, this study did not explore the construct of attitudes, but only relied on the investigation of the power and impact of ICT on teaching and learning in EFL classrooms. Furthermore, instead of focusing solely on the social, psychological and cultural aspects, this study also focuses on the affective, cognitive and behavioral aspects of teachers' attitudes, which I argue can help us understand how attitudes and ICT integration policy interplay in the Algerian educational system. For instance, in chapter one, it will be concluded that the teachers' attitudes toward ICT integration in schools were influenced by a wide range of factors. Moreover, the study will also demonstrate that educational innovations in Algeria may fail if teachers' attitudes are not taken into account, which generally concurs with current theory on teachers' attitudes ; which meets one of the objectives underlying the dissertation, i.e., to add to theory on teachers' attitudes toward ICT integration . Therefore, the scarcity of information on the attitudes of EFL teachers toward the integration of ICT in education, and the factors that potentially influence teachers' attitudes from successfully utilizing and integrating ICT tools in their teaching practice are the main stimuli for the current study.

Significance of the Study

Teachers' attitudes are considered as a major predictor of the use of new technologies in the 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 the new technologies (Albirini, 2004). Demetriadis et al. (2003) assert that "teachers' attitudes regarding ICT use in schools not only pose difficulties in the use of technology per se but also cancel the learning benefits expected to spring from the instructional reform" (p. 20). As Fullan (2016) notes, an innovation is a multidimensional process that involves changes in beliefs and attitudes as well as practices. 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; Benzie, 1995).

Benzie (1995) suggests that empirical research of "the pedagogical, psychological and cognitive barriers to the successful use of information technology are a vital precondition for improving the utilization of computers and other technological aids in the educational process" (p. 39). The detection of these barriers may be considerably constructive at initial/experimental stages, so as to avoid their ramifications on the use of the new tools. This is particularly true for the developing countries, where technology has only lately entered the educational milieu. The findings of the study will help those involved in the technology implementation process identify barriers as perceived by teachers .It is hoped that decision-makers can gain insight into the future direction of the implementation in the light of the teachers' reactions to the current integration of computers.

Several attitude theorists have emphasized the strong connection between attitudes and behavior. For example, Ajzen and Fishbein (1980) propose that attitudes impact behavior indirectly by guiding the formation of behavioral intentions, which themselves prompt behavior. According to Ajzen and Fishbein's Model of Reasoned Action, attitudes are main predictors of behavior. Some theorists have gone a step further by emphasizing the possibility of changing individuals' behavior once their attitudes are pinpointed (Zimbardo, Ebbesen & Maslach, 1977).Such assertions explain to a large extent the wide interest in the study of attitudes toward technology. It is expected that once teachers' attitudes have been identified, steps can be taken to change these attitudes if necessary. Change can be more effective if one can identify the factors that produced these attitudes. These assumptions hold true for this study. The findings of the study may help decision-makers to know why teachers are responding to technology in a certain manner. Based on this knowledge, decision-makers can take the necessary steps either to change negative attitudes or to foster positive attitudes. For instance, decision-makers can take advantage of the study findings to design training programs that take into account teachers' attitudes toward ICT.

This study is significant as it raised the importance of considering how teachers perceive the implementation of ICT into 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 practices. The effective implementation of ICT in education is a 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 the teachers' use of ICT. Also, 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. This study provided significant data to point out the factors and issues facing teachers regarding the adoption and implementation of ICT in the classroom. In addition, it provided information that can be used to supplement existing educational reform programs.

The results from this study may greatly benefit the decision makers and the Ministry of National Education in Algeria. They will become more knowledgeable of the current status of teachers' use of ICT and the factors that may affect this use, which should motivate both the decision makers and the Ministry of National Education to expand their efforts and take suitable action to improve teachers' and schools' preparedness. For instance, findings from this study might assist the decision makers and the Ministry of National Education in making informed decisions regarding the training and professional development of teachers that will result in increasing their use of ICT to support the educational process.

Finally, the findings of this study may contribute to the existing body of research on the integration of technology in developing countries. Obviously, developing countries have much in common in terms of the novelty of their technology initiatives as well as the obstacles they are facing to integrate ICT in their educational systems. Last but not least, the findings of the study may serve as a guide for future researchers who may examine teachers' attitudes in similar educational contexts.

Limitations of the Study

Any academic study has its limitations, no matter how carefully it has been designed (Strauss & Corbin, 1998). Although this study used both quantitative and qualitative strategies to explore answers to the three research questions, it still has limitations, some of which can be addressed in further research. The following limitations were present in this study:

- The methods used to collect data could not have included classroom observations and/or focus groups. This is because neither the sampling strategy nor the participants' circumstances, cultural and organisational, have allowed for these methods to be used in this study. Further research using other methods to collect data would be important to evaluate this research.

- The study does not claim overgeneralisation of the claims or representativeness of the population sample. The findings in this study are limited in scope to Secondary School EFL teachers in the Western District of Chlef. As a result, this study will only be exploratory in nature and is not intended to represent all the population of EFL teachers in Algeria. However, it hopes that through insights gained from a sample of teachers, some conclusions could be made and possibly applied to other cases similar to the one under study.
- This study is a cross-sectional study, so it is limited to a particular point in time. A cross-sectional research involves the collection of data from participants in at a single point in time from a sample drawn from a specified population.
- The attitudes profiled in this study are not exhaustive. The study acknowledges that attitudes are complex and difficult to assess. It only reflects a sample of what these attitudes are as identified by the researcher.
- Attitudes are hard to investigate. This study does not claim perfection and certainty in its findings, nor does it try to challenge current theory; rather it only attempts to use theory as a framework in order to give interpretations to attitudes articulated in a context where research so far seems to lack.
- The research could not have included learners, administrators, managers and decision makers, although it succeeded in including an inspector as a supplier of the information related to the refinement of the questionnaire. Including other actors would have given the study a more balanced and complete picture of the integration of ICT in the Algerian educational system. This point will be raised in “Recommendations for further research” in chapter four.

Delimitations of the Study

The scope of this study is restricted to the population of the Algerian Secondary Schools EFL teachers in the Western District of Chlef.Teachers' attitudes toward ICT in other sections of the Algerian educational systems, such as Middle Schools, Universities and Teachers' Training Schools (ENS), are not considered. Similarly, teachers from disciplines other than EFL are not included in this study. The results of the study may apply to the majority of the Algerian EFL teachers working in public education because of the great similarities amongst these teachers. For example, EFL teachers share the same resources, curricula, tests, and standards that are provided by the Ministry of National Education. Also, qualifying procedures are the same for all Algerian EFL teachers. However, the findings may not be generalizable to teachers in other countries.

Basic Assumptions

It is assumed that the participants are capable of describing their attitudes and perceptions as required in the study instruments. It is further assumed that the participants will be candid in their responses to the survey items and the interview questions. The researcher also presumes that the responses of participants involved in this sample are representative of those of Algerian EFL teachers working in Public Secondary Schools in the Western District of Chlef that constitute the population of the current study.

Definitions of Key Terms

The following definitions are provided to ensure uniformity and understanding of these terms throughout the study.

Information and Communication Technology or Technologies **(ICT)** is an umbrella term that includes any communication device or application, encompassing: radios, televisions, mobile or 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. ICTs are often spoken of in a particular context, such as ICTs in education, health care, or libraries (Mustafina , 2016; Oster et al ,2006).

ICT Integration, ICT Implementation

In the present research, these two terms are used interchangeably; however, they are all defined as having the same meaning – teaching and learning with ICT. That is, the two terms used in this research are referred to as embedding/incorporating ICT in the curriculum for supporting teaching and learning, rather than teaching ICT as a separated subject. In addition, the two terms are concerned with the introduction, consolidation and full use of electronic means of capturing, processing, storing and disseminating information.

Computer Attitudes: Attitude is "A psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor" (Eagly & Chaiken, 1993, p. 15). In this study, computer attitude is operationally defined as the degree of favor or disfavor with which Secondary School EFL teachers in Algeria evaluate the presence and use of ICT in Algerian education.

Computer Attributes*:* Rogers (2003) identifies five attributes of an innovation which determine its rate of adoption: (1) relative advantage, (2) compatibility, (3) complexity, (4) observability, and (5) trialibility. In this study, *computer attributes* is operationally defined as the level of relative advantage, compatibility, complexity, and observability of the computers as perceived by Secondary School EFL teachers in Algeria. The fifth attribute, trialability, was not included in the study since EFL teachers in Algeria have not had the chance to experiment with ICT before it has been placed in schools by government decree.

Cultural Perceptions: Based on Rogers's (2003) idea of cultural compatibility, cultural perceptions can be defined as "the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters" (p.15). In this study, cultural perceptions refer to the extent to which Algerian EFL teachers' perceptions of the value, relevance, and impact of ICT as it relates to the cultural norms in Algerian society and schools.

Computer Knowledge: is the level of understanding of the main computer hardware components and software applications identified as essential for educational computer use.

Computer Skill: is the ability to use the main computer hardware components and software applications identified as essential for educational computer use.

Computer Access: is the perceived availability of computers that Algerian EFL teachers can use at home, school, and other places.

Teacher Characteristics: is the demographic information about Secondary School EFL teachers in Algeria, including their computer training background.

Computer Training: refers to any type of activity, including college computer courses, public or private computer in-service training, training seminars or workshops, peer staff development, etc. that helps teachers to learn about computers and computer usage.

Organization of the Dissertation

This dissertation is divided into four chapters. Chapter one reviews and synthesizes the literature with respect to the nature of teachers'attitudes, the history of ICT in education, the use of ICT in the developing countries and its promotion in the Arab World, technology and language teaching, as well as factors related to EFL teachers' attitudes toward ICT.It tries to build a theoretical framework to guide the study in the processes of data collection, analysis and interpretation. Chapter two provides a general background to the Algerian educational system and the main policies for the implementation of ICT in education that enable the reader to conceptualise the context in which the participants lived and worked. Chapter three gives a reflective account of the research methodology underlying the study, which details the population and sample of the participants, design of the study, the chosen paradigm and methods for data collection. Chapter four presents the findings and profiles the attitudes as articulated by the participants. This chapter also provides the implications emerging from the findings, and makes recommendations for future research.

CHAPTER ONE

THEORETICAL BACKGROUND OF THE STUDY

Chapter One
Theoretical Background of the Study

1.1. Introduction

The present study tries to explore the attitudes of Secondary School EFL teachers toward ICT. This chapter will review the relevant literature related to teachers' attitudes and ICT integration in order to provide an insight into the context and theoretical framework of this study. In this process, the chapter will first discuss the nature of teachers' attitudes. It will look at attitudes' definitions, components and aspects. Next, it will highlight the history of ICT in education and its promotion and use in the Arab world just to present a wider view of the issue, although we should keep in mind that this is a case study. After that, technology and language teaching is presented. The chapter will also provide the theoretical framework for the study, Rogers' (2003) Diffusion of Innovation Theory and the Theory of Reasoned Action. Then, research on the attitudes of teachers toward ICT is dealt with by explicating other factors related to teachers' attitudes toward the uptake of ICT. Lastly, the chapter focuses on teacher education and technology.

1.2. The Nature of Teachers' Attitudes

1.2.1. Definitions of teachers' attitudes

The issue of teachers' attitudes seems to be a subject of inconclusive debate in social psychology. It is argued that still little is known about teachers' attitudes and that no consensus was reached as to the exact nature of this complex construct. It has different meanings for different people in different contexts. The reason for this, as it is argued, is the fact that attitudes are abstract in nature .They have different components and are formed in different ways which makes them difficult to research (Perloff , 2017, p.89). Another reason is that attitudes can be attributed to other concepts, such as "learned pre-dispositions" (Aiken, 1996). "mental evaluations" (Panagiotis, George, Nikos & Ioannis, 2005) , " global evaluations of a person, object, place, or issue" (Huskinson and Haddock 2006), "dispositions" (Haji, 2015; Ajzen, 2005), "enduring organization of beliefs , feelings, and behavioural tendencies " (Hogg & Vaughan, 2005), " mental or neural states of readiness" (Allport, 1935 , as cited in Albarracin et al., 2005), " psychological tendencies" (Eagly and Chaiken, 1993), " beliefs and opinions about people, objects and ideas (Santrock, 2000; Johnson and Johnson,1998). "psychological dispositions "

(Albarracin, Johnson, Kumkale, and Zanna ,2005) “ likes or dislikes of things” (Fishbein and Ajzen, 1975).

Attitudes have generated great interest in the social sciences because they have long been presumed to exert a strong influence on behaviours, decisions, and judgments. Thus, another body of research suggested that attitudes may not be closely related to behaviour either (see Wicker, 1969, as cited in Guyer and Fabrigar, 2015) and their relationship with each other can be quite tenuous in practice (Eagly and Chaiken ,1993) . Instead, we may expect a close relationship between attitudes and behavior only under some specific, and relatively narrow, conditions (Schwarz & Bohner, 2001). For example, Zimbardo et al. (1977, as cited in Albirini, 2004) emphasize the strong interrelationship between attitude and behavior in that they each affects the other. Zimbardo and his associates suggest that “even though we cannot predict the behavior of single individuals, we should be able to predict that people (in general) will change their behavior if we can change their attitudes…” (p.52). Likewise, early theories of attitude structure explicitly assumed that behavior was closely intertwined with attitude. For instance, the tripartite theory of attitudes proposed behavior as one of the three fundamental components of attitudes (e.g.,Katz and Stotland, 1959 cited in Guyer and Fabrigar ; 2015).Additionally, attitudes are shaped by our experiences , and they are important because of their potential to influence behaviour. According to Santrock (2000), observed behaviour provides the best interpretation of an individual’s attitude, and once we examine this, we can see how attitudes influence how people see the world and the attributions they make to explain events (Wade and Tavris, 1990).

To clarify the construct further, Eagly and Chaiken (1998) provide a synthesis of the nature of attitudes, which are summarised by Shah (2008) as follows:

(a) Attitudes involve cognitive, affective and behavioral elements with an essential evaluative dimension;

(b) Are learned and they can develop with new input of a cognitive, affective or behavioural nature, or any combination;

(c) Can affect subsequent behaviour;

(d) May not be observed directly but must be inferred from observed behaviour.

For the purposes of this study, teachers’ attitudes toward ICT can be defined as the degree of favor or disfavor towards the existence of ICT in the Algerian schools. It consists of three key components: teachers' feelings toward ICT (affective), teachers' belief and factual knowledge of ICT (cognitive) and teachers' behavioural intentions and actions with respect to ICT (behavioural). "Teachers' attitudes " toward ICT then stands for teachers' evaluation and perceptions of self regarding how they feel about utilizing technology in their own teaching practices. Addressing teachers' attitudes is essential because teachers take on a major role in deciding on the extent to which ICT use is allowed or hindered in the classroom.

1.2.2. Components of Attitudes

The study of attitudes have long been considered a central concept of social psychology. Social psychologists are interested in the components of attitudes, how attitudes develop, and how they change. There are several main theoretical viewpoints about the essential components of attitude (Eagley & Chaiken, 1993).Attitudes are made up of three components: affect, cognition, and behavior (Abu-Samak, 2006; Albirini, 2006 ; Eagly & Chaiken, 1993). Each component serves a specific function .The affective component represents an individual's emotional response or liking to a person or object. The cognitive component consists of a person's factual knowledge about a person or object. Finally, the behavioral component involves a person overt behavior directed toward a person or object (p. 20) (Albirini, 2006, p. 376). These components were assumed to correlate with actual behavior based on evidence from related studies supporting the Theory of Reasoned Action (Albirini, 2004; Eagly & Chaiken, 1993).

The most frequently used cognitivist attitude model is the tripartite model (Riagáin 1997; Ladegaard , 2000), also called the ABC model, which embraces attitudes as being comprised of affective, cognitive, and behavioural aspects. The tripartite model of attitudes raises the question of whether attitudes must always contain all three components. Research carried out by social psychologists has shown that all three components do not have to be in place for an attitude to emerge, as attitudes can be based largely or exclusively on any of the three concepts (Eagley & Chaiken, 1993: 16). Consequently, an attitude is instead considered as a general evaluative summary of the information derived from these components.

In this study, the three-fold nature of "attitude " is significant in that it provides us with ideas about how to measure them. The affective component could be measured by physiological responses or verbal statements of like and dislike, while the cognitive component might be measured by self-ratings of beliefs or by the amount of knowledge which a person has about some topic. The behavioural component could be measured by observation of how the person behaves in specific stimulus situations. It is important to note that attitudes form a key point of an individual's thinking, especially toward things that matter to the individual and their relationship with the three aforementioned components is still surrounded with ambiguity and inconclusiveness. The following chart (Figure 1.1) illustrates the three-fold interaction of the three components and their relationship to attitude, as well as how it manifasts itself in the form of behaviour.

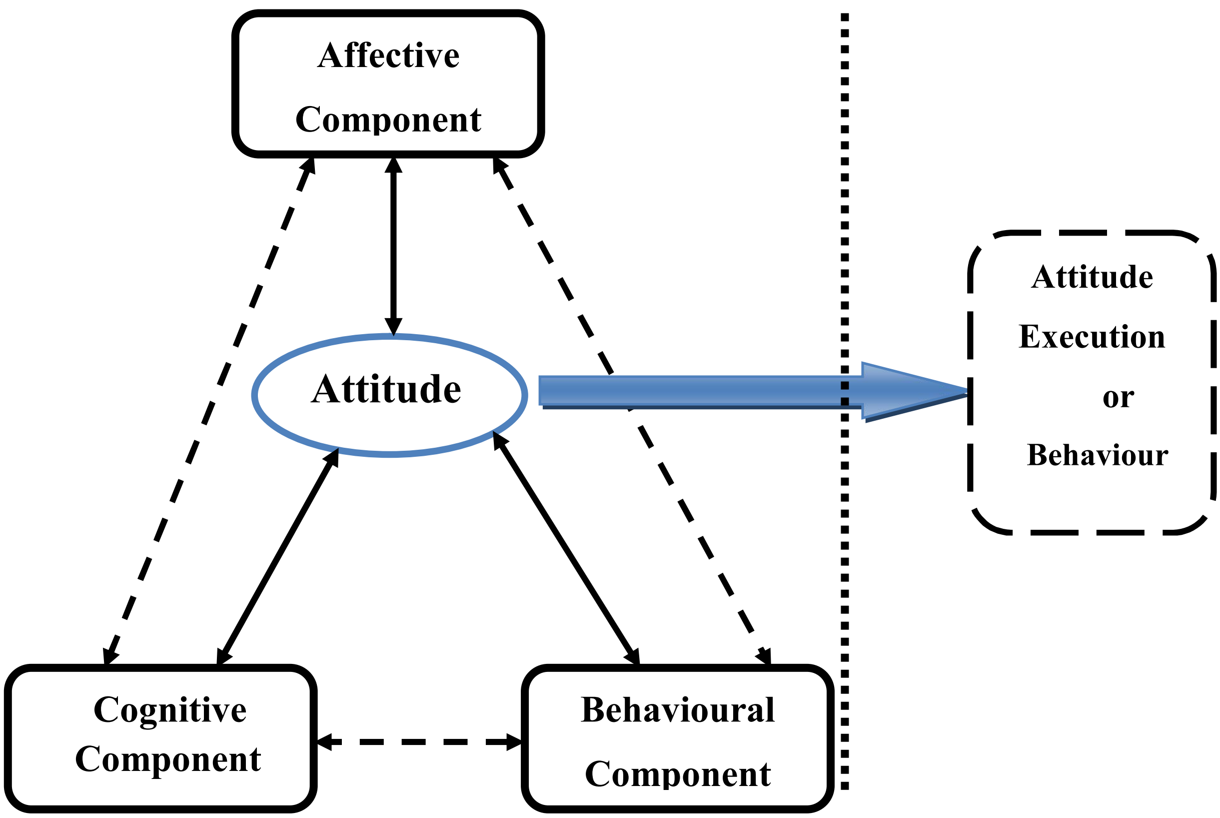

Figure 1. 1: The Three Components of Attitude and their Three-fold Interaction

1.2.3. Aspects of Teachers' Attitudes

As early as the 30's , Allport (1935) as cited in Albarracin et al., (2005) mentioned that an attitude is a mental or neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related. His definition, though is complex, emphasises two crucial aspects that contribute a lot in understanding the concept of attitude.

Gilakjani and Leong (2012) acknowledge that attitudes are characterized by two core aspects.The first, which is the central one, refers to "readiness for response." That is, an attitude is not behaviour, not something that a person does; rather it is a preparation for behaviour, a predisposition to respond in a particular way to the attitude object. The term attitude object is used to include things, people, places, ideas, actions, or situations, either singular or plural. This aspect appears in many other definitions like that of Jung (1971): "readiness of the psyche to act or react in a certain way" (Jung, 1971, p. 687, as cited in Oskamp and Schultz , 2005).

The second aspect is the "motivating" or "driving force" of attitudes. That is, attitudes are not just passive result of past experiences. Instead they have two active actions expressed by Allport (1935, cited in Schwarz and Bohner ,2001) as "exerting a directive or dynamic influence upon the individual' s response to all objects and situations with which it is related" (p. 810). Dynamic action means that it impels or drives behaviour. Directive action means that it guides the form and manner of behaviour into specific channels, encouraging some actions and deterring others.Furthermore, attitudes are characterised by other essential features like their relatively "enduring nature", though it is not true for all attitudes (some attitudes can be stable whereas others can be changeable).

The evaluative aspect of attitudes, which is the disposition to respond in a favourable or unfavourable manner to given objects, has been increasingly stressed by recent research. For instance, in the succinct words of Daryl Bem, "Attitudes are likes and dislikes" (1970, p. 14). Similarly, Eagly and Chaiken (1993), in a highly influential textbook, defined attitudes as "a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor" (p. 1).

Although the abovementioned definitions of attitude have varied over time and across disciplines, most contemporary researchers have come to view an attitude as a relatively general and enduring evaluation of an object, person, or concept along a positive to negative dimension (e.g.,Fabrigar and Wegener, 2011).Thus, a distinguishing characteristic of attitudes is that they involve evaluation of a particular psychological object, be it a physical entity (e.g., the Eiffel Tower), an institution (the Catholic Church), a person (President Kennedy) or group of people (homosexuals), a policy (stem cell research), an abstract concept (democracy), or any other discriminable aspect of an individual's world. In the succinct words of Daryl Bem, "Attitudes are likes and dislikes" (1970, p. 14). Similarly, Eagly and Chaiken (1993), in a highly influential textbook, defined attitudes as "a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor" (p. 1).

In conclusion, "attitudes" in general are a hypothetical construct that represent an individual's like or dislike for an item. They are positive, negative or neutral views of an "attitude object". Accordingly, people can simultaneously hold a positive and a negative bias towards the attitude in question. All attitudes take a stance - positive or negative – but they can vary in intensity (Gilakjani and Leong , 2012) .

1.3. ICT in Education

1.3.1. History of ICT

When discussing the history of ICT in education, educators and researchers tend to divide it into a number of periods of time. According to Roblyer and Doering (2013), the development of ICT in schools could be divided into three eras: the pre microcomputer era, microcomputer era, and Internet era (Roblyer & Doering, 2013). Lambert and Cuper (2008) argue that ICT "offers today's classroom teachers the opportunity to move from a largely linear learning environment to an increasingly nonlinear environment" (p. 266).

According to Roblyer and Doering (2013, p. 8), the pre-microcomputer era lasted from 1950 until the late 1970's. One of the most important characteristics of this era was that computers were large and quite expensive machines and required a great deal of expertise to use. The pre-microcomputer era began in 1950 when the first computer was used for instruction at The Massachusetts Institute of Technology (MIT), followed by the first computer used with children in school to learn arithmetic in New York City in 1959. The Computer-Assisted Instruction (CAI) movement emerged in the early 1970's and federal funds were issued by the American Government for a larger minicomputer system in schools (Roblyer & Doering, 2013). In the late 1970's, the computer literacy movement began when computer literacy skills were considered to be important in programming and using software tools like Word Processing. In the same vein, the common wisdom of the time was that education needed to resolve a previously unknown deficiency called "computer literacy" (Besser, 1993). More importantly, computers were perceived to have the potential to revolutionize teaching and learning just as they revolutionized many other aspects of modern life (Maddux, Johnson, & Willis, 1997).

In 1977, the first small, stand-alone desktop microcomputers were invented announcing the beginning of the microcomputers era (Roblyer & Doering, 2013). Therefore, the issue of 'computers in education' started to become popular in educational policy-making in the early 1980's, when relatively cheap microcomputers became available for the consumer market (Pelgrum & Law, 2003) .Stimulated by governmental policies, and quite often led by the fear of losing the technology race, many countries started to build their own brand of microcomputers and distributed these to schools. The 1980's in particular witnessed a frenzied competition between the major computer companies, such as Apple, IBM, Radio Shack, and Hewlett Packard, to disseminate computers into American schools.

Since the 1980's the integration of computer technologies in education has been a challenge for many educational systems throughout the world. The terminology to denote these technologies during the past decades changed quickly from micro-computer to NIT (New Information Technologies), IT (Information Technologies) and ICT (Information and Communication Technologies) all denoting a shift from a technological focus to the more functional characteristics of these technologies (Pelgrum and Law 2003) . This shift in terminology resulted also from changed expectations about the role of ICT in education. While in the 1980's and early 1990's ICT meant for most educational systems that students were learning about computers, since the mid 1990's the prevailing rhetoric in many policy documents was to conceive ICT as initiator of a societal change and as facilitator for educational reforms aimed at lifelong learning. (Pelgrum, 2001)

Unfortunately, the large-scale technology initiatives of the 1980's made little reference to the classroom teachers (Harper, 1987). Being at the lower-end of the decision-making chain, teachers were hardly involved in the process that touched the very foundations of their profession, and their opinions were never solicited (Harper, 1987). The consequence was soon palpable in their apathy to the new tools (Bush & Terry, 1997). As Perelman reports, the typical teacher response was "Why should I do anything different next year from what I did last year? Who cares?" (p.6). Such indifferent attitudes drove several educational theorists in the United States to ask "Should not educators, then, be actively involved so as to ensure that computers are used effectively?" (Harper, 1987, p. 44). The real challenge for educationists is, therefore, how to harness the potential of ICT to complement the role of a teacher in the teaching and learning process. Teachers who do not have a chance to develop professionally in the use of emerging technologies and acquire modern computer literacy and skills are under threat.

The mid 1990's is considered as a milestone in the development of computer systems. With the advent of the World Wide Web (www) by Tim Berners-Lee in 1993, the Internet era was born and a new optimism in technology arose in educational circles. Such optimism was based on the great capacities of the networked computer and its related technologies to provide a wide array of learning opportunities ranging from access to huge amounts of information, to communication with others throughout the world, and to multinational collaborative research projects. The new capabilities added to computer technologies qualified them to play an important role in education. Technology advocates initiated a new discourse, contending that "we must prepare learners for their future, not for our past" (Thornburg, 1999). Therefore, the effective digital-age school should equip students with new and necessary skills to ensure their success beyond the school environment .

The web, now called "Web 1.0", was initially designed as an information source and medium for online publishing. It required an understanding of HTML (Hyper Text Markup Language) in order to publish a web page (Rosen & Nelson, 2008). Furthermore, Web 1.0 was one-way communication so the majority of students simply used the Internet to collect information (Albion, 2008). Web 1.0 lasted for around ten years until 2004, when it turned to what is called read/write Web or "Web 2.0" facilitating collaboration and communication (Solomon & Schrum , 2007). The change from a 'read Web' to a 'read/write Web' encouraged teachers to become increasingly inventive in their approach to engaging technologically savvy learners who want to publish their work within an ever expanding arena. In the same vein, Ramirez (2010) highlights that:

> When students write or speak for a broader and more international audience, they pay more attention to polishing their work, think more deeply about the content they produce, and consider cultural norms more thoughtfully … (Ramirez , 2010, p. 1).

Web 2.0, through its encouragement of user-created content, is much more than a simple static information source. It is, rather, considered as an interactive tool allowing teachers and students to contribute to a website's content, so they can share information, collaborate and interact with each other (McAfee, 2006). In the same vein, Web 2.0 is regarded as a shift from what were primarily informational tools to what we might call relational tools – so that if Web 1.0 was the informational web, Web 2.0 is the social web.' (Pegrum, 2009, p. 18).That is, Web 2.0 technologies are becoming more prevalent in our society. They are being used not only in people's personal lives, but also in their educational and occupational settings. Learners are able to work on virtually all aspects of their language learning, from grammar and punctuation to speaking and listening skills via Web 2.0 technologies. Additionally, Web 2.0 has allowed language to be taken out of the classroom and into the "real world," permitting learners the opportunities to learn collaboratively and use their new language more and more in its natural settings. Therefore, it is very important that EFL teachers become familiar with these technologies and how they can be used to enhance the educational experiences of their students.

All aspects of life today are significantly affected by ICT. Digital devices are gradually becoming smaller, more powerful and cost effective with the advent of Web 2.0. People today live in an information age across all walks of life where information is accessible anytime, anywhere, just at the touch of a fingertip. Table 1.1 illustrates the most important inventions during the last 40 years.

Table 1. 1: The History of ICT in Education (Roblyer & Doering, 2013; Timetoast, (2011)

Eras	Years
Pre-microcomputer era	1910 Silent Film entered education 1927 Broadcast radio was in schools 1936 BBC began regular television broadcasts 1950 First computer used for instruction Early1970's Computer-assisted instruction (CAI) movement emerges Late 1970's CAI movement declines and Computer literacy movement begins
Microcomputer era	1977 First microcomputers in schools The Apple corporation is founded 1981 The IBM corporation begins 1982 The Personal Computer was introduced 1990 The mobile phone becomes more than just the government 1991 The first interactive white board, but it was 10 more years before they became part of education
The World Wide Web era	1993 The advent of the World Wide Web 1994 The Netscape navigator released 1995 Microsoft released Windows 95 The beginning of virtual schooling 1997 Internet Explorer version 4 released 1998 The Search Engine Google is founded 1999 Bluetooth was announced 2000 Microsoft released Windows 2000 Apple introduces the ipod 2001 Wikipedia, a Wiki free content encyclopedia goes online 2004 The advent of Web 2.0 2005 Social networking sites , such as Facebook, gained popularity Youtube was launched 2007 The first iphone is released beginning the development of "smartphones" Amazon released first kindle ebook reader 2010 The first generation ipad hits the market beginning the development of tablet computing

1.3.2. The Implementation of ICT in Education around the World

Integrating Information and Communication technology (ICT) in education has been an important agenda of all countries because in the world with rapid changes occurring every now and then, no one country is willing to be left out. In fact, ICT is the tool for rapid advancement in the 21st century. Through ICT every part of the world is connected. Thus, the citizens of each country should acquire ICT skills and knowledge to be able to go through the ever changing world. As a result of the explosion of ICT, the world is the classroom and the world exists in the classroom. Students are easily connected to the rest of the world and information is easily accessible with a click of a mouse. Thus, teaching approaches need to be changed and the role of teachers needs to be changed too. The classroom itself needs changes to cater for the new way of learning and teaching. (Alazzam et al., 2012)

Computer technologies had attained wide recognition in technologically developed countries by the time they entered developing countries. The new changes were often characterized by speed, convenience, and efficiency. With these attributes, "computerization has risen to ideological prominence, an expression of grand hopes and ideals" (Winner, 2003, p.595). Unfortunately, however, the use of modern technological tools such as computers and Internet is still in its infancy stage in most developing countries (Ndibalema, 2014).

The general sentiment for computerization among decision makers in developing countries is reflected in Allotey's speech to top decision makers in Ghana: "We paid the price of not taking part of the industrial revolution of the late eighteenth century because we did not have the opportunity to see what was taking place in Europe. Now we see that information technology has become an indispensable tool. We can no longer sit down and watch passively" . It has also been hypothesized that ICT could impose adverse effects in the developing world because greater advantages will accrue to the industrialized world from global competitiveness than to the developing world, thus making it hard for the less developed countries to compete on the international market. Furthermore, the rapid evolution in ICT will make it harder for the developing countries to bridge the already widening gap between the developed and developing world. ICT, by increasing inequality in income distribution and thus adding to the poverty of the poor, will have adverse results on the status of the poor. (Nour ,2002 , p. 7).

At the international level, information technologies facilitated the world's shift to a more open and global society, which created new challenges, related to changing patterns of labor, business, and world communications (Berg & Vogelaar, 1998).Hence, the adoption of computer technology became not only an option, but a must, dictated by "international standards" in business, communication, and global labor (Albirini, 2006).

1.3.3. Promoting ICT use in Education in the Arab World

In an article by Amr Ibrahim (2008), several initiatives in North Africa and the Middle East (MENA) have been developed acknowledging e-learning and integration of IT in education as a tool for educational development and enhancement. At the start of the twenty-first century, (MENA)[1] countries are starting to embrace IT integration in education and training. However, often no clear policy or strategy has yet been implemented, but initiatives and procedures emerge that harness IT policy development. Examples of programs and pilot projects can be found in Oman (Knowledge Oasis Muscat, 2006), Jordan (Ministry of Planning and International Cooperation Jordan, 2004),Syria (Albirini, 2004) , Lebanon (UNDP, 2003, 2006b), Qatar (ICT Qatar, 2005), Bahrain (Kingdom of Bahrain Ministry of Education, 2004), United Arab Emirates (Digital Opportunity Channel, 2007; Smart Learning Programme, 2012) , Saudi Arabia (Nair, 2006), Kuwait (Digital Opportunity Channel, 2007), Palestine (Hammad, 2005), Algeria, Egypt, Libya, Morocco, Sudan, and Tunisia (United Nations Economic Commission on Africa), MENA countries (The Arab League Educational, Cultural and Scientific Organization, 2008), and Morocco (GENIE Program in 2005).

Access to information and technology is seen as so crucial to the progress of developing countries that the United Nations placed it third on the list of the most important global issues after poverty and domestic violence (Hafkin & Taggart, 2001). In 2003, the United Nations Development Program (UNDP) created a program called Information Communication Technologies in the Arab Region (ICTDAR) to help Arab

[1] According to the World Bank classification of world regions in the Middle East and North Africa , MENA region is composed of fourteen countries, including Algeria, Djibouti, Egypt, Iran, Iraq, Jordan, Lebanon, Libya, Morocco, Oman, West Bank and Gaza: Occupied Palestine Territories, Syrian Arab Republic, Tunisia and Yemen.

countries[2] in "harnessing ICT to further human development and reduce poverty”. This regional programme enhances and complements UNDP's national and global efforts and issues highlighted in the Arab Human Development Report (Accascina , 2001). ICTDAR has been described as “'human development' driven by the active use of ICT to build, develop, and sustain knowledge acquisition and utilization”. In a 2004 report by the Regional Program for Arab States of the UNDP, the Arab region was described as having the lowest levels of ICT usage relative to other world regions.

The United Nations Development Program sees ICT as a means to help the Arab region to embrace modernization at every level, by moving from rigid, central structures to flexible decentralized ones. The United Nations Conference and Development (UNCTAD) compiled a 2004 report detailing ICT indices in the developing countries and comparing them with those in Europe and the U.S. The purpose of the UNCTAD is to monitor the developed countries in relation to their technological efforts to “leapfrog” and fill the growing “digital divide” between Western and Eastern developed countries. The UNCTAD report advised Arab countries to see the development of ICT as tied “to the development of education, trade, health, and other sectors to generate wider benefits,” and argued that technology is important in the "knowledge economy of the globalmarket”.

The Arab League Educational, Cultural and Scientific Organization (ALECSO)[3] has, as its primary responsibility, the promotion and coordination of educational, cultural and scientific activities for Arab countries. In this perspective, a "Plan for the Development of Education in the Arab Countries" (2008-2018) is being implemented by ALECSO. The implementation plan aims at systematically developing the Arab educationa system, mainly through the effective use of ICTs in education. To this end, a number of measures ought to be considered, stemming from technological and educational point of views. In this context, the Information and Communication direction in the ALECSO

[2] The Arab countries include Algeria, Bahrain, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya,Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syrian Arab Republic,Tunisia and the United Arab Emirates.

[3] The Arab League Educational, Cultural and Scientific Organization (ALECSO) is an institution of the Arab League, founded in 1975 and headquartered in Tunis. It coordinates and promotes educational, cultural and scientific activities in the Arab world. (Jemni , 2014, p3).

organization strives to well define a set of innovative and emerging issues such as Open Educational Resources (OERs), Massive Open Online Courses (MOOCs), Educational Mobile Applications, and Educational Accessibility, according to which, several projects are being conducted, aiming to contribute in the modernization and the development of the educational Arab system.(Jemni , 2014).The ALECSO ICT Department fulfils two main missions :

(1) providing ICT services within the organization (soft and hard).

(2) proposing and conducting ICT projects in the areas of Education, Culture and Science.

The ICT Department maintains cooperation and coordination with the Arab countries in the ICT field in order to guarantee easy flow and high efficiency of exchanged information and thus reaching an optimum enrichment of development. Moreover, in order to take the greatest possible advantage from this new growing niche, we propose to launch a pilot experience of MOOCs dedicated to Arabic language learning for native and non-native speakers. Actually, concerning the technological considerations that could concern also the previous stated projects, we focused on cloud computing[4] facilities for the educational domain (Weber, 2013 as cited in Jemni , 2014). In fact, the related project aims to propose a specific guideline for the effective use of cloud computing in education for Arab countries, through the implementation of a cloud computing based educational platforms (Jemni, 2014).

Similar to other world countries, the Arab nations have the opportunity to benefit from the wide and fast diffusion of ICT. According to Nour (2002, p. 9), ICT has the potential to accelerate economic development in the region by:

- Promoting economic growth by facilitating the generation or increase of another sources of income and investment, thus enhancing sustainable development and welfare economy.
- Improving the knowledge-based economy by (a) increasing the efficiency of

[4] Cloud computing is a web-based service that increases interactivity.The term “cloud” is a metaphor for the Internet. Cloud computing allows the individual to use files and applications over the Internet and hence in multiple locations. This means that personal files can be stored on the Internet and retrieved from any computer that has access to the Internet. Examples of these are the Web 2.0 applications such as Gmail, Prezi , Wikispaces and Voicethread (Wang Ng, 2015 , p.9)

the educational system and learning to benefit from long-distance teaching in the near future; (b) developing the communication system through the provision of cheaper, easier, faster and more efficient services; (c) upgrading skills and developing human resources through improved educational and training systems and enhancing the capability of people.

- Accelerating the catching-up effect. The diffusion of ICT can be used to accelerate and facilitate efforts to bridge the gap with the advanced countries.
- Minimizing poverty in the region by creating additional employment opportunities.
- Advancing Research & Development efforts by motivating and facilitating the collaboration between research institutes and organizations in the region, thus promoting research activities in the region.

As a result, and in order to cope with the challenges of the 21st century, most Arab countries have initiated curriculum reforms in their systems of English language teaching at one point of time since the start of the 21st century. In this respect, different innovations have been introduced at different levels of the countries' educational systems (Bellalem , 2015)

1.3.4. ICT Use in Education in the Arab World

Amongst the few studies on language teachers' attitudes that were conducted in the Arab world there is, for instance , Al-Ammari (2004) who conducted a study in Qatar that investigated female teachers' perceptions of computers in education, and examined the correlation between the female teachers' perceptions and computer training and computer laboratory use. The findings of the study showed that the Qatari female teachers placed a high value on computer implementation in education. They saw it as a useful educational tool for both teachers as well as students. However, the study revealed that the female teachers encountered many barriers, both external and internal, to their implementation of computers in education. External barriers included: a lack of manuals, limited number of labs, lack of time, lack of incentives for using computers, limited proficiency in the English language, and the high cost of hardware and software. The internal barriers were related more to personal factors, such as a teacher's lack of knowledge and competence, fear of computers, and lack of confidence.

As for the EFL context, one of the pioneering studies was conducted by Albirini, (2006), who explored the attitudes of Syrian EFL teachers towards ICT in relation to computer attributes, cultural perceptions, computer competence, and computer access.The researcher utilized a mixed method: quantitative and qualitative to collect the data in the city of Hims in the scholastic year 2003-2004. A random sample of 326 Syrian EFL teachers was surveyed and 15 teachers were interviewed. The study findings showed that Syrian EFL teachers had positive attitudes towards ICT in education. They also had the intention to learn about computers and to use them in their teaching practices.

Another study which investigates EFL teachers' attitudes towards ICT integration is designed by Abu-Samak (2006) in Jordan. The researcher examined ICT usage among EFL teachers and the factors affecting their attitudes. The data were gathered from 363 EFL teachers. Results indicated that teachers have a positive attitude towards ICT. Computer attributes that affect their attitudes were listed ranging from highest to lowest as observablity, relative advantage, complexity and compatibility. It was also found that personal characteristics such as age and teaching experience had a negative correlation with attitudes while qualification was positively correlated. Gender and teaching methods were found insignificant as predictors of teachers' attitudes toward ICT.

In another region in the Middle East, Alaa Sadik (2006) conducted a study of the attitudes of 443 teachers in the southern districts of Egypt toward the personal and school use of computers and the various factors that may affect these attitudes and uses. The findings from the study indicated that the majority of Egyptian teachers demonstrated positive attitudes towards computer use. Further, the demographic variables of gender and computer experience were found to be significantly related to the teachers' attitudes towards computers. Clearly, the findings of the study indicate that teachers who have positive attitudes towards their personal use of computers also have positive attitudes towards the use of computers in schooling.

Additionally, Nedjah (2010) conducted a study to investigate the nature of EFL teachers' beliefs and attitudes toward the incorporation of e-learning into their teaching, and to define the different factors influencing them in the EFL departments of five universities in Algeria (University of Constantine, ENS, Annaba, Guelma and Adrar). She used one data collection instrument, a questionnaire, to gather the data. The study revealed that the regular use of technology influenced positively both teachers' attitudes and perceptions as an effective teaching tool. Teachers with 10 to 20 years of teaching experience perceived e-learning implementation most positively as valuable in EFL instruction. Genre, age, educational level and university affiliation did not significantly influence teachers' attitudes and beliefs toward e- learning integration into English language teaching.

The most recent study, conducted in 2016 by Zyad, investigated EFL Secondary Education teachers' attitudes towards ICT implementation in the El-Jadida Province in Morocco as well as the barriers that impede the spread of ICT use for teaching purposes. The study utilized the technology acceptance model as its theoretical framework. Zyad used a mixed method design including both quantitative (survey) and qualitative (semi-structured interviews) approaches to collect the data. The findings of the study identified several conflicts between teachers' behavioral readiness to utilize ICT in the classroom and a range of barriers that slow down the process of ICT integration. Despite teachers' positive attitudes towards ICT, it is still largely underused. The study found that this is mainly ascribable to curricular, infrastructural and logistical barriers that have to be removed to boost teachers' attitudes and encourage them to use ICT in the classroom.

This current study tries to shed light on the current use of ICT by EFL teachers in another country in the Arab world. It hopes to help in presenting a more comprehensive description of the region in terms of ICT implementation for future initiatives and evaluations.

1.4. Technology and Language Teaching

Educational technologies are becoming increasingly important and promise to change the way students learn and teachers teach. However, technology has been around in language teaching for decades. For example, the blackboard, as a form of technology, has been used for centuries. Tape recorders, language labs and videos have been in use since the 1960's and 1970's, and are still used in classrooms around the world (Dudeny and Hockly, 2007). The key to successful use of technology in language teaching lies not only in hardware or software but also in our human capacity as teachers to plan, design and implement effective educational activities. This, of course, can help bring out the best that human and machines have to offer (Abunowara, 2014).

When language teaching and technology are concerned, CALL[5] has been the most widely used expression, and it has progressed substantially particularly for the past four decades. Computers-based materials for language teaching, often referred to as CALL (Computer Assisted Language Learning) were introduced to the language learning field in the 1980's (Dudeney and Hocky 2007:7) and many enthusiasts strongly advocated their use, espousing the many advantages they could bring to both language learners and teachers. The CALL approach is one that is still found on many published CD-ROMs for language teaching. The use of computer technology in the field foreign language teaching is intertwined with the use of computer-assisted language learning (CALL).In a well-recognized review of CALL-related research, Warschauer and Healey (1998) identified famously three phases of CALL use in the classroom which they termed ''Structural / Behaviouristic CALL'', ''Communicative CALL'' and ''Constructivist / Integrative CALL'' .

As illustrated in the following Table 1.2. Warschauer and Healey (1998, p.59) have noted that these phases are not clear-cut in terms of a particular time line. As the authors stipulated, "Current uses of computers in the language classroom correspond to all three of the paradigms".

Table 1. 2: Three Stages of Computer-Assisted Language Learning adapted from (Warschauer, 2000, p. 3)

Stage	**1970's–1980's: Structural CALL**	**1980's–1990's: Communicative CALL**	**21st Century: Integrative CALL**
Technology	Mainframe	PCs	Multimedia and Internet
English-teaching paradigm	Grammar-translation and audio-lingual	Communicate[sic] Language teaching	Content-Based, ESP/EAP
View of language	Structural (a formal structural system)	Cognitive (a mentally constructed system)	Socio-cognitive (developed in social interaction
Principal use of computers	Drill and practice	Communicative exercises	Authentic discourse
Principal objective	Accuracy	Fluency	Fluency and agency

[5] Computer Assisted Language Learning (CALL) was determined as an acronym at the 1983 TESOL convention in Toronto (Chapelle, 2001).

As access to ICT has become more widespread, so CALL has moved beyond the use of computer programs to embrace the use of the Internet and web-based 2.0 tools. The term TELL (Technology Enhanced Language Learning) appeared in the 1990’s, in response to the growing possibilities offered by the Internet and Communications Technology (Dudeney and Hocky, 2007). More recently, ICT in the form of e-learning and the Internet have presented additional benefits to the learning environment as they enable the integration of virtually unlimited multimedia learning materials from external sources into the curriculum and make them available to students at any location in the world (distance education) where there is a computer, mobile phone or tablet device with Internet access (Alsunbul, 2002).

A growing body of literature suggests that teachers are the ones in charge of incorporating CALL into their classroom, and as Sagarra and Zapata (2008) explained, the success of CALL is linked to the abilities of the teacher who manages the course. For example, a study by Tuzcuglu (2000) examined teachers’ attitudes towards CALL in the Foreign Language Department at a Turkish university. The teachers surveyed were found to have positive attitudes towards the use of CALL in language instruction. Nevertheless, the teachers were reluctant to use the computer lab, thus underutilizing the use of computers in their language instruction. Despite the teachers' awareness that the use of CALL promoted student achievement and linguistic competence in general, the study revealed that the teachers' lack of training and experience in using CALL resulted in the under-use of computers in the classroom.

Noytim (2010) also conducted a study in order to explore Weblogs’ role in enhancing EFL students’ English language learning in the context of a University in Thailand. According to the findings of the study, Weblogs fostered students’ analytical and critical thinking skills. Furthermore, it was also claimed by Noytim that Weblogs enabled the students to improve their English and using Weblogs motivated students to gain confidence in writing and reading in English.

The increasing and rapid growth of ICTs cannot go unnoticed in the field of foreign language teaching as the benefits have multiplied and the new generations, being digital natives, are technologically savvy (Al-Mahrooqi and

Troudi , 2014, p. 3).Therefore, the use of technology in the classroom is becoming very important and it will become a normal part of English Language Teaching (ELT) practice in the coming years. Dudeney and Hocky (2007:7) relate this to many reasons, to mention just some:

- Younger learners are growing up with technology and it is a natural and integrated part of their lives. For these learners the use of technology is a way to bring the outside world into the classroom. And some of these younger learners will in turn become teachers themselves.
- Technology, especially the Internet, presents us with new opportunities for authentic tasks and materials, as well as an access to a wealth of ready-made ELT materials.
- Technology is offered with published materials such as coursebooks and resource books for teachers.
- Technology offers new ways for practicing language and assessing performance.
- Technology is becoming increasingly mobile. It can be used not only in the classroom, lecture hall, computer room, or self-access center, but it can be also used at home, on the way to school and in Internet cafés.
- Using a range of ICT tools can give learners exposure to and practice in all of the four main language skills - speaking, listening, writing and reading.

With the advances in ICT, the learners are offered many opportunities to improve the quality of their language learning. ICT has moved the learners from passive users of the materials on the computer to active creators of their own materials. Today, teachers use web tools to allow learners to create, share and interact with their own as well as others' materials. Hence, the use of ICT in the classroom for the teaching and learning is very important to provide opportunities for students to learn and operate in the information age. Hence, Networking technologies are capable of connecting people across the globe and today's students are accustomed to the instantaneous connection with others at the click of a mouse (Collins & Halverson, 2009). The current study will try to shed some light on EFL teachers' use of ICT in the Arab region, particularly in Algeria.

1.5. 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) that explains reinforcement of behavior and attitudinal dispositions and how it affects the decision to adopt or not a technology. The theoretical models described below have been empirically applied to understand ICT adoption behaviour in education.

1.5.1. Innovation Diffusion Theory (IDT)

One of the salient theories that explain the process of change ushering the adoption of new technologies is Rogers' "Diffusion of Innovations" (2003). Rogers' theory was founded on a meta-analysis of 2,585 empirical studies published in 1981 in nine disciplines. Up to 1995, 3,890 research studies utilized the diffusion of innovation framework to examine the spread of new ideas, practices and objects (Roger, 1995 as cited in Albirini , 2004). This wide applicability of diffusion theory explains why so much diffusion research continues to be conducted (Sooknanan, 2002;Rogers 2003). Since Rogers uses the terms innovation and technology interchangeably (Rogers, 1995, p.13), the diffusion of innovation framework seems particularly suitable for the study of the diffusion of ICT.

According to Rogers (2015), diffusion is "a special type of communication concerned with the spread of messages that are perceived as new ideas, and necessarily represents a high degree of uncertainty to the individual. The four main elements in the diffusion of new ideas are (1) the innovation, (2) communication channels, (3) time, and the (4) social system" .These four components explain the process of change that is confronting policy-makers, researchers, or whole organizations. In the field of education, teachers are gatekeepers of the way technology is used in the classroom, and their decisions reflect their pedagogical and epistemological beliefs in terms of technology. Therefore, teachers are undeniably the most important agents of change within the classroom arena.

Rogers (2003) describes an *Innovation* as "an idea, practice, or object that is perceived as new by an individual or other unit of adoption" (p. 12). Rogers explains how new ideas spread via communication channels over time. Such innovations are initially perceived as uncertain and even risky. To overcome this uncertainty, most people seek out others like themselves who have already adopted the new idea. Thus the diffusion process consists of a few individuals who first adopt an innovation, then spread the word among their circle of acquaintances—a process which typically takes months or years.

The second main element in the diffusion of new ideas is the communication channel. Communication is the process by which participants create and share information with one another in order to reach a mutual understanding. A Communication Channel is “the means by which messages get from one individual to another” (p. 18). The diffusion process typically involves both mass media and interpersonal communication channels. And, in today’s informatics age, information technologies such as the Internet and Smart phones and especially web 2.0 technologies including social networks like Facebook, represent formidable tools of diffusion, combining aspects of both interpersonal interaction and mass media (Morris & Ogan, 1996). Mass media channels are more effective in creating knowledge of innovations, whereas interpersonal channels are more effective in forming and changing attitudes toward a new idea, and thus in influencing the decision to adopt or reject a new idea. In addition to mass media and interpersonal word-of-mouth communication channels, interactive communication via the Internet has become more important for the diffusion of certain innovations in recent decades (Rogers 2003, p.18). Most individuals evaluate an innovation, not on the basis of scientific research by experts, but through the subjective evaluations of near-peers who have already a dopted the innovation. So the process is essentially social in nature, being driven by individuals talking to others about the new idea, as they give meaning to the innovation.

The third main element in the diffusion of new ideas is *time*. Diffusion research considers *time* as a variable to a much greater degree than do other fields of communication study. *Time* is involved in diffusion in (a) the *innovation-decision process*, the mental process through which an individual passes from first knowledge of a new idea, to adoption and confirmation of the innovation; (b) *innovativeness*, the degree to which an individual is relatively earlier in adopting new ideas than other members of a system; and (c) an innovation’s *rate of adoption*, the relative speed with which an innovation is adopted by members of a system (Rogers, 2003).

The fourth main element in the diffusion of new ideas is *the social system*. A social system is defined as a set of interrelated units that are engaged in joint problem-solving to accomplish a common goal. The members or units of a social system may be individuals, informal groups, organizations, and/or subsystems. The social system constitutes a boundary within which an innovation diffuses. The first area of research is based on how the structure of the social system affects diffusion in many ways. A second area of research involved how norms affect diffusion. Norms are the established behaviour patterns for the members of a social system. A third area of research has had to do with opinion leadership, the degree to which an individual is able to influence informally other individuals' attitudes or overt behavior in a desired way. A change agent is an individual who attempts to influence clients' innovation-decisions' in a direction that is deemed desirable by a change agency.

Additionally, the underlying socio-cultural structures in a social system determine the extent to which an innovation is adopted and the time it takes for an innovation to be diffused. In other words, the social system plays a significant element in reducing uncertainty and facilitating the adoption of an innovation (Abu-Samak , 2006). Rogers (2003) calls attention to the dearth of studies dealing with the effects of the social systems on the diffusion of innovations. This may be related to the difficulty involved in capturing this construct. In the same vein, Rogers (2003) highlights that:

> The structure of a social system can facilitate or impede the diffusion of innovations in a system .The impact of the social structure on diffusion is of special interest to sociologists and social psychologists, and the way in which the communication structure of a system affects diffusion is a particularly interesting topic for communication scholars (Rogers, 2003, p. 25)

Research studies using Rogers' Diffusion of Innovations has often been guided by the assumption that the theory incorporates several sub-theories, each focusing on different elements of the diffusion process. Because of the comprehensiveness of Rogers' theory, researchers often test or investigate some aspects of this unified theory of diffusion. In the field of education, researchers have often examined two major sub-theories of diffusion related to the sphere of educational change: Innovation Attributes, and Innovation Decision Process.

The sub-theory of *Innovation Attributes* (Rogers, 2003) states that potential adopter's judge an innovation based on their perceptions in regard to five characteristics of the innovation. The characteristics of an innovation, as perceived by the members of a social system, determine its rate of adoption. Some innovations diffuse relatively slower, and other innovations diffuse faster. The characteristics which determine an innovation's rate of adoption are: (1) relative advantage, (2) compatibility,(3) complexity, (4) trialability, and (5) observability.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. Furthermore, innovations that are perceived by individuals as having greater relative advantage, compatibility, trialability, observability, and less complexity will be adopted more rapidly than other innovations. Using Rogers' (2003) theory as a theoretical framework for investigating ICT adoption by Algerian EFL teachers, this study examined key attributes of ICT (the innovation) to determine the extent to which it has successfully been diffused and adopted in the Algerian educational system by EFL teachers in the Western District of Chlef. In this study, only four of the perceived attributes of ICT were examined among a sample of Algerian EFL teachers. These attributes were relative advantage, compatibility, complexity, and observability. In line with Diffusion Theory, then, in order for ICT to be effectively implemented for EFL instruction in Algeria, EFL teachers first needed to see the relative advantage of ICT. Second, they needed to believe that ICT could be compatible with the existing socio-cultural structures. Third, they needed to feel that the use of ICT is less complex and makes their work easier. Fourth, they needed to see visible positive benefits of the use of ICT in the classroom. 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. Thus, the exclusion of trialability from this analysis is consistent with Rogers' (2003) assertion that "one problem with measuring the five attributes of innovation is that they may not in all cases be the most important perceived characteristics for a particular set of respondent" (p. 225)

The sub-theory of *Innovation Decision Process* (Rogers 2003) stipulates that diffusion is a process that occurs over time through five stages: Knowledge, Persuasion, Decision, Implementation and Confirmation (Rogers, 2003: 169). These stages typically follow each other in a time-ordered manner (Figure 1.2). Accordingly, “the innovation-decision process is the mental process through which an individual (or other decision-making unit) passes (1) from first knowledge of an innovation, (2) to forming an attitude toward the innovation, (3) to a decision to adopt or reject, (4) to implementation of the new idea, and (5) to confirmation of this decision.”(Rogers 2003:20). Sachs (1993) further writes, somewhat derisively, "after looking at [the literature] in our field, one might get the impression that the only important thing we need to know about how to encourage the adoption of innovations or how to be better change agents is that there are five stages to the innovation adoption process (p. 1)".

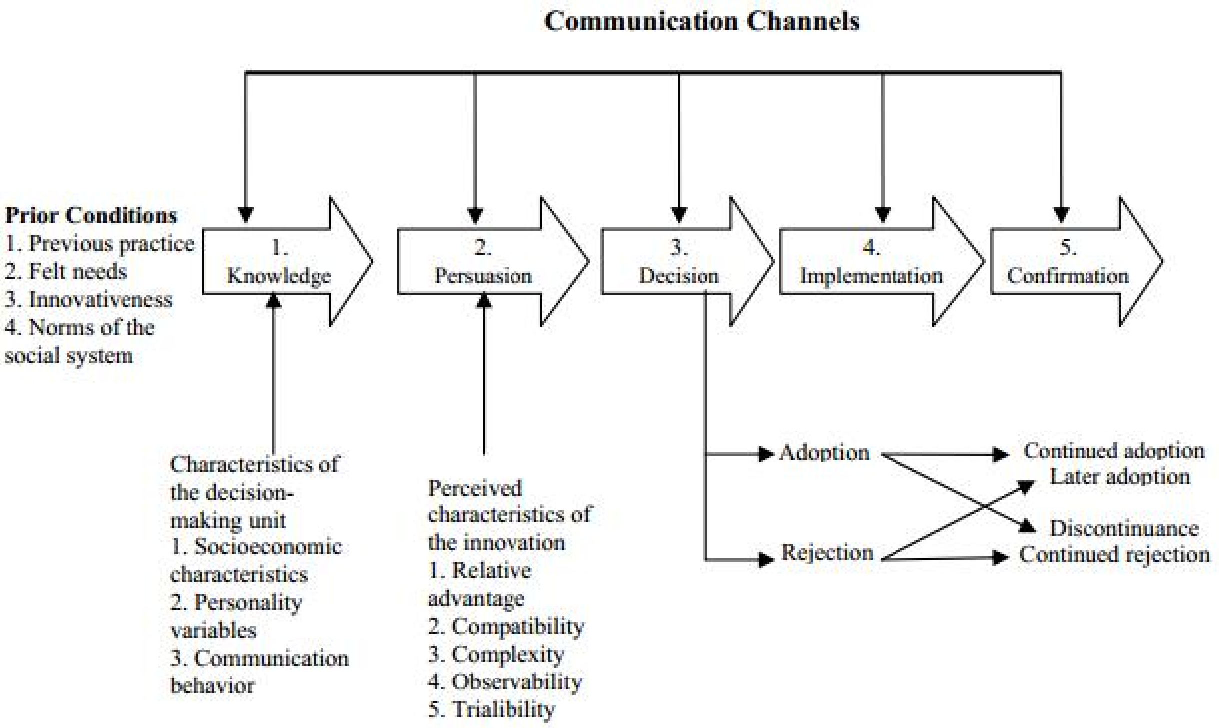

Figure 1. 2 : Stages of Innovation-Decision Process, Based on Rogers (2003, p170)

Owing to the novelty of computers and their related technologies in many developing countries, research studies concerning technology diffusion in education have often focused on the first two stages of the innovation decision process, that is, on knowledge of an innovation and attitudes about it .Rarely do we find studies dealing with the “adoption/rejection” phase. Rogers’ premise concerning individuals, a shift from knowledge about technology to forming attitudes toward its adoption or rejection corroborates the general and widely accepted belief that attitudes affect behavior directly or indirectly (Ajzen & Fishbein ,1980).

For the purpose of this study, the Diffusion of Innovations Theory will help us shed light on the most likely influencing factors for the adoption and use of Information Technology in education. This study will be explaining the characteristics of Innovation as listed above by Rogers (2003) vis-a-vis the responses of participants in the questionnaire and interview conducted for the purpose of this study to explain the guiding principles for the decision to adopt certain information technology within their organization.

1.5.2. Theory of Reasoned Action (TRA)

As noted above, individuals' attitudes toward a new technology are an important component in its diffusion (Rogers, 2003). Rogers' premise confirms the general and widely accepted belief that attitudes affect behavior directly or indirectly (Zimbardo et al., 1977). Several attitude theories and models have corroborated the symbiotic relationship between attitude and behaviour.

The Theory of Reasoned Action (TRA) of Ajzen and Fishbein (1980) serves as a second grounding theoretical framework of our study since it is a research model that employs psychosocial factors to predict and explain behaviour in specific contexts . The main premise of this theory is that a person's intention is the main predictor and influencer of behaviour. If a person intends to do something, then he/she will be more than likely to do it. Malhotra and Galletta (1999) claim that TRA is a widely-studied model from social psychology which is mainly concerned with the determinants of consciously intended behaviours . According to TRA, a person's performance of a specified behaviour is determined by his or her behavioural intention (BI) to perform the behaviour, and BI is jointly determined by the person's attitude (A) and subjective norm (SN) concerning the behaviour in question (Figure 1.3).This theory aims to explain the relationship between attitudes and behaviours within human action. Indeed, the genesis of the theory of reasoned action is attributable in large part to the assertion that the relationship of attitude (and subjective norm) to behavior is mediated by the formation of a behavioral intention. (Haddock and Maio, 2004)

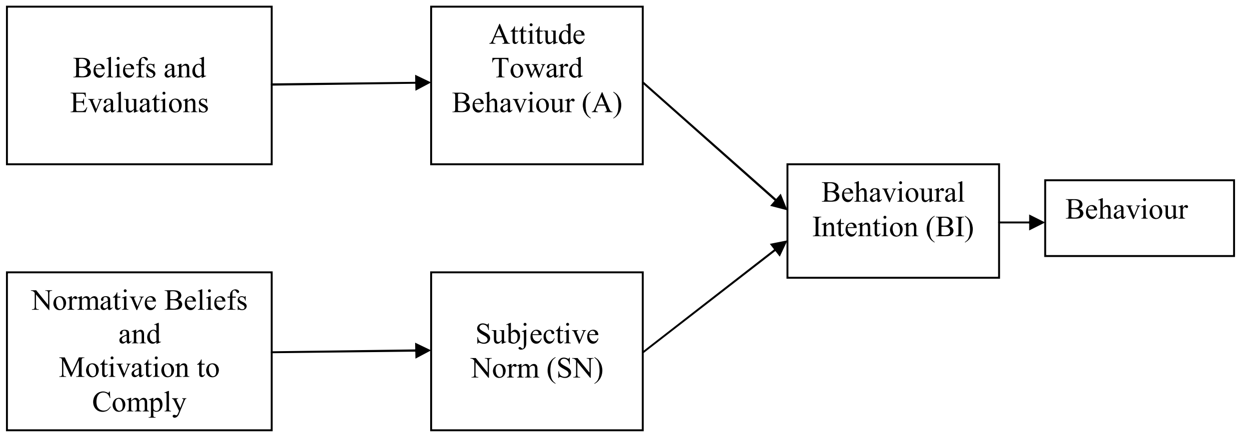

Figure 1. 3: The Theory of Reasoned Action (Fishbein and Ajzen, 1975).

According to Fishbein and Ajzen (1975, p.216) , attitude is “an individual's positive or negative feelings (evaluative affect) about performing the target behavior”.Individuals will have a favorable attitude if they believe that the performance of the behavior will lead to mostly positive results and vice-versa. In other words, a person’s attitude toward a behavior consists of 1) a belief that that particular behavior leads to a certain outcome and 2) an evaluation of the outcome of that behavior.

Subjective norm is another important construct in TRA. Fishbein and Ajzen (1975, p. 302) define subjective norm as “the person’s perception that most people who are important to him think he should or should not perform the behavior in question”. Social influence is an equivalent to subjective norm, which is studied in theory of reasoned action (TRA) as an important determinant to explain system adoption (Wei et al., 2009). Likewise , Venkatesh and Morris (2000) confirmed that an important role is played by social influence to determine user acceptance and behaviour of adapting new information technologies.

According to the Theory of Reasoned Action (TRA), behavioural intentions are formed based on the individual’s attitude towards the behaviour and on perceived subjective norms. Subjective norms capture the individual’s perceptions of the influence of significant others (e.g. family, peers, authority figures and media) (Fishbein and Ajzen, 1975).Additionally, attitudes are in turn determined by one’s “*behavioral beliefs*” about the favorableness or nonfavorableness of the behaviour outcome.Thus, subjective norms are based on “*normative beliefs*” about whether specific individuals or groups approve or disapprove the behaviour**.** Ajzen and Fishbein posit that behavioral and normative beliefs are based on information that individuals hold about themselves and the world in which they live. Moreover, both types of beliefs, and the corresponding attitudes and subjective norms, are influenced by “external variables”, such as demographic variables.

The Theory of Reasoned Action (Ajzen & Fishbein, 1980) asserted that individual behavior is rational and based on a systematic assessment of the information available to them in a certain situation. Thus, an individual’s behavior—in the case of this study, the use or rejection of ICT— is determined by his or her intentions to perform the behavior, and this intention is influenced jointly by the individual's "attitudes and subjective norms"(Dillon & Morris,1996, p. 6). Due to the applicability of the Theory of Reasoned Action to the educational settings in which new technologies are introduced, the present research uses the Theory of Reasoned Action as a theoretical framework for exploring the factors which may make EFL teachers support or resist the continuous ICT development.

1.6. 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 (Isleem , 2003;Albirini, 2006 ; 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 realize desirable implementation of technology in education. Correspondingly, a number of studies were carried out to determine teacher attitudes toward computer use.

Hadley and Sheingold (1993) carried out a descriptive survey study on teachers’ attitudes toward technology integration and their applications. There were about 608 participants from 576 different schools in 50 states of the U.S. According to the findings of the study, teachers’ motivation to use computers in their classes contributes to the effective use of technology in education. Additionally, sufficient access to technology facilitates the effective use of technology in education. Hadley and Sheingold reported that examples of writing and language projects are used more than other applications by teachers.

Another study was conducted by Wozney, Venkatesh and Abrami (2006) in order to investigate the attitudes of teachers towards computer technology and their computer technology practices among 764 Elementary and Secondary teachers from both Private and Public School sectors in Quebec. The findings of the research indicated that teachers utilize computers mostly for informative purposes (i.e., Internet and CD-ROM) and expressive purposes (i.e., Word Processing, online journal). In addition to this, the study also revealed that a great majority of teachers did not use computers for instructional or communicative purposes. It was also found out that teachers who use computers outside school for personal purposes tend to integrate computer technology more in the class.

Veen (1993) carried out a study that described the daily pedagogical practices of four teachers in the midst of implementing ICT in their classrooms in Dutch, found that the most important factor effecting 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 the 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.

In a recent study, Ertmer and Ottenbreit-Leftwich (2010) explored "technology integration through the lens of the teacher as an agent of change: What are the necessary characteristics, or qualities, that enable teachers to leverage technology resources as meaningful pedagogical tools" (p.255). The findings of the research indicated that teachers are hesitant to make use of new instructional technologies. Ertmer and Ottenbreit-Leftwich (2010) also stressed that teachers should be equipped with the necessary skills how to integrate technology in their teaching; however, before that, teachers should have positive attitudes toward technology and feel confident enough to master those skills related to technology implementation in their teaching experiences.

Al-Zaidiyeen, Mei and Fook (2010) investigated the attitudes of Jordanian Secondary School teachers towards the use of ICT for educational purposes. The data for the study were collected through the use of quantitative data from 650 Jordanian teachers. According to the results of the study, a great number of the teachers had rather low level of computer use for educational purposes. Teachers prefer utilizing applications such as the Internet, CD-ROM, and Word Processing that do not entail teachers to conduct high level applications with technology. Many other researchers have observed that teachers' attitudes are the driving force for the successful integration of technology in the classroom . Accordingly, Saye (1998) stated that as the teacher plays the key role in classroom change and teachers tend to accept only changes that they perceive facilitate their work, exploring teachers' attitudes toward technology integration is necessary.

Unfortunately, the task of pinning down teachers' attitudes has not always been an easy one (Albirini , 2004) . Watson (1998) considers teachers' attitudes as the most misread impeding force in the integration of computers in educational practices. As Zimbardo et al. (1977, p. 53) note, the complexity of attitudes and their interrelationship with behaviour and many other variables summons a considerations for "the maze of variables and processes that could affect attitudes, beliefs, and action". Following is a review of the variables that have been found to correlate with attitudes as they appear in the literature.

1.7. Factors Related to Teachers' Attitudes toward ICT

In this section, a wide range of factors that may affect teachers' attitudes towards ICT are presented. The variations in the factors identified by different researchers might be attributed to differences in context, participants, and type of research. However, this review provides a link to the variables whose relationship with attitudes toward ICT has been theoretically and/or empirically well-supported, including teacher characteristics, computer attributes, cultural perceptions, computer competence, and computer access.

While many scholarly papers tried to clearly identify these influential variables, there is still a lack of consensus about the universal factors that affect teachers' attitudes toward ICT. Teacher characteristics, computer attributes, cultural perceptions, computer competence, and computer access are among the factors that the researcher of this dissertation considered to be important as they have been frequently tested in research and discussed in international scholarly papers (see Figure 1.4). Even taking into account that all five factors are significant, there is still no clear understanding of how and why these factors may affect teachers' attitudes toward ICT integration in school.

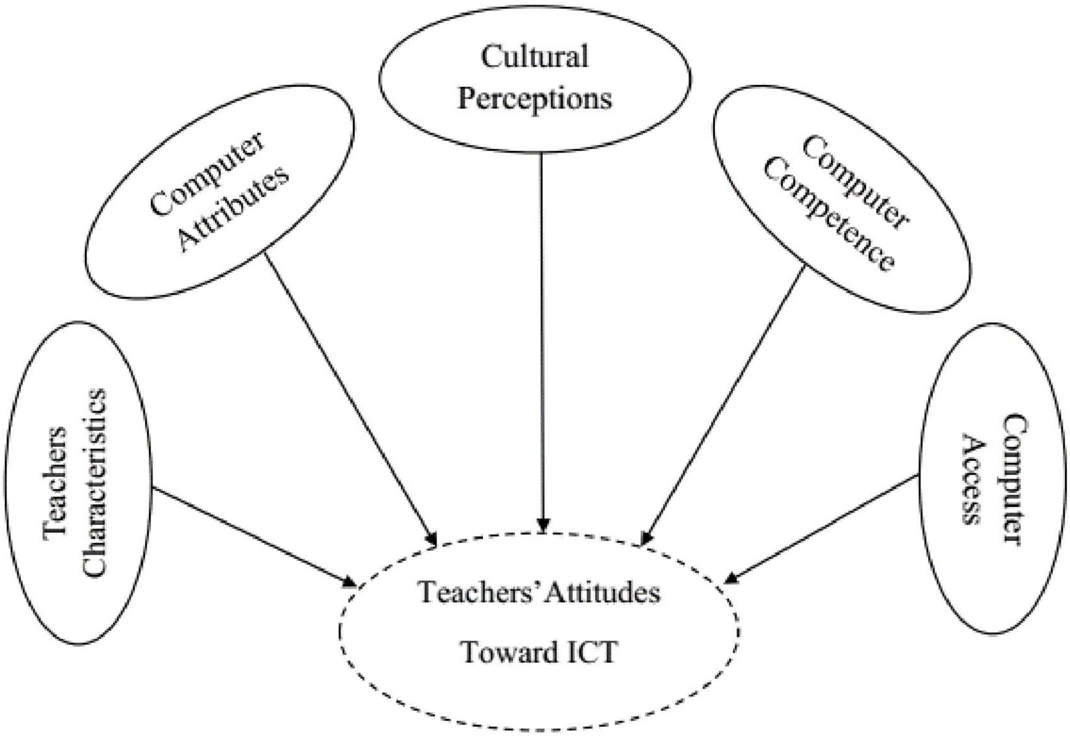

Figure 1. 4 : Factors that Influence Teachers' Attitudes toward ICT Integration

As noted above, studies have pointed to a wide range of factors affecting attitudes toward ICT. The variations in the factors identified by different researchers might be attributed to differences in context, participants, and type of research. This section presents a set of variables whose relationship with attitudes toward ICT has been theoretically and/or empirically well-supported.

1.7.1. Teacher Characteristics

Rogers (2003) notes that "individual innovativeness [adoption of an innovation] is affected both by individuals' characteristics and by the nature of the social system in which the individuals are members" (p.26). In the course of researching and reviewing the many studies that concerned teachers and the adoption of technology, it became apparent that several conflicting findings exist concerning the relationship between demographic variables and the actual use of computers by teachers. The following sections describe studies investigating some of the major demographic factors associated with teacher attitudes towards computers.

- **Gender**

Gender differences related to ICT attitudes have been a major concern among researchers and educationists .A plethora of studies have reported conflicting ideas about the role of gender in formulating attitudes toward ICT. Several researchers found no significant relationship between gender and teachers' attitudes (e.g., Roza, 1994 ; Yildirim ,2010; Na, 1993; Nedjah , 2010 ; Albirini , 2006; Zyad , 2016). For example, Roza (1994) found no difference in attitude toward computers between male and female teachers, even when male teachers had greater computer literacy scores and experience with computers than female teachers. Similarly, Zyad (2016) found that the gender of EFL Secondary School teachers had no significant effect on their attitudes toward computers. Other researchers, however, have found differences in teachers' attitudes toward computers on the basis of gender (e.g., Tezci, 2009; Kay , 2006; Tondeur,Valcke, and Van Braak , 2008). For instance, Kay (2006) found that male teachers use more ICT in their teaching and learning processes than their female counterparts. Tondeur,Valcke, and Van Braak (2008) found out, that male teachers display more positive attitudes toward ICTs and their using of ICTs in education process is more frequent in comparison with female teachers.

Although earlier research suggested that males had more positive attitudes towards computers, more recent studies have revealed that difference in computer attitudes stemming from gender is dwindling and disappearing. Teo (2006) concludes that the more widespread use of computers by almost every member of the society has made the difference insignificant.

- **Age**

Different experiences of different age groups may entail disparity in attitudes toward computers. Hence, age seems to stimulate more heated debate, as a result of a leading article written by Prensky (2001) that dichotomizes people on the basis of their familiarity with digital technologies. In other words, people are assumed to be either "digital natives" or "digital immigrants". According to Prensky the "digital natives … are all native speakers of the digital language of computers, videogames and the Internet" (p. 1), while the "digital immigrants" are those who might adapt to the new digital environment which they have encountered later in life. However, they also tend to use their pre-digital language (p. 2). In fact, young teachers may have been exposed to computers as part of their Middle and Secondary School or University studies. On the other hand, older teachers may have had limited exposure to computers. Therefore, learning to use a computer in the classroom is a new skill and may result in different attitudes toward ICT. Several studies reported a relationship between teachers' ages and their attitudes toward computers (Blankenship ,1998; Na , 1993).Blankenship (1998) found that age was the most important demographic variable affecting computer use and attitudes of classroom teachers in Carroll County Public Schools (Virginia) . Na (1993) found a significant relationship between age and teachers' attitudes toward computers in Korean Vocational Agriculture High Schools; young teachers had more positive attitudes toward computers than their older colleagues. However, many studies reported no relationship between teachers' age and their attitudes toward computers (Nedjah , 2010; Lin , 2002) . For example, Lin (2002) found that the older teachers had lower technological knowledge. Yet, teachers' motivation, their attitude toward ICT, and their technological knowledge were not significantly related to age. He concluded that "no matter how old a teacher is or at which level she/he has technological knowledge, she/he still has high motivation and maintains a positive attitude toward IT" (p. 113).

- **School Location**

Mitchell (1985, cited in Na, 1993) found that teachers in a large, urban school district have a higher level of knowledge about microcomputers than do teachers in rural schools. However, they showed no statistically different attitude toward computers. Similarly, Na (1993) found no relationship between Korean teachers' resident location and their attitudes toward computers. However, Isleem (2003) found that teachers in urban schools in Ohio have less positive attitudes and less level of computer use than those in suburban schools.

- **Education**

Rogers (2003) suggests that an individual's educational level affects his/her adoption of an innovation. It seems reasonable that the higher the educational level, the more familiarity an individual may have with the new technologies. This may entail more positive attitudes toward ICT. This hypothesis has been supported in different educational contexts. Several studies have reported a significant relationship between educational level and attitudes toward computers (e.g., Na, 1993). However, such relationship did not exist in different educational contexts. For example, Al-Tamimi (1998) found no relationship between education and teachers attitudes toward technology in the United Arab Emirates.

- **Teaching Experience**

There have been mixed results concerning whether teaching experience has an impact on or relationship with teachers' attitudes utilising ICT in education. For example, Gorder (2008) reported that teacher experience is significantly correlated with the actual use of technology. Baek, Jong and Kim (2008) claimed that experienced teachers are less ready to integrate ICT into their teaching. However, several researchers found no significant relationship between teaching experience and teachers' attitudes (e.g., Na, 1993).

Though some research reported that teachers' experience in teaching did not influence their use of computer technology in teaching (Niederhauser & Stoddart, 2001), most research showed that teaching experience influence the successful use of ICT in classrooms (Giordano, 2007). Gorder (2008) reported that teacher experience is significantly correlated with the actual use of technology. In her study, she revealed that effective use of computer was related to technological comfort levels and the liberty to shape instruction to teacher-perceived student needs.

- **Computer Training**

A body of literature on the subject of teachers' attitudes toward computers shows that teacher training programs can play a vital role in making teachers less anxious and more confident about the use of computers (Pina and Harris, 1993). Teachers who have had computer training are more likely to show positive attitudes toward computer use in the classroom (Burke, 1986, as cited in Christensen and Knezek ,2008, p.356). Thus education can help teachers feel less anxious and more confident, and generally value computers more highly (Savenye, 1993).Teachers who are more familiar with computers are more confident about using them for instruction and report more positive attitudes about the instructional effectiveness of computers (Dupagne and Krendl, 1992). Tsitouridou and Vryzas (2003) investigated the attitudes of early childhood teachers toward computers and IT. The subjects of the survey were in-service female early childhood teachers, taking part in a 2-year program of in-service training in Greece. The results show that early childhood teachers' attitudes appear to be influenced significantly by computer use at home, experience with computers, and in-service training.

Several researchers have reported a positive relationship between computer technology training and teachers' attitudes. For example, Yildirim (2000) found that teachers' attitudes towards computers were related to previous computer training. A total of 104 pre-service and in-service teacher received computer training through enrollment in an undergraduate level course. The researcher used the Computer Attitude Scale (CAS) to measure the teachers' attitudes towards computers in four areas: computer anxiety, computer liking, computer confidence, and computer use. The data was then subject to multivariate analysis. The results of the study indicated that the teachers' anxiety towards computers decreased significantly after training. In addition, the teachers' levels of confidence and liking of computers increased after the training.

Additionally , Gulbahar (2008) reported that lack of in-service training and insufficient technological infrastructures were the factors that have a significant influence on the effective use of technology by instructors. Therefore, teachers must be given the opportunity to become acquainted with newly introduced technologies.Warschauer (2002) discussed the training of instructors in Egypt about the use and applications of CALL. An interesting anecdote was given in his discussion of CALL. He said that an Egyptian University Lecturer expressed his view stating that " we have the hardware, we have the software, but we lack the human ware". Similarly, Gilakjani and Leong (2012, p. 632) stressed the importance of technology training in order for teachers to become informed users of technology.

- **Teaching Method**

Research suggests that teachers who use more innovative instructional approaches (e.g., use of inquiry, project-oriented work, hands-on activities,etc.) are more likely to use new technologies than those who stick to traditional teaching methods. For example, Warschauer (1999, cited in Warschauer, 2000) carried out a qualitative study about Internet-enhanced learning in three Colleges and Universities. The study showed that the way instructors presented computers depended to a large extent on their teaching and learning beliefs. Instructors who believed in student-centered, collaborative learning found that the Internet was a viable tool for their de-centered class activities. Whereas teachers who believed in controlled learning could not make much use of the Internet and were eventually obliged to re-consider their teaching beliefs. However, the relationship between teachers' computer attitudes and their teaching method has not been consistently reported in the literature. For example, Savitt (1996) investigated the effect of using a cooperative learning teaching strategy to train pre-service teachers. A total of 153 subjects in six sections of a course designed to the use of computers in education were randomly assigned to either a cooperative or individual group. An attitude survey administered upon completion of this study showed small differences in attitude towards instruction and the Internet. Both groups reported a favorable experience either working individually or cooperatively. However, a slight preference for working alone existed among all subjects. The findings of this study indicated that cooperative learning does not affect an individual's attitude toward computers either negatively or positively.

In general, the literature has produced mixed results about the role of demographic characteristics in determining teachers' attitudes toward ICT. A still vaguer picture exists as to which demographic variables are related to computer attitudes and which are not. Hence, the relationship between teachers' attitudes toward ICT and demographic variables seems quite unpredictable. Nonetheless, demographic characteristics were included in the study for two reasons. The first, and the most important, concerns the need to control extraneous variables (Gay & Airasian, 2000) by building them into the design of the study. The second rationale for including demographic variables in this study regards the theoretical support of the role of some demographic variables in the diffusion of innovation (Rogers, 2003).

1.7.2. Computer Attributes

According to past research, Rogers (2003) asserted that one of the major factors affecting individual's attitudes toward innovation is the attributes of the technology. In order to address the "innovation" differences, he identified five perceived attributes of innovations: 1) relative advantage, 2) compatibility, 3) complexity, 4) trialability and 5) observability. According to Rogers (2003), relative advantage is the degree to which an innovation is perceived as better than the idea it supersedes. Compatibility is the extent to which an innovation is perceived as consistent with the existing values, past experience, and needs of potential adopters. Complexity is the degree to which an innovation is perceived as relatively difficult to understand and use. Observability is the extent to which the results of an innovation are visible to others. Finally, trialibity refers to the degree to which an innovation is experimented with on a limited basis .

However, Rogers (2003, p.209) contended that "one problem with measuring the five attributes of innovations is that they may not in all cases be the five most important perceived characteristics for a particular set of respondents". In this study, only four computer attributes are thought to be relevant to the participants: relative advantage, compatibility, complexity, and observability. Trialibility was excluded because the majority of EFL teachers in Algeria may not have had the chance to experiment with computers before these were introduced into schools. That is, trialibility does not seem to be a pertinent computer attribute to the participants in this study.

The relationship between an innovation's attributes and adoption has been examined in a number of diffusion studies (Albirini, 2004; Abu-Samak, 2006; Blankenship, 1998; Sooknanan, 2002). For example, Abu-Samak (2006) in Jordan found that the computer attributes were significantly correlated to teachers' attitudes towards computer. Abu-Samak's study accentuated the importance of computer attributes in the process of computer adoption in developing countries. Also, Dillon and Morris (1996) summarized the connection between computer attributes and attitudes as "innovations that offer advantages, compatibility with existing practices and beliefs, low complexity, potential trialiblity, and observability will have a more widespread and rapid rate of diffusion" (p. 6). Therefore, if teachers perceive ICT as a beneficial tool, compatible with their current activities, easy to use and have observable outcomes, they will demonstrate positive attitudes towards ICT.

In his study in Trinidad and Togo, Sooknanan (2002) used the same four computer attributes utilized in this study. He found that relative advantage, compatibility, and observability were significantly related to the teachers' attitudes toward computers. However, the results showed no relationship between complexity and teachers' attitudes. Based on the above conclusions, Sooknanan's study accentuated the importance of computer attributes in the process of computer adoption in developing countries.

Everett Rogers (2003) suggests that "the relative advantage of an innovation, as perceived by members of a social system, is positively related to its rate of adoption". Several studies have endorsed the positive relationship between teachers' attitudes and the relative advantage of using computers (Sooknanan, 2002; Abu-Samak ,2006). Sooknanan (2002) found that "relative advantage" was the second most significant innovation characteristic in relation to teachers' attitudes. Roblyer (2005) argues that relative advantage may often be the best IT implementation rationale:

> When there is a clear need for a better instructional method than those used in the past, researchers can propose that a given technology-based method is the best choice because it offers the combination of relevant symbol systems, processing capabilities,

> and logistical feasibility to address the need—and then do research to support that it has this relative advantage and clarify the conditions under which it works best (Roblyer, 2005).

In terms of the second attribute, compatibility, Rogers (2003) stated that "the perceived compatibility of an innovation is positively related to its rate of adoption". Some studies have also established a positive relationship between attitudes and compatibility (Abu-Samak ,2006; Sooknanan, 2002). Generally, compatibility is viewed in terms of needs and beliefs (Rogers, 2003). Zaitman and Lin (1971**,** cited in Sooknanan, 2002) suggest that the less compatible an innovation and the more changes and adjustments it requires, the slower its acceptance. As was shown in Sooknanan's (2002) study, compatibility was the most significant computer attribute in relevance to teachers' attitudes. Teachers in his study who perceived the computers to be "reliable, accurate, and meet their information needs" (p. 129) showed positive attitudes towards ICT.

The third attribute, complexity, suggests that the greater the perceived complexity of an innovation, the less will be its rate of adoption (Rogers, 2003). That is, new ideas that are simpler to understand are adopted more rapidly than innovations that require the adopter to develop new skills and understandings (Rogers, 2015). Harper (1987) argues that, "To many teachers, a computer is intimidating and difficult to master, so they avoid the computer for fear of committing embarrassing mistakes" (p.47). Some researchers pointed to the complexity of computer integration as a "brake" on teachers' use of the new technology.

The final element of computer attributes to be examined in the study is observability, which, as Rogers (2003) pointed out, is positively related to the rate of adoption. Sooknanan (2002) found that observability was significantly related to the teachers' attitudes toward computers in Trinidad and Togo education. Most of the teachers in his study had not heard about or seen computers at work, especially as an educational tool. In general, the literature points to a positive relationship between teachers' attitudes toward ICT and their perceptions of computer attributes. Teachers who perceive computers as advantageous, compatible with their current practices, easy to use, and observable usually have positive attitudes toward ICT in education.

1.7.3. Cultural Perceptions

Social system is an important parameter that constitutes a boundary within which an innovation diffuses (Rogers, 2015). The social system may consist of individuals, groups, or organizational systems. The underlying socio-cultural structures in a social system determine the extent to which an innovation is adopted and the time it takes for an innovation to be diffused (Rogers, 2003). Within the boundaries of a social system, social norms play a vital role in determining the rate of an innovation's adoption. These norms are defined as "the established patterns of behavior that tell members of the system what behavior is expected" (Rogers, 2003). Furthermore, Rogers (2003) highlighted the notion of system effect where the structure of the social system affects the behavior of the individuals, and consequently, the entire diffusion process. Rogers (2003) and Thomas (1987, cited in Albirini , 2006) emphasized the importance of the cultural/social norms of a given country to the acceptance of technology among its people. Potential adopters may resist a technological tool because it may not fit within their micro- or macro-cultures. Thomas (1987) proposes, 'How acceptable a new technology will be in a society depends on how well the proposed innovation fits the existing culture'' (p.15). Thomas refers to his hypothesis as the *cultural suitability* factor. Thomas (1987) and later on Rogers (2003) note that few studies have considered the influence of peoples' cultural perceptions on their adoption of technological innovations.

As early as 1987, Harper (cited in Abu-Samak, 2006) claimed that the study of the role of culture on technology perception is significant in examining individuals' attitudes towards ICT. He contended that culture can play a role in the existence of negative attitudes towards computers for two causes: first, "people's apprehension that life is becoming too mechanical, so they resist contributing to a computer culture. The second cause is the concern that there are other social problems that need to be solved before computer-education is addressed" (p. 47). Martinez (1999), among others, found that one of the major challenges facing developing countries is to make technology an essential part of the culture of the people. Similarly, Zhuang & Thomas (1987) warned that importing a technology into developing countries without enough understanding of the indigenous culture could result in an incompatibility between the home culture and the technology. Intellectuals from different developing nations had been aware of the mismatch between the computer culture and their home cultures.

According to Hodas (1993), the diffusion of technologies may be inhibited by the micro culture of a certain institution or organization. Hence, acceptance of a new technology in a society depends on how well the proposed innovation fits the existing culture. Therefore, there must be a match between organizational culture and new technology into an organization. Within the school organization, school culture is an important consideration in terms of ICT integration (Tearle, 2003). School culture can be defined as the basic assumptions, norms and values, and cultural artifacts that are shared by school members (Maslowski, 2001, pp. 8–9). These meanings and perceptions indirectly affect attitudes and behavior in the organization of schools (Devos et al., 2007). Hence, if the technology is not received well by teachers, there must be a mismatch of values between the culture of schools and the technology (Albirini, 2006). Thus, teachers who have positive perceptions about the cultural relevance of computer technology will apply ICT in education.

The study of the cultural impact on technology's reception has been claimed essential for accounting for any positive or negative attitude (Thomas, 1987; Harper, 1987, cited in Abu-Samak ,2006). Unfortunately, however, very few studies have tried to study the impact of culture on the reception/rejection of the new tools. In this study, ''Cultural Perceptions'' was operationally delineated to mean ''Algerian EFL teachers' perceptions of the value, relevance, and impact of ICT as it relates to the cultural norms in Algerian society and schools''. Among the very few researchers examining cultural norms, Li (2002) explored the effects of national culture on students' use of the Internet and the differences between Chinese and British students in terms of use of the Internet. The researcher found that there were differences in Internet experience, attitudes, usage, and competence between Chinese and British students. Most of these differences were related to students' national culture.Similarly, Albirini (2006) pointed out that teachers' cultural perceptions were the second best predictor of computer attitudes. Therefore, it could be beneficial to encompass cultural values pertinent to the users' cultural norms for a successful integration of computer applications into the classroom.On the same grounds, Hamdan (2010) contends :

> Educators are often accused of resisting the change related to the integration of ICT. They are commonly hesitant to indulge using information and communication technologies in schooling on claims of preserving societal culture, traditions, values, local identity and so forth (Hamdan, 2010, p. 887).

From both theoretical and empirical perspectives, cultural perceptions seem to have a significant association with teachers' attitudes toward ICT. It is expected that teachers who have positive perceptions about the cultural relevance of computer technology will have positive attitudes toward ICT in education. Conversely, teachers' negative attitudes toward ICT may be related to their negative cultural perceptions. Overall, implementing effective teaching with technology integration requires changes in teachers' knowledge, beliefs, and school culture (Ertmer and Otternbreit-Leftwich , 2010).

1.7.4. Computer Competence

A considerable amount of literature has highlighted the importance of computer competency in order to use computers as an educational tool in their classrooms (Pelgrum , 2001; Knezek & Christensen, 2000). According to Pelgrum (2001), the success of educational innovations depends largely on the skills and knowledge of teachers. Also, he found that teachers' lack of knowledge and skills was the second most inhibiting obstacle to the use of computers in schools. Similarly, in the United States, Knezek and Christensen (2000) hypothesized that high levels of will (attitude), skill and knowledge (proficiency), and tools (level of access) would produce higher levels of technology integration that will reflect on student achievements positively. Their model postulated that educators with higher levels of skill, knowledge, and tools would exhibit higher levels of technology integration in the classroom.

A large number of studies showed that teachers' computer competence is a significant predictor of their attitudes toward computers (Na, 1993; Berner, 2003). For example , Al-Oteawi (2002) found that most teachers who showed negative or neutral attitudes toward the use of ICT in education lacked knowledge and skill about computers that would enable them to make " informed decision" (p. 253). In their review of the literature on teachers' attitudes toward computers, Dupagne and Krendl (1992) noted that positive attitudes increase as computer experience increases. Similarly, Yildirim (2000) found a significant correlation between prior computer experience and attitudes toward computers, both of which [attitude, and experience] significantly affect teacher competence with computers.

In another context, Capan (2012) conducted a study in Turkey to investigate EFL teachers' attitudes towards the integration of ICTs into the classroom. The study showed that high computer competence was the principal determinant of effective use of computer by EFL teachers in the classroom. In a research conducted on technology education teachers in Ohio Public Schools, Isleem (2003) found that computer expertise (competence) was the strongest predictor of attitudes towards computer use. Similarly, another research by Berner (2003) which was supportive of the theoretical and empirical arguments was carried out for the importance of computer competence in determining teachers' attitudes towards ICT. The results confirmed that computer competence was the most significant predictor of teachers' attitudes towards ICT in education.Therefore, teachers should develop their competence based on the educational goals they want to accomplish with the help of ICT.

However, computer competence does not always account for positive attitudes toward computers. Sometimes, teachers report positive attitudes toward computers but indicate that they lack the competence necessary for using them effectively in the classroom (Grasty, 1986, cited in Na, 1993). That is partly why some studies did not find any significant relationship between teachers' attitude and competence (e.g., Hendricks, 1998, cited in Albirini , 2004 , p 46).Overall, however, the bulk of literature indicates that teachers' attitudes toward ICT are directly related to their level of computer competence.

1.7.5. Computer Access

Previous research suggests that access to computer resources has often been one of the most important barriers for the integration of technology in both developed and developing countries. Reporting on her study in Malaysian schools, Abas (1995) suggests that access to computers in different location may help create what she calls "a computer using culture" among teachers (p. 161). Pelgrum (2001) found that computer inavailabilty/insufficiency was the main obstacle to computer use by teachers from 26 different countries.

Most studies examining computer attitudes have reported a significant correlation between computer access and attitudes toward computers (Pelgrum, 2001; Ropp, 1999; Na, 1993). In his study of Korean teachers, Na (1993) found a positive correlation between teachers' attitudes toward computers and computer ownership, accessibility to school computers, the level of accessibility to school computers, and number of computer locations in the school. Na concluded that there was a significant relationship between the proximity of computers and the number of access resources (home and school) on the one hand, and, on the other, teachers' attitudes toward computers. Ropp (1999) found that there is significant relationship between computer access and hours of computer use per week and computer attitudes. Furthermore, Nedjah (2010) confirmed that the lack of access to technology likely perpetuates negative attitudes and beliefs toward e-learning application in language classrooms.

Earle (2002) asserted that many factors could hinder or promote the use of technology in a classroom. He classified these as first-order and second-order barriers. First-order barriers included access, time, support, resources, and training. Second-order barriers consisted of attitudes, beliefs, practices, and resistance. According to Earle, second-order barriers are more difficult to change, since overcoming them involves the prolonged use of technology rather than a one-day workshop. He pointed out that teachers need to observe technology, reflect and discuss their evolving ideas, and collaborate with others to overcome these second order barriers.

In a fewer number of studies, however, access to computers did not correlate with teachers' attitudes toward ICT. For examples, Watson (1998) reported of teachers resisting the very existence of computers in the educational milieu. Rockman (2000) argued:

> If schools have access to the Internet and there are computers in reasonable numbers, we also need to know that the teachers are prepared, that the technology is maintained and in working order, and that the appropriate software is available. Further, we must also have a culture that encourages and supports the use of technology for teaching and learning. (Rockman, 2000, p.3)

That is why some researchers indicated that the results of technology implementation are "independent of any computer platform or software environment". This suggests that access is important only when other conditions are met in the process of technology implementation in schools.

1.8. ICT, Teacher Education and Professional Development

Ever since the invention of information and communication technologies (ICT), teacher education programs have been dealing with the question of "how to teach" so as to advance human potential and boost teaching with available technologies. Similarly, teacher education programs have also been involved in the question of "how to prepare prospective teachers" since it is fundamental for teachers to have appropriate ICT training during their pre-service education to address their students' needs and expectations in an information society (Yildirim , 2000). ICT requires specific training in order for teachers to become competent and successful in utilizing it to its fullest potential.

Parallel with the developments in research on learning with information technology (IT) and on pedagogies for teaching with IT, the last 40 years have seen important developments in teacher education and professional development in this area (McDougall, 2008). The importance of teacher education in IT is indicated by the frequently heard assertion that one of the major barriers to the effective integration of IT into teaching and learning is inadequate teacher professional development (e.g. Watson, 2001).Similarly, Hardy (1998) listed the following existing barriers that may prevent teachers from using ICT in the classroom: lack of time for classroom activities, lack of hardware and software, uncertainty about how to integrate the computer in the curriculum, and a lack of adequate professional training.

The professional development of teachers can be characterized as the most crucial factor for both the adoption and the effective use of ICT in learning processes. Technology push seems to be a poor approach to introducing ICT in education. Educational pull based on a clear vision of learning seems to be a more powerful strategy for the sustainable use of ICT in learning. Sustainable use of ICT in education requires investment in building long-term capacity for improvement, such as the development of teachers' skills. These skills will stay with teachers forever, long after the (project) money for acquisition of ICT materials has gone (Stoll, 1999).

Teacher professional development has long been identified as critical to the successful adoption of ICT in schools. Starting from the early 1980's when computers were introduced into schools, the issue of helping teachers to learn the prerequisite knowledge and skills have attracted the attention of those interested in promoting the integration of computers in the curriculum (Law, 2008). Thus, a large body of research has accumulated so as to investigate the factors that might potentially affect teachers' adoption and successful use of computers in their teaching profession. Few of those studies relied on the descriptive factors shaping the manners of teachers about technology and teaching. In this respect, research has been conducted in order to explore the relationship between ICT and teacher education. In order to enhance the integration of ICT in education, teacher education and professional development on ICT should be given priority. To this end, in this part of the chapter, an overview of research related to ICT and teacher education is provided.

In an exploratory study investigating EFL teachers' attitudes towards the classroom use of ICT in a tertiary level institution in the United Arab Emirates (UAE), Samira Boukadi (2014) reports that while there is more or less complete agreement on the role of technology in enhancing learning, teachers lacked proper training to be able to use the technology to its full potential in the classroom. The study also revealed that it was important for teachers to be consulted in pedagogical decisions about use of technology. Top-down models of educational management do not allow for teachers' voice in pedagogical matters. Moreover, Baylor and Ritchie (2002) carried out a quantitative study that looked at the factors facilitating teacher skill, teacher morale, and perceived student learning in technology-using classrooms. They found that professional development has a significant influence on how well ICT is embraced in the classroom. Also, they added that teachers' training programmes often focus more on basic literacy skills and less on the integrated use of ICT in teaching.

Kluever et al. (1994) conducted a study to examine changes in teacher attitudes towards computers following participation in computer-related professional development. The researchers surveyed 265 Elementary School teachers before and after they had taken part in a computer training workshop. The training consisted of demonstrations of software use, applications of computer-integrated models to different subjects and grade levels, and instruction on the use of multimedia for teaching and learning. The results of the study indicated a significant difference in the teachers' attitudes towards computer use following the training as evidenced by significantly higher scores on the study's post-test than on the pre-test. Mueller and his colleagues (2008) related technology training to successful integration of technology in the classroom. In a study of 400 pre-tertiary teachers, they showed that professional development and the continuing support of good practice are among the greatest determinants of successful ICT integration.

Russell, Bebell, O'Dwyer & O'Connor (2003) examined teachers' technology use and came up with some very important findings. They collected survey data from 2894 teachers to investigate to what extent technology was used by teachers in their educational practices. According to Russell et al. (2003), the quality of teacher training may be increased by providing teachers with opportunities through which they can experience the advantages of integrating technology on teaching and learning. The study also showed that young teachers do have more positive attitudes toward technology, but they cannot integrate it into their teaching curriculum. Thus, both pre and in-service training of teachers are of great importance in order to form a vision that follows the innovations and bring them to the class through technology.Hence,the research literature is clear that professional development is one of the critical components for effective ICT integration, and the amount of professional development teachers undertake is positively correlated with ICT use in the classroom (Law , 2008).Therefore, professional development of teachers sits at the heart of any successful technology and education program (Afshari et al., 2009).

1.9. Conclusion

In this chapter we first tried to discuss the nature of teachers' attitudes. It was seen that attitudes are hard to define because they are abstract in nature. It was asserted that teachers' attitudes are shaped by personal experiences and they are important because of their potential to influence behaviour, mainly in educational institutions. It was seen that teachers' attitudes are generally made up of three components: affect, cognition, and behaviour. These components, it was argued, are interrelated and closely interconnected. Next, we presented the history of ICT in education and its promotion and use in the Arab world and then dealt with technology and language teaching. We also presented the theoretical framework for the study. Then, we dealt with the attitudes of teachers toward ICT by explicating other factors related to teachers' attitudes toward the integration of ICT. Finally, we reviewed teacher education and technology.

CHAPTER TWO

ICT IN THE ALGERIAN EDUCATIONAL CONTEXT

Chapter Two
ICT in the Algerian Educational Context

2.1. Introduction

The present study was conducted in Algeria and data were collected from a sample of English as a Foreign language (EFL) teachers who work and live in one province in the Western District of Chlef , West of Algeria (See Appendix A for some general information about Algeria's geography, population and ethnicity). This chapter provides an outline of the Algerian context for ICT in education. The purpose of this will be to familiarise the reader with the context in which the participant-teachers work, and hence to build a conceptual picture of the background surrounding the data and the findings. First, we shall give the main policies for the promotion of ICT use in Algeria. After that, a synopsis of the Algerian educational structure will be outlined. Next, we shall discuss ICT and Educational Reform in Algeria. Finally, a profile of EFL, ICT, and Educational Reform in Algeria will be provided in this chapter.

2.2. ICT Policies in Algeria

With the advent of ICT, many countries throughout the world have established different national strategies for integrating ICT in their schools. Algeria is one of those countries in which the Government is investing a great deal of resources to bring ICT into the schools. Therefore, the implementation and management of Algerian National ICT Policy has been mandated to the Ministry of Posts, Information Technology and Communications (MPTIC). At the same time the Algerian Government has also initiated collaboration with a number of international agencies to enhance the ICT status in the country. The first important policy was drafted in 2000 with the creation of the Regulatory Authority for Post and Telecommunications (ARPT), and the split of Algeria Posts and Telecommunications into two companies: Algeria Poste (AP) and Algeria Telecom (AT). Currently there are three operators:

- Algerie Telecom (mobile and fixed lines)
- Orascom (Djezzy and Lacom for fixed lines)
- Alwatanya (Nedjma and Internet access with mobile phones)

The ARPT is in charge of regulating postal services and the telecommunications sector via:

- Promoting competition in the telecommunications sector.
- Taking responsibility for the procedures for the allocation of operating licences and defines the rules on pricing for the services provided to the public.
- Ensuring that the licence conditions are implemented and that the telecommunications infrastructure is shared.

In 2002, The Ministry of Posts, Information Technology and Communications (MPTIC) in Algeria co-operated with the World Bank to develop and implement projects for the creation of the enabling environment and improving access to ICT while making it affordable for all. MPTIC, in 2005, also received assistance from United States of America (USA)-funded project, the Internews Network Global Internet Policy Initiative (GIPI). This project aimed at enhancing and assisting policy and regulatory actions needed to address the identified constraints on access to and use of the Internet in Algeria (Djoudi, 2010). In addition to the MPTIC and ARPT, the Ministry of Higher Education has also played an important role in the ICT field, especially through the Scientific and Technical Information Research Centre (CERIST)[6], which functioned as the only Internet Service Provider (ISP) before market liberalisation (UNESCO, 2004; World Bank, 2007).

Algeria first gained Internet connectivity in 1994 under the auspices of the Scientific and Technical Information Research Centre (CERIST), which by law remained the country’s sole ISP until 1998. On August 5, 1998, decree no. 98-257 opened Internet service provision to other providers, but private entry into the market proceeded slowly (Djoudi , 2010).

The Government has placed unprecedented weight on the development of ICT-related human resources. In light of the globally emerging knowledge and information society, Algeria has formed a Committee in charge of defining the elements of an Algerian National Information Society Strategy. It is anticipated that the Committee

[6] According to Word bank report (2003, p 47), CERIST was the first organization (and for a long time, the only Internet Service Provider with 18,000 active subscribers) to offer Internet access. Founded in 1986, and set up under the supervision of the Algerian Ministry of Higher Education and Research, CERIST is a statutory body with official scientific and technical capacity.

will work on creating synergies among the different sectors in the area of infrastructure, training, and research as well as information systems and ICTs. The Committee will identify a national ICT working group, which will be charged with formulating short-, medium-, and long-term action plans for ICT.

Additionally, many initiatives have been undertaken to promote ICT through the level of the Algerian Government for a successful transition to an information society. Hence, the President of the Republic frequently mentions in his speeches the strategic importance of the ICT sector in Algeria’s modernization and economic development policy. On December 31, 2001, he emphasized "the importance of the stakes of the technology battle" that Algeria must face, which implies that the country must "progressively rebuild the information society." (World bank, 2003) Hence, to facilitate the entry of Algeria into the information society, the following national ICT initiatives have been designed:

- The project of the Ministry of National Education to equip all schools with computers by 2005
- The distance education project
- The virtual university project
- The research network to be put in place by the Ministry of Higher Education and Scientific Research
- The health network developed and maintained by the National Health Development Agency (ANDS)
- The Djaweb Internet platform (4) (Hamdy, 2007)

Several Ministries are particularly involved in the rapid expansion of ICT. The Minister of Communications pointed out in January 2002 the urgency of "generalizing the use of information and communication technologies in various areas such as public administration."Similarly, the Ministries of Vocational Training, National Education, and Higher Education and Scientific Research sought to engage in significant projects to promote the use of ICT. Though the importance of these initiatives has been proven, many of the practical arrangements for effective integration of ICT into these professional sectors have not been thoroughly examined.

Over the last 15 years, a number of initiatives have been undertaken to integrate ICT in Algeria at all educational levels that can be stated as follows:

- **ICT in Primary and Secondary Education**

Algeria's 17,000 Primary Schools, 6,000 Middle Schools and 1,300 High Schools are still barely equipped with computers, and are not yet connected to the Internet. Most of them have equipment limited to one or perhaps two PCs used for daily management. The authorities would like to accelerate the introduction of the computer and the Internet in schools and High Schools. However, this introduction should be combined with training the teachers to use these tools and be based on the gradual development of specific educational tools (World Bank, 2003).

According to World Bank report (2003), the operation of "Tarbianet" in Algeria aims to promote ICT in the Education sector through three actions. First, it entails the modernization of the education sectors' administration. Second, it focuses on Distance Learning Education. Third, it aims at diffusing ICT in schools. This final action consists of three interventions: (1) equipping schools with computers and Internet access; (2) training teachers in the uses of ICT for pedagogical purposes; and (3) developing educational content.

- **ICT in Tertiary Education**

The Government strategy to improve the diffusion of ICT in the Tertiary Education System is based on three actions: modernizing the Tertiary Education Administration, promoting the use of ICT as a support to research and teaching, and encouraging the establishment of ICT as an independent field of research.

There are a number of very sound dimensions to Algeria's first two strategies for the acceleration of ICT diffusion and development via the Tertiary Education sector. Efforts to modernize the Education Administration will have a number of important benefits. Aside from greater efficiencies, it has proven to be a quite viable manner of introducing the culture of ICT within the sector over the long run. Furthermore, the promotion of connectivity and the use of informatics in research and learning in Tertiary Education constitute promising approaches. This level of the education system will benefit the most from the introduction of new technologies, particularly as it will provide in relatively short terms the opportunity to exploit and contribute to the global arena of research and learning.

Among the information society projects piloted by the Ministry of Higher Education and Research, Distance Learning occupies a crucial position. In effect, this concept is a strategic one for better dissemination of knowledge throughout the overall territory. The Virtual University Project is led by the University of Continuing Education (UFC), a structure created in May of 1990, that has an intake of nearly 50,000 students each year. Intended for young people who did not go beyond their High School Diploma (BAC) and want to obtain bac+3 Diplomas. The UFC uses ICT in the dissemination of its teaching through its Internet site. During the Academic Year 2001/2002, UFC registered 56, 842 students, of which 8,236 were studying via Distance Education (Henni, 2003; Djoudi, 2010). Furthermore, UFC has many foreign partners in the Distance Education Work it undertakes. These partners include; Group A6 (France); the National Center of Distance Education (France); M. I. T. (USA); ROBOTEL (Canada); the Open University El Quods (Jordan); the University of Jean Moulin (France); and the "Avicenna" Virtual University (UNESCO/European Commission) (Henni, 2003; Djoudi, 2010).

In Algeria, the integration of ICT at the level of the University is relatively recent. Therefore, there is certain awkwardness in handling this new issue. The double problem which emerges is: First, the training of trainers as to their aptitude to handle the new technologies and adopt the adequate pedagogies. Second, the question of the readiness of the Algerian learners: to what extent are they ready and able to adopt new learning strategies involving the use of computer and Internet?

Today, CERIST continues to develop the academic, non commercial Internet under the influence of the State and has created nodes in Algiers, Oran, Constantine, and Ouargla.The Algerian Academic and Research Network (ARN) is a national project financed by the Government of Algeria. The project has been initiated in 1994. The network is being set up by the CERIST on three phases:

- Selection and connection of regional nodes: this phase consists in defining POPs (point of Presence) in each region of the country, connecting these points through communication lines, buying and installing routing and server equipment.

- Connection of regional centers and universities to the POPs: this phase consists in selecting research and academic institutions in each region and connecting them to the regional node.
- Connection of the regional nodes to the main central node which is connected to international networks and development of services and information servers.

Additionally, several key initiatives have been launched to enhance access to online information itself:

- **Ousratic**

Within the framework of the process of building the Algerian information society and of the recommendations of the e-Commission, chaired by the Chief of the Government and installed in Apri1, 2004, the Minister of Post and Information and Communication Technologies announced operation OUSRATIC in July 2005. OUSRATIC plays on the combination of the following two terms : 'ousra', meaning 'family' and 'TIC' a suffix meaning ' yours', an acronym for information and communication technologies (ICT). Together, they form the word 'Ousratic', which translates to 'your family.' The stated aim of operation OUSRATIC is 'one PC per household.' The Ousratic initiative aims to increase the penetration of computers in households by offering people loans for their purchase. The Government has also lowered the value added tax (VAT) on computers from 17% to 7%. Operation OUSRATIC consists of putting on the market five million PCs, which makes a total of one million PCs per year. The new market created by this project will have a value of more than USD 4 billion. Each family will be able to buy a PC thanks to the conditions put in place. Nine million schoolboys, high-school pupils and students will take part in shaping the success of this operation and the good use of PCs (World Bank, 2007).

- **E-Algeria 2013**

The MPTIC ministry recently revealed a new strategic plan for developing ICTs in the country. The e-Algeria 2013 initiative is supposed to accelerate ICT use in the country, including the Government's application of technology to increase access to Government information. This strategy is the result of the deliberations of a so-called "e-committee" headed by President of the Republic. It follows the rapid growth of mobile telecommunication services in Algeria.

2.3. Structure of the Educational System

In this part of the chapter, a very brief current structure of the Algerian Education System is provided. The Algerian educational system can be divided into two sub-structures: the school system and the administration system. In line with the sphere of this study, only the school system structure of Algerian Education System is dwelled on in this part of the chapter.

The school system in the Republic of Algeria is made up of three stages: Primary, Middle, and Secondary education. Accordingly, The Arabian Campus Web site[7] describes the Algerian educational system as follows:

> Primary education is mandatory and lasts for nine (9) years (École fondamentale which ceased in 2003 with the new Educational Reforms). Whereas in today's Algerian Primary School, education lasts for five (5) years. Middle School lastes four (4) years with the new reforms. Secondary education which is obligatory and consists of three-year cycle of study provided in Secondary Schools and technicums.

The first two stages are compulsory, known as "Basic Education". Children generally enter the nursery at the age of 4 and spend two years before they are enrolled in Primary school. Primary School is divided into two cycles which last 5 years and at the end of Cycle 2 children undergo a national examination called "Primary School Examination". Children usually finish their Primary education at the age of 12-13 and

[7] The Arabian Campus Web site is an academic service provider established in the United Arab Emirates for the purpose of promoting accredited Higher education programs and Institutions within the Arabian region. With its extensive range of services, it offers unique advantages for students searching for programs as well as the Institutions trying to promote their programs within the region and abroad.

sometimes earlier. Those who pass their Primary school examination, move to Cycle 3, which is called Middle School (Bellalem , 2008, p. 51) . The period of studies in Cycle 3 used to last three years prior to 2003, but is now extended to four years as part the Government's initiative to reform the educational system. At the end of Cycle 3 ,successful students in the Middle School examination 'Middle School Certificate" (BEM) are referred to the Secondary School (called "Lycée") to study a one year foundation course which includes a mix of specialist routes or streams that students will follow in their subsequent years of education. The specialist routes that the educational system offers are: a) literary streams, which in essence include studies in Humanities and the Social Sciences, b) scientific streams, which include studies in Biology, Mathematics, Physics and Chemistry, and c) technological streams, where students study Applied Technology. The duration of these specialist routes takes three years and ends with the Baccalaureate examination (BAC), which students have to sit for to be able to pursue Higher education. Once the students are successful in their BAC, they are referred by the Ministry of National Education in conjunction with the Ministry of Higher Education to study for an Undergraduate Degree in a subject which is decided according to the marks the students obtain in their BAC. Students usually finish their Secondary studies at the age of 18-19 (See Appendix B for the structure of the school system).

Students who are not successful in either the Middle school examination or the Secondary School examination can, if they wish, take alternative routes, which the Ministry in partnership with other ministries offer them. They can for instance either enrol at the Training Centres to gain a vocational qualification or they can pursue distance learning with the National Open School (CNEG), the latter of which offers the same streams as the Secondary School and also leads to the BAC (See Appendix C for alternative routes for education and training). An important element to point out is that the main objective of Technical and Vocational Secondary Education is to prepare pupils for active life and industry (technicians and qualified workers). Studies last between one and four years, according to the type of training undertaken and can also lead to Higher education.

Higher education is provided by Universities, Specialized Institutes, National Institutes of Higher Education, and Teacher Training Institutes, which fall under the responsibility of the Ministry of Higher Education and Scientific Research, as well as by Institutes run by other Ministries. The specific degrees awarded are determined by the field of study, not the institution. The Ministry of Higher Education approves the curriculum, which is standardized for each field of study. Universities in Algeria have gone through several reforms, bringing the composition of degrees into accordance with international standard called LMD: 3 years bachelor (Licence), 2 years Master and 3 years Doctorate (Mahieddine Djoudi ,2010) .

2.4. ICT in the Algerian Education

2.4.1. ICT and Educational Reform in Algeria

With the advent of ICT, many countries throughout the world have established different national strategies for integrating ICT in their schools their educational system. Algeria is one of those countries in which the government is investing a great deal of resources to bring ICT into the schools. Hence, during the 2000's, Algeria launched a series of political and economic reforms involving the educational sector as an important step towards the political and economic prosperity of the country (Toualbi-Thaalibi, 2006, cited in Bellalem, 2008, p16). The Ministry of National Education (hereafter, MoNE: 2006a) notes for instance that:

> Recent social changes that were triggered by the new political and economic visions of our country, the need of the Algerian society for development and progress, the opening on the world through modern technology, lead us to define new strategies…this cannot be achieved without a full reform of the educational system. (MoNE, 2006a, p. 17) [translated from French]

The need for reform also emerged from the political efforts of Algerian leaders to adapt to globalisation because it was assumed that globalisation had an inevitable impact on new conceptions of education in the world (Tawil, 2006). This initiative was paralleled by a series of meetings between Algerian and UNESCO officials, leading to a contract signed on 2nd October 2003, in which the UNESCO accepted to fund these educational reforms (Tawil, 2006). The project, called the Programme of

Support for the Reform of the Algerian Educational System (PARE), was followed by a series of meetings and conferences between Algerian and UNESCO officials in the period of 2003 and 2006 to assess the progress of these reforms and to put forward future directions (Tawil, 2006). Other international agencies also contributed to the funding of the project, amongst which were the French Agency for Development (AFD), the European Union, and the United States Aid (USAID).

In this respect, the Algerian Government appointed a National Commission for the Reform of Education (CNRE) in 2000, the task of which was to evaluate the situation of the educational system and to provide some recommendations on the necessary reforms in line with the country's new philosophy of economic development. The CNRE gave their report back in 2001 which confirmed the need to reform the educational system to meet the challenges of the 21st century (Tawil, 2006). Hence, the proposed curriculum reforms centred round three platforms:

- Platform 1: Reforming the school structure which involved: a) introducing a pre-school level for 5 year old pupils, b) restructuring the duration of Primary School from 6 to 5 years, and Middle School from 3 to 4 years, and c) restructuring the post-compulsory education in Secondary School (lycée) into three streams: general, technical, and vocational.
- Platform 2: Reforming teacher training which involved: a) improving the knowledge and skills of teachers and inspectors, and b) coordinating and evaluating Teacher Training and Development.
- Platform 3: Reforming teaching syllabuses and textbooks which involved: a) elaborating and introducing new teaching programmes for all school levels, b) providing and evaluating new teaching resources and materials, c) introducing new teaching methodologies to meet the programmes' objectives, and d) setting up systems for Information and Communication Technology in Schools.

By adopting the third aforementioned platform, the Algerian Government is committed to set forth a policy for the integration of ICT within the educational system. The reform of the educational process and inclusion of ICT with a set structure was formally included in the country's formal ICT policy in June 2002 with an allocation of three billion dinar (Hamdy, 2007).

Algeria has placed considerable emphasis on the importance of developing a national ICT strategy for education and training. The Ministry of National Education has taken steps to support the implementation of the strategy either by direct action or through the various institutions and agencies that partners with the ministry, such as UNESCO, the EU, and different UN agencies.

The Ministry of National Education is working on building the infrastructure for implementing the ICT environment. All Secondary Schools are equipped with computer labs (15 computers: 10 for students, five for teachers) connected to the Internet through Asymmetric Digital Subscriber Line (ADSL), and 30% of this foundation already had Internet access via cable modem. Half of the Middle Schools have adopted ICT as an integral part of the Educational programme (Hamdy, 2007).

Within the framework of enhancing the level of ICT penetration and usage in education, the Government has signed a number of agreements with international organisations. For example, UNESCO is undertaking a number of initiatives for the proper integration of ICT in the Algerian education system, and the Japanese Government has provided funding for teacher-training programmes totalling to USD$750,000.

There are a number of initiatives that have been adopted in an attempt to improve the quality of teaching and learning. The related strategies, under the heading of e-learning, were set forth to:

- Promote the development of e-learning resources
- Promote the development of integrated e-learning curriculum to support ICT in education
- Provide affordable infrastructure to facilitate dissemination of knowledge and skill through e-learning platforms
- Promote the development of content to address the educational needs of Primary, Secondary, and Tertiary Institutions
- Create awareness of the opportunities offered by ICT as an educational tool to the education sector
- Facilitate sharing of e-learning resources between Institutions
- Integrate e-learning resources with other existing resources

Algeria is encouraging and fostering the use of ICT to enhance the development process in general and the development of the educational system in particular, paving the road for an ICT policy framework along with an implementation strategy (Hamdy, 2007) . Thus, the integration of information and communication technologies into the education field is in constant progression and generates empirical approaches for educational environment design. According to Hamdy (2007), the Government is committed to set forth a policy for the integration of ICT within the educational system. The reform of the educational process and inclusion of ICT with a set structure was formally included in the country's formal ICT policy in June 2002 with an allocation of three billion dinar. Some Algerian Universities have computer laboratories and Internet access for the faculties, the students, and the administration, in addition to the availability of digital libraries. Each University has its own ICT policy to accelerate the educational process and offer better learning opportunities in virtual universities and with distance and open learning. Nevertheless, while these reform initiatives are very important to catch up with international progress, they do however need to be underpinned by a solid body of empirical research, an initiative that seems to be scarce at the moment (Bellalem ,2015). In fact, a closer analysis of educational research in the Arab world would reveal that not many studies have documented these reforms. In particular, research on language teachers' attitudes, as an important factor in the integration of ICT by EFL teachers, is to a certain extent underrepresented.

2.4.2. EFL, ICT, and Educational Reform in Algeria

As a result of the eagerness of the President of the Republic to turn Algeria into an information society, the year 2001 witnessed many major educational reforms across Algeria that promoted the teaching of English as a Foreign Language (Ministry of National Education, 2006a). These reforms included a mandate for "the introduction of English as a Foreign language beginning from 1st year instead of 2nd year in all Middle Schools [and] the computerization of the country's state–run Secondary Schools" (Hamdy, 2007). While, English is still considered to be the second Foreign Language in the Algerian Educational System after French, it has received considerable attention within the recent Educational Reform. This Educational Reform was seen as vital to supporting the country's drive for modernization and economic development (World bank , 2003, p 53).

The recent reforms that affected the educational system led to the re-definition of the aims and objectives of the teaching and learning of foreign languages in the Algerian school. A new teaching curriculum was therefore designed to meet the principles and philosophies that underlie these reforms. This is reflected in drafted syllabus in 2005 by the Ministry of National Education for the teaching of English as a second Foreign Language (Ministry of National Education, 2006b). As a result, English covers seven years - four of which at the Middle School and three at the Secondary School (See Table 2.1). This stands as part of a whole process consisting of designing new syllabuses, devising new textbooks and accompanying documents.

Table 2. 1: New Structure for Teaching English as a Foreign Language in Algeria

	Primary School (6 years – age 6 – 11)	Middle School (4 years –age 12 – 15)	Secondary School (3 years – age 16 – 18)
English	Not taught	Year 1 to Year 4	Year 1 to Year 3

The Ministry of National Education (2006b) summarises the Algerian Government's policy of learning foreign languages as follows:

> The teaching of [foreign languages]…has to be perceived within the objectives of "providing the learner with the skills necessary to succeed in tomorrow's world"...It is helping our learner to catch up with **modernity** and to join a linguistic community that uses [these foreign languages]… in all **transactions**. The learner will develop capacities and competencies that will enable them to integrate their society, to be aware of their relationship with others, to learn to share and to cooperate…this participation based on the sharing and the exchange of ideas and scientific, cultural and civilisational experiences will allow them to identify themselves and to identify others through a process of constant reflection…In mastering [foreign languages]…every learner will have the chance to know about science, technology and universal culture and at the same time to avoid acculturation. Hence, they will blossom in a professional and academic world and will develop **critical thinking**, **tolerance** and **openness towards the others**. (MoNE, 2006 b, p. 4) [text translated from French -words in bold as in original text]

Hence, according to the Ministry of National Education (2005, as cited in Bellalem, 2008, p. 61), the objectives of teaching and learning foreign languages are not solely functional, but are also social and ideological. These objectives centre round: a) an academic platform, which is the development of linguistic skills to catch up with science and technology in the world, b) a cultural platform, which enables students to communicate with and to know people from other countries and cultures, and to exchange ideas and experiences, and c) a socio-cognitive platform, which allows students to reflect on themselves and their environment and hence to identify themselves and their society (MoNE, 2005). It was seen that in general, foreign language teaching has always been given importance, since the country's independence in 1962, because foreign languages were always seen by policy-makers as tools for scientific and technological progress, and economic prosperity (Bellalem , 2008).

Algeria has also noticed the importance of educational technology and allotted a considerable amount of money for equipping schools with high technology tools. As part of the economic recovery program, a Dinar 3 billion program is envisaged to equip all Algerian High Schools within two years. This program plans the installation of 20 to 30 computers per school, and 5 computers for the libraries. In order to implement this plan, the Algerian MONE started negotiating in 2002 with two local distributors (Alfatron and King Line Computer) for the supply of computers, user training, and maintenance of the systems that will be installed in various schools(World bank, 2003). The AMoNE is also engaged in deploying an Intranet to connect its central departments to the 48 Wilaya management units. In a second stage, Wilaya management units will be in charge of extending the Intranet to reach all the High Schools under their supervision.

It is obvious that the implementation and integration of both ICT and English instruction mandated in all Algerian Secondary Schools is of great importance to AMoNE. EFL teachers are seen as change agents in schools. They are key drivers who play crucial roles in technology integration in the schools and classrooms. Therefore, it is imperative to explore their attitude toward ICT, for it may play a crucial factor on the adoption of such innovation on the long run.

2.5. Conclusion

This chapter tried to provide an overview of the Algerian context for ICT in education as the context where the present study was conducted. The chapter commenced with the adopted ICT policies in Algeria. This was followed by a presentation of the structure of the Algerian education system, mainly school system, which is made up of the Primary, Middle and Secondary Schools. A review of the Algerian efforts to integrate ICT into its education was provided with a focus on educational reforms in the Algerian schools. The chapter gave a picture of EFL and ICT integration within the educational reform in Algeria .It was seen that foreign language teaching has been given importance since the country's independence in 1962 because foreign languages have always been seen as tools for scientific and technological progress as well as economic prosperity. The next chapter will present the methodology used in this study, including research variables, research design, study population and sample, research tools, data collection, pilot study and data analysis procedures.

CHAPTER THREE

RESEARCH METHODOLOGY

Chapter Three
Research Methodology

3.1. Introduction

This chapter describes the research methodology that was used to study the attitudes of Algerian Secondary School EFL teachers toward ICT and the factors that influence those attitudes. The methodology of this study is presented in the following sections: (a) research variables, (b) research design, (c) study population and sample, (d) research tools , (e) data collection, (f) pilot study, and (g) data analysis procedures.

3.2. Research Variables

The purpose of this study is two-fold: first, to examine the attitudes of Secondary School EFL teachers in the Western District of Chlef (Algeria) toward ICT in Algerian education; and second, to explore the relationship between teachers' attitudes toward ICT and factors identified as potentially influencing teachers' attitudes .These factors include: teacher characteristics, perceived computer attributes, cultural perceptions, computer competence, and computer access. The dependent variable in this study is the attitudes of Algerian EFL teachers toward ICT in the Algerian educational system. The independent variables are: (1) teachers' characteristics (including gender, age, school location, academic qualification, teaching experience, and computer training background as well as teaching method), (2) perceived computer attributes, (3) cultural perceptions, (4) computer competence, and (5) computer access. Figure (3.1) shows a diagrammatic illustration of the research variables.

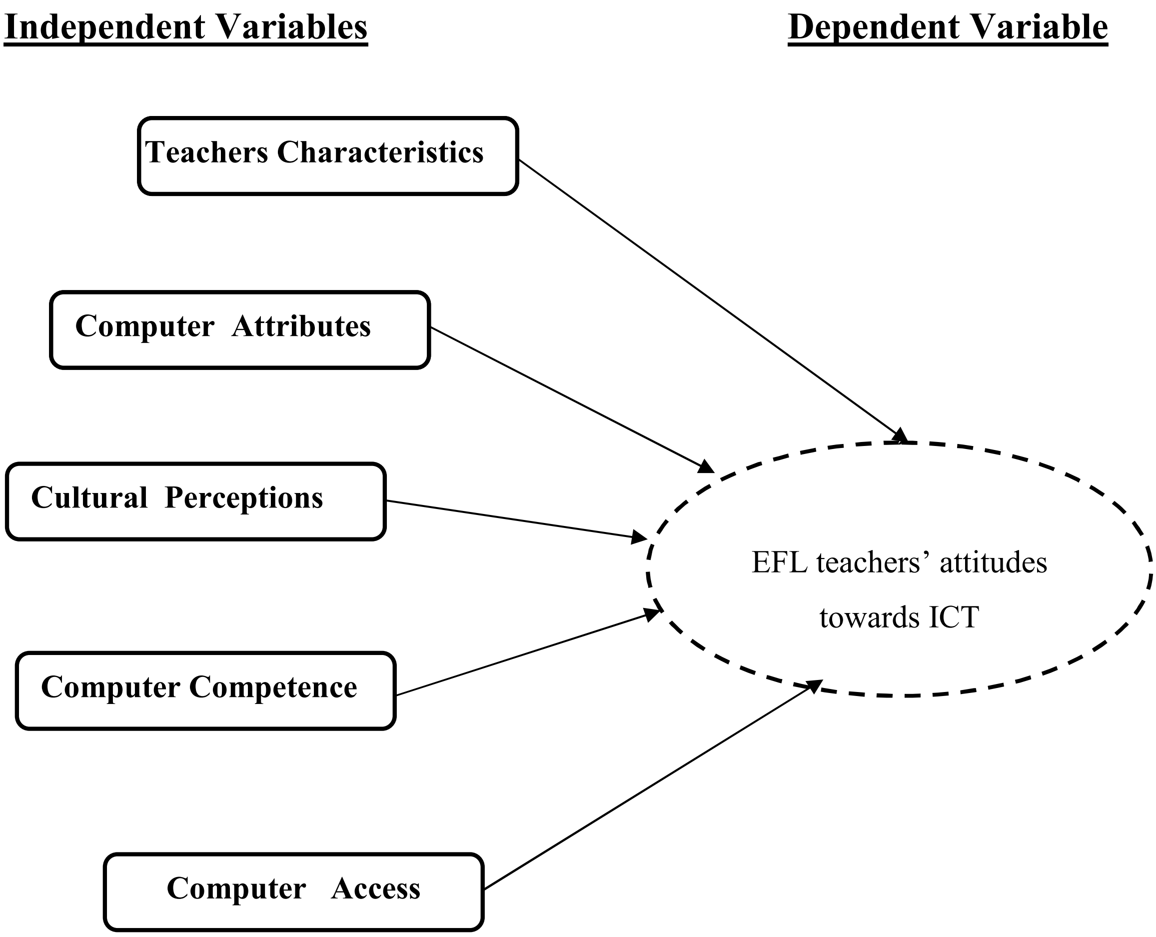

Figure 3. 1: Variables of the Study

3.3. Research Design

The current study used a combination of two methods (quantitative and qualitative) by including both quantitative and qualitative data which is called the mixed method design. Mixed methods research has been defined as "a type of research design in which QUAL and QUAN approaches are used in types of questions, research methods, data collection and analysis procedures " (Tashakkori & Teddlie).As Creswell (2014) iterates, mixed methods are used when we wish to discover more specific information about a phenomenon than can be gleaned from a single research methodology. Kelle (2006, p. 295) explains that social phenomena require "knowledge about context-bound patterns, structures and rules characteristics for particular social life worlds" . However, researchers may too easily lose contact with the social world, which is critical for the investigation of social phenomena, when they remain focused on the development of complex questionnaires. Hence, the researcher targeted to conduct the study only in one particular region in Algeria

(Secondary Schools in the Western District of Chlef), which meant that it was an in-depth exploration of a bounded system in terms of place (Stake, 1995). This study is an instrumental case study (Creswell, 2014), which served the purpose of illuminating a particular issue–in the case of this study "ICT integration in education".

The study was largely exploratory in nature because very little research has been conducted on the use of ICT by EFL teachers in the Arab world in general and in Algeria in particular. Creswell (2003) suggested that exploratory studies are most advantageous when "not much has been written about the topic or the population being studied" (p. 30). Tate (1998) stated, " a choice of whether a specific study is to be confirmatory or exploratory … depends on whether there is an adequate basis in the research literature" (p. 4). The study's goal was to explore EFL teachers' attitudes towards ICT in a different context. At the same time, certain principles of innovation adoption were tested in the course of this study.

As the current study sought understandings of the attitudes of EFL teachers and the factors that may contribute to teachers' attitudes toward the uptake of ICT in education, the research was based on two main data gathering methods: a structured questionnaire (Appendix F) and a semi-structured interviews (Appendix G). Drawing on both quantitative and qualitative methods in combination, the purpose and exploratory nature of this research has the capacity to develop understandings that using one data source may have been insufficient (Creswell & Plano Clark, 2011). To develop an in-depth understanding of EFL teachers' attitudes toward ICT integration in the Algerian Secondary Schools, a combination of qualitative and quantitative approaches was deemed most appropriate to investigate and analyse this phenomenon.

The reason for using a mixed method design in this study is to build on the distinctive strengths of each method to add unique perceptions about ICT integration by EFL teachers , that cannot easily be achieved from a study employing a single method. Indeed, research directed from the dual perspectives of qualitative and quantitative data collection and analysis counteracts the disadvantages of a single research method and generates greater depth and breadth of understandings in the interpretation of the data (Check & Schutt, 2012; Creswell, 2013).

To answer the research questions of the current study, a sequential mixed method design was adopted in order to collect, analyze, interpret and report data. This approach starts with quantitative data collection stage and is followed by qualitative inquiry stage (Figure 3.2). There were two main rationales for mixing methods in the research of teachers' attitudes toward ICT implementation in education. First, using both qualitative and quantitative approaches to examine teachers' attitudes toward ICT implementation offers more confidence in the validity and reliability of the study findings than using only one approach, and can also support the generalisability of the findings. Mixed methods approaches can minimise errors that may arise from a single approach and confirms data accuracy (Tashakkori & Teddlie, 2003**).** Consequently, adopting both qualitative and quantitative approaches provided what Collins, Onwuegbuzie, and Sutton (2006) call "significance enhancement" (p. 83). That is, the qualitative data were used to enhance the quantitative data.

The second rationale for adopting mixed methods in this research study was complementarity, in which different approaches were used to examine different aspects of a phenomenon producing an enriched, elaborated understanding of that phenomenon (Greene, Caracelli, & Graham, 1989). The quantitative questionnaire was used to examine Secondary School EFL teachers' attitudes toward ICT integration, and some other independent variables, including: the personal characteristics of the teachers, computer attributes, the cultural perceptions of ICT, perceived computer competence and access. Additionally, data from the quantitative method were used to examine the relationships between the dependent variable (teachers' attitudes toward ICT integration) and some of the independent variables, for example, teachers' demographic characteristics. In addition, the attitudes toward the implementation of ICT was explored by using qualitative interviews with Secondary School EFL teachers in the Western District of Chlef to provide an in-depth understanding answering ' ' ' 'how' ' Secondary School EFL teachers perceive the implementation of ICT into their classroom practices. Also, this qualitative element was employed to ensure the trustworthiness of the quantitative findings. Figure 3.2 illustrates the design of this research study. It shows the number of participants in each stage as well as the data collection and analysis techniques used to respond to the research questions.

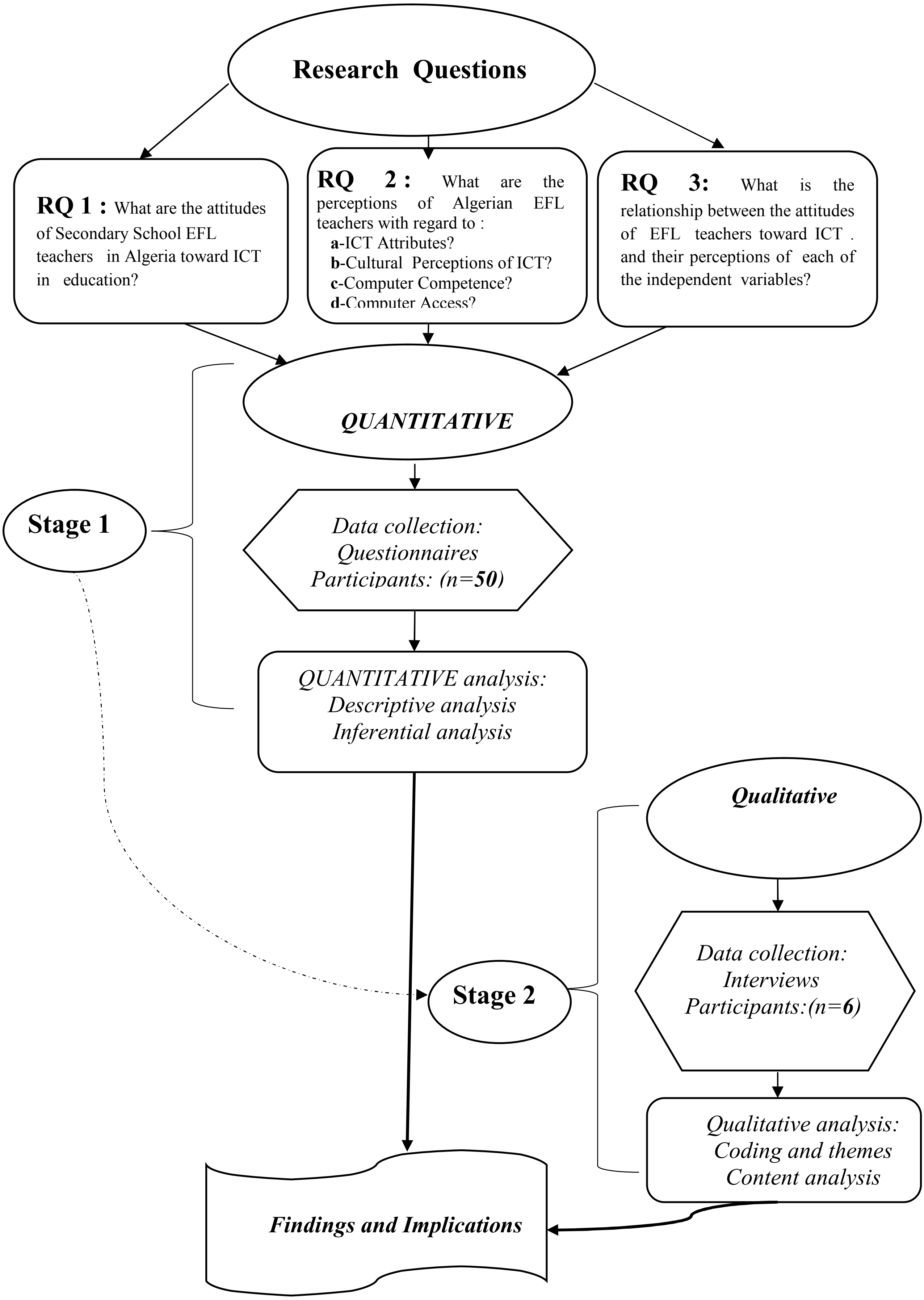

Figure 3. 2: Research Design

3.4. Study Population and Sample

3.4.1. Population

The target population for this study was EFL teachers from twenty-three Secondary Schools in the Western District of Chlef in the West of Algeria during the Academic Year 2016-2017 . 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. The Inspector of National Education in English had already provided the researcher with a list of the EFL teachers working in Secondary Schools in the Western District of Chlef (See Appendix D). As of January 2017, the total number of EFL teachers in this district was 79 (29 males, 40 %; 50 females, 60 %) as illustrated in Table 3. 1 .

Table 3. 1 Distribution of the Population According to the Western District in Chlef

District	Number of Secondary Schools	Female Teachers	Male Teachers	Total Number of Teachers
Western District in the Wilaya of Chlef	23	50	29	79

3.4.2. Sample

As for sampling, the questionnaire informants were EFL Secondary School EFL Teachers working in the Western District of Chlef (n = 50) while the interview participants (n = 6) were selected on the basis of reputational sampling (Denscombe, 2010). Reputational sampling was used to select only those teachers who had a reputation of implementing ICT in their classrooms. Wiersma (2000) defines sample as “A subset of the population to which the researcher intends to generalize the results” (p.269). Gay and Airasian (2000) suggest that for a population number of 900, a sample of 269 subjects is appropriate.

The lists obtained by the researcher included each coordinating teacher's name,phone number, e-mail address, facebook page, and school site. Gay and Airasian

(2000, p.140) have recommended that a simple random sample is “the best single way to obtain a representative sample”.

3.5. Research Tools

The research methodology applied in this study is 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 Cresswell (2009), 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 the findings that are more comprehensive, holistic and integrates various aspects of the problem investigated.

An anonymous questionnaire was constructed to elicit information regarding the three research questions that the study set out to answer. On the basis of five-point Likert scales, the participants were required to state their level of agreement on the items presented. The questionnaire (Appendix F**)** included five and four point Likert-scale items, open-ended and multiple-choice items. Before the questionnaire instrument was officially used in the study, piloting was conducted by providing it to ten EFL teachers in the Western District of Chlef. The aim of piloting study was to enable the researcher to “identify problems, so that they could modify, delete, and add items in the instrument to increase its reliability” (Wang, 2006, p.103). After the study, two vague items in the teacher’s questionnaire were changed in order to be clearer.

As regards the semi-structured interview (Appendix G) , it consisted of several questions attempting to obtain additional information and clarifications from teachers. The interview participants were selected on the basis of reputational sampling (Denscombe, 2010) to gain greater insight into the EFL teachers’ attitudes toward the adoption of ICT.

3.5.1. Questionnaire Instrument

The development of questionnaire was guided by extensive review of literature and scales used in different educational backgrounds (Al-Oteawi, 2002; Christensen & Knezek, 1996; Abu-Samak, 2006; Isleem, 2003;Albirini ,2004; Rogers,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 that correspond to the main variables of the study (See Appendix F) **.**These sections were labeled:

- **Section I:** Teacher Characteristics
- **Section II:** Attitudes toward ICT
- **Section III:** Perceived Computer Attributes
- **Section IV:** Cultural Perceptions
- **Section V:** Perceived Computer Competence
- **Section VI:** Perceived Computer Access

All statements were either constructed by the researcher or selected from previous research based on their relevance to the current study and on their cultural and contextual appropriateness. Positive and negative items were balanced across the six sections. In this study, the response value (score) for each of the negative items in the three sections of the questionnaire (Computer Attitudes, Computer Attributes, and Cultural Perceptions of ICT) was reversed before summing for the total. That is, if the informant gave a 1, the score was made 5; if gave a 2 it was made 4; 3=3; 4=2; and, 5=1.Following is a detailed description of the constructs/variables in the study:

3.5.1.1. Teacher Characteristics

The items used to characterize Secondary School EFL teachers in Chlef were gender, age, school location, academic qualification, teaching experience, and computer training background as well as teaching methods. As mentioned previously, demographic variables were correlated with attitudes to ensure maximum control of extraneous variables by building them into the design of the study. Gay and Airasian (2000) state that “two types of extraneous variables in need of control are participant variables and environmental variables. Participant variables are the characteristics of the participants (such as gender) that cannot be altered but that can be controlled” (p.

383). Although demographic variables in general do not seem to have a consistent relationship with attitudes, a set of these variables were selected mainly based on their theoretical relevance to attitudes (Rogers, 2003). The selected variables in this section were quantified by individual scores on eight items. The responses to all eight items were treated separately as descriptive information that was correlated with the attitudes toward ICT.

- *Gender* referred to the gender of each teacher. It was measured by asking respondents, "what is your gender?" with a dichotomized choice of male or female as guided responses.
- *Age* referred to the number of years attained by each teacher. It was measured by asking respondents, "what is your age?" with a choice of ten-year interval as guided responses.
- *School location* referred to the general population density of each teacher's school district. It was measured by asking respondents, "What type of school district do you teach in?" with a choice of urban, suburban, and rural as guided responses.
- *Academic qualification* referred to the degree of formal higher education attained by each teacher. It was measured by asking respondents, "What is your highest completed Academic Degree? " with a choice of Teacher Certificate (ENS), Bachelors , Master's and Doctorate as guided responses.
- *Teaching Experience* referred to the number of years that each teacher had been teaching in the school and was measured by asking respondents, "Including the current year, how many years have you been teaching?" with a choice of five-year interval as guided responses.
- *Training experience:* was measured by asking respondents, "Have you ever attended any training course, workshop, or seminar on using computers?" with a choice of "yes" and "no". For respondents answering with "yes" a further question asked them to specify the number of days with no guided responses.
- *Computer expertise* referred to the number of years that each teacher had been using computers. It was measured by asking respondents, "Including the current year, how many years have you been using computers?" with a choice of five-year interval as guided responses.

- *Teaching method* referred to the teaching method that each teacher used. It was measured by asking respondents, "What is the teaching method you use most often?" with a choice of Active Discussion, Collaborative Learning, Role Playing, Computer-Assisted Instruction, and Other as guided responses.

3.5.1.2. Attitudes toward ICT

This section included 20 statements arranged into three subscales: (a) affective (statements 1-6), (b) cognitive (statements 7-15), and (c) behavioral (statements 16-20). Affective statements were about feelings towards ICT in education, cognitive statements dealt with knowledge of ICT, and behavioral statements sought information on the use of ICT. The participants evaluated themselves on a five-point Likert-type scale with the following response choices: 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), and 5 (strongly agree). The responses were converted to a mean score, ranging from 1 to 5.As Albirini (2004) puts that:

> The responses were reduced to a mean score that demonstrates how positive or negative each respondent's attitude towards ICT was. Since respondents rated their attitudes on each item from strongly disagree (1) to strongly agree (5), the range of possible mean scores was between 1 and 5, with higher scores indicating positive attitudes. (Albirini, 2004, p. 62)

In this current study, this same summative method was used to create a score for this section.

3.5.1.3. Perception of ICT Attributes

The Perceived Computer Attributes Scale consisted of 18 Likert-type statements with the same response choices as in the previous section. The statements were grouped into four subscales corresponding to four of the attributes identified by Rogers (2003). The subscales are relative advantage (statements 21-25), compatibility (statements 26-30), complexity (statements 31-34), and observability (statements 35-38). One of Rogers' attributes, trialability, was excluded because the majority of the teachers in the study had no chance of experimenting with computers before computers were introduced into schools. As with the previous section, the responses were converted to a mean score, ranging from 1 to 5. For the sake of systematicity, the negative statements of complexity were reversed , and thus it was the simplicity (non-complexity) of computers that was measured. In other words, higher scores on the complexity subscale indicated positive perceptions about the simplicity of computers (or negative perceptions of the complexity of computers) and not the opposite.

3.5.1.4. Cultural Perception of ICT

This section consisted of 16 statements on a five-point Likert-type scale described earlier. The statements took into account the teachers' perceptions of the cultural value, relevance, and impact of ICT as it related to both Algerian scholastic and national cultures. As with the previous sections, the answers were reduced to a mean score, ranging from 1 to 5.

3.5.1.5. Perceived Computer Competence

This section contained 15 statements zeroing in on revealing how competent the respondents considered themselves to use computers for educational purposes. The statements were about software installation (statement 1), basic hardware (statements 2-3), productivity software (e.g., word processing; statements 4-7), telecommunication resources (statements 8-9), basic troubleshooting (statement 10), graphic application (statement 11), grade keeping (statement 12), educational software evaluation (statement 13), organization tools (e.g.,use of folders) (statement 14), and virus handling (statement 15). Computer competence was quantified on a four-point Likert-type scale, with the response choices ranging from 1 (no competence), through 2 (little competence), and 3 (moderate competence), to 4 (much competence). Once more the responses were reduced to a mean score, this time ranging from 1 to 4.

3.5.1.6. Perceived Computer Access

The Perceived Computer Access Scale consisted of five statements that took into account the possible locations where computers might be available for use by the EFL teachers.Hence,computer access, as an independent variable, was quantified by the respondent's score on the three access-related items, each measured according to a 5-point scale, ranging from never (1), to rarely (2), to sometimes (3), to often (4), to very often (5). The responses were reduced to a mean score indicating each respondent's perceived level of computer access, with higher scores indicating greater computer access.

3.5.2. Interview Instrument

For the qualitative component of this study, a semi-structured interview (Gay& Airasian, 2000) was developed by the researcher in order to seek more additional information and clarifications from EFL teachers related to the survey data collected in the first stage. As Alswuail (2015) explains, interviews have the capacity to gain insight into the lived experiences of participants, learn their perspectives and discover the underlying reasons for a particular way of viewing the world. The interviews were intended to further probe some issues that were unanswered by the questionnaire data. Additionally, the semi -structured interviews allow the researcher to ask specific questions for clarification and expansion of ideas (Creswell, 2014).

The interviews were in particular anticipated to provide some explanations for the attitudes of the participants, their cultural perceptions, and their computer competence, access, and training. Each interview involved thirteen structured questions and allowed for open-ended comments. Questions 1, 6, and 7 probed the interviewees' views about the entry of ICT into Algerian society and school. Questions2, 3, 4, and 5 sought to examine the interviewees' perceptions about the attributes of computers as well as their general cultural perceptions. Questions 8, 9 and 10 sought to explain the interviewees' computer use in Education in general and in teaching in particular when they had positive attitudes toward ICT. Question 11 sought to explore the factors and the barriers that affect the perceptions and behaviours of English teachers for the uptake of technology in language teaching .Question 12 sought to investigate the interviewees' future plans in terms of increasing their computer competence/ access/ training as well as their suggestions about the training opportunities that they would like. Finally, questions 13 allowed interviewees to add open comments at the end of the interviews. The rationale motivating the use of two instruments for data collection is for methodological triangulation; that is, the results obtained from one source can be cross-examined by results obtained from another source of data collection (Denscombe, 2010; Kothari, 2004). To resolve issues of confidentiality, the researcher used codes in the questionnaire and pseudonyms in the interview to conceal the respondents' identities.

3.6. Data Collection

The methods for data collection in the current study were a survey as questionnaire (Appendix F), statistically analyzed using the Statistical Package for the Social Sciences (IBM SPSS Statistics Version 22), and interviews (Appendix G) that were analysed qualitatively by the researcher. The study consisted of two stages (See Figure 3.3): collecting quantitative data first, and then collecting qualitative data to help explain or elaborate on the quantitative results. In Stage One, the questionnaire described above was administered to the 56 participants included in the sample starting on the 18th of February, 2017. The informants were asked to complete the survey and were informed that was their consent to participate in the study immediately after the obtaining of permission from the Inspector of English in the Western District of Chlef and the Headmasters of Secondary Schools were contacted then and their approval was also obtained in the same district. A total of 56 questionnaires were distributed over a four day period from February 18th through February 21st, 2017.

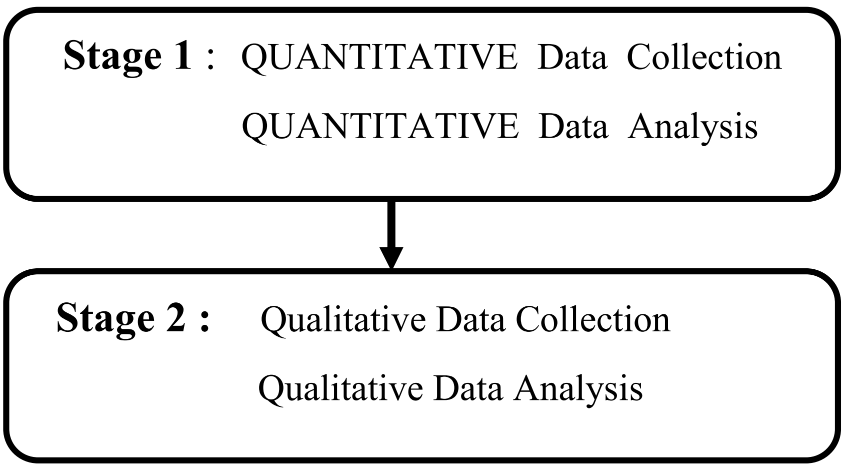

Figure 3. 3 : The Explanatory Sequential Mixed Methods Design

The surveys were delivered and collected in person to and from the schools' English Teacher Coordinators (often two or more informants were from the same School). The coordinators in turn distributed them to the teachers. This procedure was necessary to avoid a low response rate given that Algerian schools were about to close for the second term exams and then for the spring break. The teachers were given two weeks to complete the questionnaire. Two days before the deadline, school coordinators were asked via phone to remind teachers to complete the questionnaire. The questionnaires were collected in person from school coordinators from March 3rd to March 7th. The coordinators of five schools where some teachers did not complete questionnaires were asked for a three-day extension for collecting the rest of the questionnaires from teachers. Accordingly, phone calls and e-mails were placed as a reminder before the final collection of the surveys. By March 10th, a total of 53 questionnaires were collected from the participants. Thus, the collection of the survey data encompassed three weeks, starting February 18th and ending March 10th. The response rate was 94.64 %. The rate was high enough to avoid further survey distribution. However, three out of 53 surveys were not usable for data analysis because they were not completed. Those incomplete questionnaires were excluded. Only 50 were analyzed, representing a valid response rate of 89.28 % (Table 3.2).

Table 3. 2 : Response Rate and Percentages

	Distributed	Returned	Valid
Number of Questionnaires	**56**	**53**	**50**
Percentage	**100.00**	**94.64**	**89.28**

In Stage Two, a purposeful sample of six (6) teachers out of 25 who agreed to participate in follow-up interviews were invited to be interviewed face-to-face or through synchronous technologies (Skype, Facebook ,Viber) according to their convenience and preference. As mentioned earlier, the criterion for choosing the interviewees was their "reputation" of implementing ICT in their classrooms. Participants who volunteered for the semi-interview (Appendix G) were given a further consent form to the interview (Appendix E), and were invited to be interviewed face-to-face or by telephone, according to their convenience and preference. Before commencing the interview, the researcher confirmed with the participants that they fully understood the purpose of the interview, how their privacy and anonymity were assured. The selected informants were contacted by phone twice. During the first contact (on 13th and 14th of March , 2017), the researcher presented a cover story (Glesne & Peshkin, 1992) to reintroduce himself and his research topic, explained the purpose of the interview, requested participation in the interview, and set up appointments for the interviews. The second contact (on April 2nd, 3rd, and 4 th of 2017) was dedicated to the interviews themselves. Participants were interviewed for approximately 10 to 20 minutes, and as all participants declined to be recorded, the researcher took comprehensive notes during the interview.

3.7. Pilot Study

After the survey instrument was refined, a pilot study was conducted in order to field test the instrument and its appropriateness for the Algerian context. The survey instrument was given to ten EFL teachers in the Western District of Chlef (n = 10), selected purposefully from the accessible population. The majority of the informants (60%, n=6) were female while the males represented 40% (n=4). The participants in the pilot study did not participate in the final study in order to avoid duplication. They were asked to complete the survey and report any ambiguous or improper wording of items. Also, they were asked to report on the relevancy of the survey to the Algerian society in general and English language teachers in particular. These pilot study participants were asked to point out any ambiguous or vague items so that those items could be modified for the final survey instrument.

The surveys were mailed back to the researcher. Upon reviewing them, it was found that most of the respondents found the survey to be clearly worded, phrased in simple, straightforward language and appropriate to the Algerian context. Most of them, however, stated it would be hard to calculate the training by hours and suggested to limit it to days only. Accordingly, changes were made in the survey. The interview instrument was also piloted on one participant on January 13th, 2017 to ensure that the questions were comprehensible to the respondents. Due to the smooth flow of the pilot interview and the positive feedback of the interviewee, no change was made after the pilot. Overall, both data collection instruments (a questionnaire and a semi-structured interview) were piloted to resolve issues of layout, wording of the items, readability, clarity and acoustics(Zyad , 2016).

3.7.1. Validity

The validity of a research instrument refers to the extent to which it measures what it is designed to measure (Brown, 1996, p. 231), while reliability refers to the consistency and accuracy of the measurement (Seliger & Shohamy, 1989). According to Wyckoff (1998), “A valid instrument measures what the researcher claims to measure; a reliable instrument measures the data in a consistent and accurate manner rather than randomly” (p. 48).In this study, the instrument was subjected to face validity and content validity tests. Face validity merely establishes that the tool seems as appropriate way to find what is being measured. To ensure face validity of the instrument, the researcher gave the questionnaire to a panel of experts in the field of psychology, and some EFL teachers who were not included in the sample to read through and make corrections and suggestions on the clarity of items and response options and fitness or alignment to the research questions. Feedback from the panel of experts and EFL teachers was used mainly to ensure that the six sections measure the content areas of investigation and are culturally and technically appropriate for the context of the study. After making the necessary corrections, the questionnaire was considered to have attained face validity. On the other hand, content validity focuses upon the extent to which the content of an instrument corresponds to the theoretical concept it is designed to measure (Haji ,2015) . To evaluate the content validity of the instrument,the researcher scrutinized the questionnaire, checked the relevance of items to the objectives of the study. This was confirmed by the researcher’s supervisor.The comments on content validity were used to eliminate,add,and modify elements of the survey instrument. The survey instrument was then ready for pilot study distribution.

3.7.2. Reliability

According to Gay and Airasian (2000), “Reliability is the degree to which a test consistently measures whatever it is measuring” (p. 169). A reliability coefficient indicates the consistency of the score produced (Gay and Airasian, 2000). Reliability in this study was established using the pilot study data. The pilot study was carried out immediately after the approval of the Headmasters of Secondary Schools that had been obtained on the 30th of January, 2017.

In this study, the researcher conducted a pilot study with 10 EFL teachers in the Western District in Chlef immediately after obtaining their approval. These informants were volunteers from the target population (they were not involved in the sample). Cronbach's alpha was used to measure internal-consistency of the questionnaire (Table 3.3). Cronbach's Alpha estimates internal-consistency reliability by indicating whether "the items of a test or instrument measure the same attribute or dimension" (Kottner & Streiner 2010, p. 926). The data were analyzed via the use of Statistical Package for the Social Sciences (SPSS) software , version 22 .As a rule of thumb, a cut-off point of .60 is common in exploratory research (Garson, 2006). Furthermore, when an instrument consists of scales measuring different constructs, the internal consistency coefficient must be calculated for each scale individually (Gliem & Gliem ,2003). The ICT Survey of EFL Teachers consisted of five main scales: attitudes, attributes, cultural perceptions , competence, and access. The attitude scale covered three subscales: affective,cognitive, and behavioral. The attributes scale involved four subscales: relative advantage, compatibility, complexity, and observability. Thus, Cronbach's alpha was used to determine the degree of internal consistency of the items with each scale. Taking the aforementioned guidelines into account, the Cronbach's alpha was calculated for the main scales and subscales of the instrument from the total sample of 50. The reliability analysis in Table 3.3 shows the statistics for Cronbach's alpha for each main scale and its respective subscale of the instrument from the total sample of 50. None of the scales had a value below .70, indicating that all items were reliable. It is worth noting that Cronbach's alpha increases as the number of items in the scale increases (Graziano & Raulin, 1997), which accounts for the high scores of the scales with many items in comparison with scales that had fewer items. The polarity of the negative questions in the Liket-type scales was reversed. This reversed polarity was used for subsequent analyses. In light of the results of the pilot study, some changes were made in the questionnaire in order to increase the reliability in the main study. The changes included adding three items and modifying two to the "ICT

Attitude Scale", omitting one item from the "Computer Attribute Scale". The changes have shown their effect on the reliability of the questionnaire by increasing Cronbach's Alpha for the current study. Therefore, the alpha coefficients for the four main scales and their subscales were represented in Table 3.3.

Table 3. 3 : Reliability Coefficients of the Questionnaire Sections

Scale	Subscale	No. of Main Study Items	***Cronbach's Alpha***
			Study (n=50)
Attitude toward ICT		**20**	**.84**
	Affective	6	**.71**
	Cognitive	9	**.85**
	Behavioral	5	**.56**
Computer Attributes		**18**	**.80**
	Advantage	5	**.71**
	Comptability	5	**.54**
	Complexity	4	**.63**
	Observability	4	**.56**
Cultural Perceptions		**16**	**.75**
Computer Competence		**15**	**.92**

3.8. Data Analysis Procedures

The following sections describe the procedures used to analyse both quantitative and qualitative data. The first part outlines the processes used to analyse numerical data collected through the questionnaire (Appendix F). The second part provides an in-depth explanation of the process of interview transcription and thematic analysis of conversational data. Through these descriptions, the strength of entwining quantitative and qualitative data analysis is explicitly revealed.

3.8.1. Quantitative Data Analysis

The study used both descriptive and inferential statistics to organize and analyze the quantitative data. Descriptive statistics were used to describe and summarize the properties of the mass of data collected from the respondents (Gay & Airasian, 2000, p. 437). The inferential statistics employed in the study were the Pearson and Spearman correlations. This method was used to explore and evaluate relationships between the variables in the study. The Spearman Correlation Statistic tells whether a relationship holds between two or more variables and it also offers a figure indicating the strength of the relationship (Kothari, 2004). The collected data from this study were analysed by using the Statistical Package for the Social Sciences (IBM SPSS Statistics Version 22) in order to determine relationships between the independent and dependent variables in a quick manner. Table 3.4 provides an outline of the research questions and the statistical methods that were used to answer them.

Table 3. 4 : Statistical Analysis Procedures Used to Answer Research Questions

Research Question	Statistical Method
1. What are the attitudes of Secondary School EFL teachers in Algeria toward ICT in education?	Means, Standard Deviations
2. What are the perceptions of Algerian EFL teachers with regard to : a) ICT Attributes? b) Cultural Perceptions of ICT? c) Computer Competence? d) Computer Access?	Means, Standard Deviations
3. What is the relationship between the attitudes toward ICT among Algerian EFL teachers and their perceptions of each of the independent variables (including teachers' characteristics)?	Pearson & Spearman Correlations

Descriptive statistics were used to answer questions 1 and 2. Statistics used to describe interval data were means, standard deviations, mode, and range. Ordinal and nominal data were described using the mode and frequency distribution. Inferential statistics were used to answer questions 3. Following Gay and Airasian's (2000) recommendations, simple correlations (using Pearson and Spearman analyses) were first performed to identify independent variables that individually correlate with the dependent variable (attitudes toward ICT). In addition, Multiple Regression Analysis was also used to investigate the relationship between teachers' attitudes towards ICT (the dependent variable) and the independent variables, including teacher perception of the attributes of ICT, culture-related perceptions of ICT, self-reported competence, and self-reported access to ICT as well as demographic variables (teachers characteristics) selected for this study. Also, the obtained results from both descriptive and inferential statistics were presented through tables in a neatly organized manner.

3.8.2. Qualitative Data Analysis

A semi-structured interview (Appendix H) was used to seek in-depth information on EFL teachers' attitudes toward the implementation of ICT in the classroom . Open-ended questions were used, as explained above, to facilitate extended responses. Once gathered, the interview data were analysed qualitatively by the researcher, using the recommended analytical methods of arranging, organising, identifying emerging themes, coding and re-coding, and finally connecting the resulting categories with the research questions.

The current study employed categorization process and content analysis in order to analyze and uncover the emerging themes of the data collected by the semi-structured interviews (Denscombe, 2010). Within this paradigm, "it is possible to understand the subjective meaning of action (grasping the actor's beliefs, desires and so on) yet do so in an objective manner" (Schwandt, 2000, p.193). Regarding the analysis of the interview data, the researcher had pre-determined questions before conducting the interview sessions in accordance with the research questions and scope of the study. Therefore, coding the interview data was easy and smooth. Though there were pre-determined set of questions for the smooth running of interview sessions, the interviewees were quite comfortable to express their views and providing enriched information on their own stance.

The interviews were realized during an in-service teacher training seminar for the benefits of the EFL teachers held by the National Inspector of English on the 4th of April, 2017. The setting was sufficiently comfortable to collect detailed data for the purposes of the research in due time.The interviewees were aware of the scope and content of the study because they responded to the questionnaire (Appendix F) and interview consent form (Appendix E) three weeks ago. This awareness enabled them to express their ideas and experiences in a broader sense. As the interviews were semi-structured, it became easy to follow the flow of interviews in accordance with the pre-determined questions. At the end of the transcribing and coding procedures, the following major content categories were obtained:

- Levels of Computer use in the Algerian Society and School
- Computer Attributes and Cultural Perceptions
- Obstacles to technology use
- ICT, Teacher Training and Professional Development

To ensure the anonymity and confidentiality of the respondents, the researcher used codes in the questionnaire and pseudonyms in the interview to conceal the respondents' identities. The relationships amongst codes were sought and then assembled into themes and sub-themes before final reporting. This provided a methodical process of categorizing, linking, forming, interpreting and formulating explanations for the phenomena under study (McMillan, 2008).The process of qualitative data analysis used in this study is shown in Figure 3.4 (adapted from McMillan, 2008). While the quantitative data in the previous chapter were represented through tables and figures, the interview data are presented mainly through thematic discussion.

To this end, in this study, semi-structured interviews enabled the researcher to explore some untouched points that were not uncovered via the questionnaire. Thus, the interviews yielded in-depth results for the scope of this research and gave rise to the detailed exploration of the research questions. The results of the qualitative data are reported separately in chapter four.

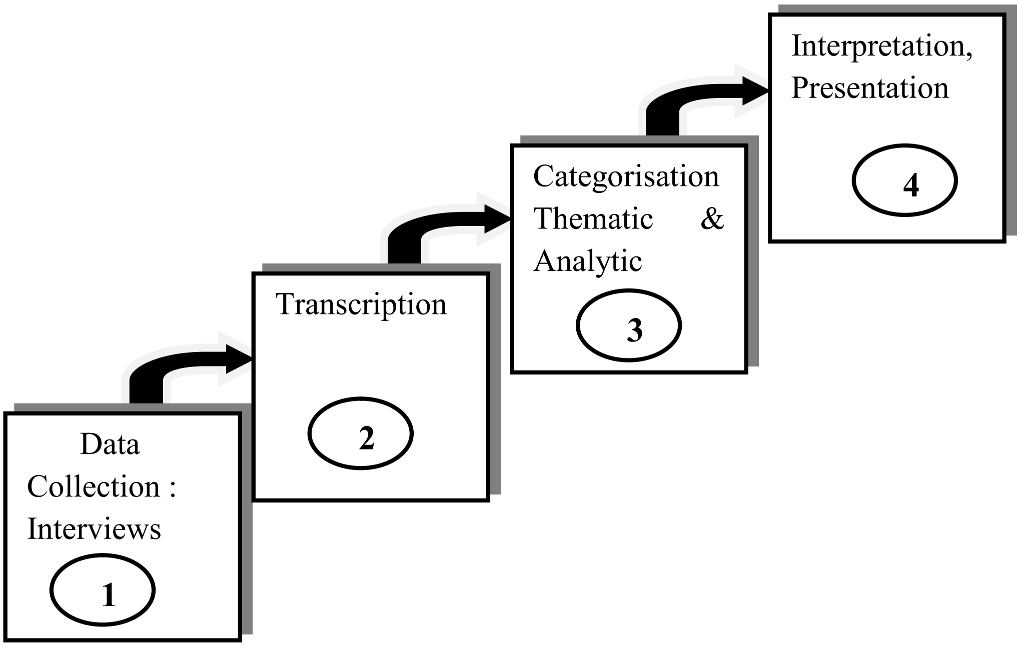

Figure 3. 4 : Steps in Analysing Interview Data

3.9. Conclusion

In this chapter, we tried to describe the research variables, research design, study population and sample, research tools , data collection, and data analysis procedures. We started with the description of the dependent and independent variables and justification of the chosen research design underpinning the present study as the most effective means of exploring attitudes toward ICT integration by EFL teachers in Algerian Secondary Schools in the Western District of Chlef. The population and means for obtaining a representative sample were explained. After that, we provided a detailed description of the development of research tools along with the data collection methods. Then, piloting the study and the analytical procedures were discussed .In the next chapter, the data analysis and the findings will be discussed in detail.

CHAPTER FOUR

DATA ANALYSIS, DISCUSSION OF THE FINDINGS, AND RECOMMENDATIONS

Chapter Four
Data Analysis, Discussion of the Findings, and Recommendations

4.1. Introduction

Chapter four is divided into two main parts: The first part deals with the findings of the study on the basis of both the questionnaire and the interview. It first presents quantitative findings of the questionnaire. Then, it presents qualitative findings of the interview. The second part of this chapter focuses on discussing the main findings that emerged in this study in relation to previous empirical and theoretical literature. The chapter ends with implications and recommendations for further research. It also includes a consideration of limitations of the study.

Part I: Data Analysis and Findings

In this study, a questionnaire and semi-structured interviews were utilized to collect the data. Both descriptive and inferential data analysis procedures were used to analyze the data gathered via the questionnaire. The quantitative data were analyzed via the use of the analytic tool SPSS. Version 22 and content analysis was employed in order to analyze the data collected through the semi-structured interviews.

This study aimed at exploring the Attitudes of English Language Teachers toward ICT integration in Algeria and the factors affecting their perceptions and behaviours about ICT use in education. Based on Ajzen and Fishbein's (1980) Theory of Reasoned Action, the dependent variable, attitudes, was assumed to contain cognitive, affective, and behavioural dimensions. Two of the independent variables, teacher perceptions of ICT attributes and culture-related perceptions of ICT, were based on Rogers'(2003) Theory of Diffusion of Innovations. The other independent variables, which were based on a review of the literature, included: 1) competence in using ICT, 2) level of access to ICT, and 3) teacher characteristics (gender, age, teaching experience, educational background, and teaching method.) Accordingly, the following research questions were investigated:

1) What are the attitudes of Secondary School EFL teachers in Algeria toward ICT in education?

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

a• ICT Attributes?
b• Cultural Perceptions of ICT?
c• Computer Competence?
d• Computer Access?

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

This first part of the chapter presents the results of the analyses that provide answers to the three research questions posed by the current study. This part starts with a brief summary of selected characteristics of the surveyed Algerian EFL teachers before addressing the results around each of the quantitative research questions. The second section presents descriptive statistics of the teachers' attitudes toward ICT. The third section presents descriptive statistics of teachers' perceptions of (a) computer attributes, (b) cultural relevance of computers, (c) their own computer competence, and (d) their computer access. The fourth section employs Pearson and Spearman correlations to present the relationship between attitudes toward ICT, the dependent variable, and each of the independent variables. The last section summarizes the themes, patterns, and relationships that emerged from the qualitative data (interviews).

4.2. Quantitative Data Analysis

This section presents the findings of the quantitative part represented by the informants' responses to the questionnaire items in light of the three research questions.

After reviewing the collected questionnaires, it was found that 53 questionnaires were returned by informants. However, a preliminary analysis of the extent of missing data revealed that 3 surveys contained missing values. In order to detect any patterns in the missing data, a coded variable for missing values was created for each variable and the resulting sample was calculated after a listwise deletion, which dropped any informant with a missing value on any of the variables to be used in the analysis. The resulting sample after a listwise deletion was 50.

The Statistical Package for Social Science (SPSS) Version 22 was used to analyze the data. In all, 56 surveys were distributed, 53 were returned, resulting in a return rate of 94.64 %. All of the returned surveys, a total of 53, were used in the analysis. Descriptive statistics (frequencies, percentages, means, and standard deviations) were computed as a means of describing the informants' attitudes toward ICT, as well as their perceptions of ICT attributes, their cultural perceptions of ICT, their levels of ICT competence, and levels of access to ICT.

Pearson and Spearman correlation coefficients were used to determine the relationship between the independent variables: Teachers' characteristics (including Computer Training Background), ICT attributes, cultural perception, computer competence and access, and EFL teachers' attitudes toward ICT.

4.2.1. Descriptive Summary of Teachers' Demographic Characteristics

Teachers' characteristics are presented in terms of (1) demographic information, including gender, age, school location, academic qualification, teaching experience, and preferred teaching method as well as (2) information regarding background in computer training (Table 4.1).

The data revealed that the number of female teachers (n=30; 60 %) is greater than male teachers(n=20, 40%).The reason for this asymmetry is due to the fact the study included both genders of Secondary School EFL teachers working in the Western Province of Chlef.As regards age, the largest age group for all informants was between 30 and 39 (n=19, 38%) whereas the smallest age group was between 50 and 59 (n= 2, 17.9%). Intermediate between these two age groups are informants whose age ranges between 20 and 29 (n=16, 32%) and those aged between 40 and 49 (n=13, 26%).None of the informants was 60 or older. Concerning the location of the schools where the teachers work, it was indicated that 22 (44%) teachers work in urban schools while 16 (32%) teachers work in suburban schools .The rest of the teachers (n = 12, 24%) work in rurul schools. Also, the sample of the 50 English language teachers breaks down into 42 % teachers with Teacher Certificates in English language from Teachers' Training Schools (ENS , n =21), 40 % teachers with Bachelors degrees (n = 20), and 18% teachers with Master's degrees (n = 9).However, no teacher of English held a

Doctoral Degree. This analysis determined that most of the EFL teachers in the sample have Teacher Certificate's Degrees from ENS.

The majority of teachers (n = 13, 26%) in the sample have a teaching experience that ranges either from 1 to 5 years or from 6 to 10 while an equal number of teachers (n = 8, 16 %) whose teaching experience ranges either between 16 and 20 or over 20 years while the lowest number (n = 1, 2 %) has a teaching experience of less than a year.

As for teachers' computer training, the majority of the informants (76 %, n=38) reported that they had participated in a training program whereas only 24 % of the respondents (n=12) stated that they had no training at all. Concerning training duration, table 4.1 indicates that fifty two percent (52%, n=26) of the teachers had between 1 to 20 days of training, 6% (n=3) had between 21 and 40 days, 2% (n=1) had between 41 and 60 days, and only 16 % (n=8) of the trained teachers received more than 61 days of training. The teaching method most commonly used by the respondents was Active Discussion (50 %, n=25) and the least used is Role Playing (4%, n=2). Collaborative Activities were the second most used teaching method (34%, n=17), and Computer-assisted Instruction was the third (12 %, n=6). No other teaching methods were reported by respondents in the "Other" option.

Table 4. 1 : Summary of Informants' Demographic Characteristics

Variable	Category	Frequency	Percent
Gender	Male	20	40,0
	Female	30	60,0
Age	(20-29)	16	32,0
	(30-39)	19	38,0
	(40-49)	13	26,0
	(50-59)	2	4,0
School Location	Urban	22	44,0
	Suburban	16	32,0
	Rural	12	24,0
Academic Qualification	Teacher Certificate (ENS)	21	42,0
	Bachelor	20	40,0
	Master	9	18,0
Teaching Experience	Less than a year	1	2,0
	1-5 years	13	26,0
	6-10 years	13	26,0
	11-15 years	7	14,0
	16-20 years	8	16,0
	Over 20	8	16,0
Training Experience	No	12	24,0
	Yes1-20 days	26	52,0
	21-40 days	3	6,0
	41-60 days	1	2,0
	≥ 61 days	8	16,0
Computer Use	1-5 years	13	26,0
	6-10 years	14	28,0
	11-15 years	18	36,0
	16-20 years	3	6,0
	Over 20	2	4,0
Teaching Method	Active Discussion	25	50,0
	Collaborative Learning	17	34,0
	Role Planning	2	4,0
	Computer-Assisted Instruction	6	12,0

4.2.2. Research Question One: 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. Negative statements were reverse-coded before analysis was carried out. Table 4.2 presents the frequency of informants' responses to the 20-item Attitude Scale. 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 behavioral domain (What teachers would like to do with computers?).Computer attitudes of EFL teachers 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. Higher scores indicate more positive attitudes and lower scores indicate less positive attitudes.

Table 4. 2 : Frequency Percentages on the Attitudes Scale

Computer Attitude Scale		Percent (%)				
Statements		SD	D	N	A	SA
		1	2	3	4	5
1	I feel comfortable using computers	2.0	2.0	12.0	64.0	20.0
2	* I am fearful about computer use	6.0	2.0	16.0	46.0	30.0
3	I am glad there are more computers these days.	00	4.0	4.0	52.0	40.0
4	I like all teachers in secondary school to use computers for instruction.	00	4.0	16.0	56.0	24.0
5	Using computers is enjoyable.	00	2.0	12.0	60.0	26.0
6	I prefer to deliver lessons using computers.	00	14.0	22.0	44.0	20.0
7	Computers save time and effort.	2.0	4.0	8.0	52.0	34.0
8	*Schools would be a better place without computers.	2.0	4.0	6.0	42.0	46.0
9	Students must use computers in all subject matters.	2.0	34.0	28.0	30.0	6.0
10	*Learning about computers is a waste of time.	10.0	2.0	4.0	46.0	38.0
11	Computers would motivate students to study more.	00	12.0	8.0	48.0	32.0
12	Computers are a fast and efficient means of getting information.	4.0	2.0	6.0	48.0	40.0
13	*I do not think I would ever need a computer in my classroom.	00	8.0	12.0	58.0	22.0
14	Using computers makes the academic climate in school more intellectually stimulating.	00	10.0	12.0	58.0	20.0
15	*Computers do more harm than good	2.0	8.0	10.0	56.0	24.0
16	*Computer use increases the usual teacher workload	8.0	42.0	20.0	22.0	8.0
17	*I would rather do things by hand than with a computer.	2.0	18.0	28.0	44.0	8.0
18	*I would avoid computers as much as possible.	00	6.0	6.0	60.0	28.0
19	I would like to learn more about computers.	6.0	2.0	10.0	58.0	24.0
20	*I have no intention to use computers in the near future.	8.0	4.0	4.0	54.0	30.0

Scale: SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree
Note: *negative items were reversed before scoring

In the affective domain, the mean score of informants' responses was 3.99 (S.D. = 0.5), indicating a positive attitude toward ICT (Table 4.3). 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%). Also, 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 by using computers (64%).

Concerning the cognitive domain, the mean score was 3.92 (S.D.= 0.5), indicating positive cognition of ICT (Table 4.3). 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 do study more (80%), are fast and efficient means of getting information (88%),and make the academic climate in school more intellectually stimulating (78%). Also, 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 behavioral domain, the mean score was 3.62 (S.D. = 0.4), indicating positive behavioral intentions toward ICT (Table 4.3). The majority of the informants intended 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 computer to decrease their usual workload. The table below summarizes the means and standard deviations for each of the three components of attitude:

Table 4. 3: 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
Behavioral	3.62	0.498	4
Overall Attitude	3.87	0.453	4

As illustrated in Table 4.3, 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 favorably to item 8 (mean=4.26), and least favorably to item 9 (mean=3.04).

4.2.3. Research Question Two: Teachers' Perceptions in Terms of Factors Related to Attitudes toward ICT

This section presents a description of the EFL teachers' perceptions of the four main independent variables in the study: (a) computer attributes, (b) cultural perceptions, (c) computer competence, and (d) level of computer access.

4.2.3.1. Computer Attributes

Informants were asked to respond to 18 Likert-type items that measured their perceptions of the attributes of computers. Table 4.4 shows the frequency of participants' responses to the 18-item Computer Attributes Scale. The scale was divided into subscales as follows: relative advantage (items 1-5), compatibility (items 6-10), complexity (items 11-14), and observability (items 15-18).

Table 4. 4 : Frequency Percentages on the Computer Attributes Scale.

Computer Attributes Scale		Percent (%)				
Statements		SD	D	N	A	SA
		1	2	3	4	5
1	Computers will improve education.	4,0	4,0	10,0	58,0	24,0
2	Teaching with computers offers real advantages over traditional methods of instruction.	2,0	8,0	14,0	66,0	10,0
3	*Computer technology cannot improve the quality of students' learning.	2,0	12,0	10,0	54,0	22,0
4	Using computer technology in the classroom would make the subject matter more interesting.	00,0	4,0	2,0	50,0	44,0
5	*Computers are not useful for language learning.	4,0	4,0	00	50,0	42,0
6	*Computers have no place in schools.	6,0	00	4,0	46,0	44,0
7	Computer use fits well into my curriculum goals.	2,0	8,0	28,0	54,0	8,0
8	*Class time is too limited for computer use.	6,0	54,0	22,0	18,0	00
9	Computer use suits my students' learning preferences and their level of computer knowledge.	00,0	16,0	18,0	58,0	8,0
10	Computer use is appropriate for many language learning activities.	2,0	10,0	2,0	64,0	22,0
11	*It would be hard for me to learn to use the computer in teaching.	2,0	12,0	8,0	58,0	20,0
12	have no difficulty in understanding the basic functions of computers.	00,0	24,0	12,0	50,0	14,0
13	*Computers complicate my task in the classroom.	6,0	6,0	14,0	52,0	22,0

Table 4.4 - Continued

Computer Attributes Scale		Percent (%)				
Statements		SD 1	D 2	N 3	A 4	SA 5
14	Everyone can easily learn to operate a computer.	4,0	14,0	12,0	66,0	4,0
15	*I have never seen computers at work.	4,0	2,0	2,0	42,0	50,0
16	Computers have proved to be effective learning tools worldwide.	00,0	4,0	12,0	46,0	38,0
17	*I have never seen computers being used as an educational tool.	6,0	2,0	4,0	54,0	34,0
18	I have seen some Algerian teachers use computers for educational purposes.	4,0	00,0	8,0	66,0	22,0

Scale: SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree

Note: *negative items were reversed before scoring

As Table 4.4 illustrates, informants had positive perceptions of the relative advantage of computers, with a mean score of 4.01 (S.D. = 0.59). The majority of the informants agreed or strongly agreed that computers will improve education (82 %), offer real advantage 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 4.5). 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 or not 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 (S.D. = 0.64) (Table 4.5). 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 11and 13, suggesting that it is easy to use computers in teaching (78 %) and that computer do not complicate the teachers' task in the classroom (74%).

As for teachers' responses to the observability subscale, the mean score was 4.15 (S.D. = 0.54), indicating positive perceptions (Table 4.5). 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%).

Table 4. 5: 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**

As illustrated in Table5.5, teachers' perceptions of computers' attributes were somewhat positive with an overall mean score of 3.8 and a standard deviation of 0.44. After reversing the negatively stated items, the mode score for the overall Computer Attribute scale was "Agree" (4). The range of informants' mean scores was between 4.34 and 2.52. Informants responded most favorably to item 4 (mean=4.34) and least favorably to item 8 (mean=2.52). Therefore, one can easily conclude that EFL teachers in this study have strong willingness to adopt computers in the classroom once they are given the opportunity.

4.2.3.2. Cultural Perceptions

Informants were asked to respond to 16, Likert-type statements dealing with EFL teachers' cultural perceptions of computers and the impact of computers on Algerian society. Table 4.6 illustrates the frequency of informants' responses to the 16-item Cultural Perceptions scale.

Table 4. 6 : Frequency Percentages on the Cultural Perceptions Scale

Cultural Perceptions Scale		Percent (%)				
Statements		SD D N A SA				
		1	2	3	4	5
1	* Computers will not make any difference in our classrooms, schools, or lives.	00,0	4,0	4,0	62,0	30,0
2	Students need to know how to use computers for their future jobs.	00,0	2,0	2,0	50,0	46,0
3	*Students prefer learning from teachers to learning from computers.	2,0	40,0	38,0	20,0	00,0
4	Knowing about computers earns one the respect of others.	00,0	12,0	42,0	40,0	6,0
5	*We need computers that suit better the Arabic culture and identity.	14,0	52,0	18,0	10,0	6,0
6	Computers will improve our standard of living.	2,0	6,0	20,0	62,0	10,0
7	Using computers would not hinder Arab generations from learning their traditions.	4,0	10,0	16,0	54,0	16,0
8	Computers are proliferating too fast.	00,0	2,0	14,0	60,0	24,0
9	People who are skilled in computers have privileges not available to others.	00,0	6,0	20,0	56,0	18,0
10	*Computers will increase our dependence on foreign countries.	8,0	30,0	18,0	36,0	8,0
11	*There are other social issues that need to be addressed before implementing computers in education.	6,0	50,0	22,0	16,0	6,0
12	The increased proliferation of computers will make our lives easier.	00,0	4,0	20,0	62,0	14,0
13	*Computers dehumanize society.	00,0	16,0	22,0	40,0	22,0
14	Working with computers does not diminish people' relationships with one other.	2,0	24,0	30,0	44,0	00,0
15	*Computers encourage unethical practices.	2,0	40,0	20,0	30,0	8,0
16	Computers should be a priority in education.	00,0	22,0	16,0	42,0	20,0

Scale: SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree
Note: *negative items were reversed before scoring

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 4.7). Notably, the majority of the informants agreed or strongly agreed that students need to know how to use computers for their future jobs (96%), that knowing about computers earns one the respect of others (46%), that computers contribute to improving their standard of living (72%), that using computers would not hinder Arab generations from learning their traditions (70%), that people who are skilled in computers have privileges not available to others (74%), that the increased proliferation of computers will make their lives easier (76%). Besides , that working with computers does not diminish people's relationships with one other (44%); And that computers should be a priority in education (62%). Also, a high percentage of the informants disagreed or strongly disagreed with the four negatively stated items 1, 10, 13, and 15, indicating that computers will make a difference in their classrooms, schools, and lives (92%), that computers will not increase their dependence on foreign countries (44%), that computers do not dehumanize society (62%). And that computers do not encourage unethical practices (38 %).

Table 4. 7 : 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**

However, most of the informants agreed or strongly agreed (66%) that there is a need for computers that better suit 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. In addition, a high percentage of the respondents (38 %) were neutral about whether or not students prefer learning from teachers to learning from computers. After reversing the negatively stated items, the mode score for the Cultural Perceptions Scale was "Neutral" (3). The range of informants' mean scores was between 4.40 and 2.42. Participants responded most favorably to item 2 (mean=4.40), and least favorably to item 5 (mean=2.42).

4.2.3.3. Computer Competence

Participants were asked to respond to 15 statements to indicate their level of computer competence. Table 4.8 shows the frequency of teachers' responses to the 15-item Computer Competence scale. 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).

Table 4. 8 : Frequency Percentages on the Computer Competence Scale

Computer Competence Items		Percent (%)			
Statements		No Competence	Little Competence	Moderate Competence	Much Competence
		1	2	3	4
1	Install new software on a computer.	26.0	26.0	28.0	20.0
2	Use a printer .	06.0	12.0	34.0	48.0
3	Use a computer keyboard.	00.0	10.0	38.0	52.0
4	Operate a word processing program (e.g., Word).	04.0	18.0	32.0	46.0
5	Operate a presentation program (e.g., PowerPoint).	14.0	30.0	28.0	28.0
6	Operate a spreadsheet program (e.g., Excel).	24.0	34.0	12.0	30.0
7	Operate a database program (e.g., Access)	34.0	28.0	20.0	18.0
8	Use the Internet for communication (e.g., email &chatroom)	2.0	22.0	28.0	48.0
9	Use the World Wide Web to access different types of information.	2.0	14.0	36.0	48.0
10	Solve simple problems in operating computers.	20.0	30.0	32.0	18.0
11	Operate a graphics program (e.g., Photoshop).	44.0	26.0	14.0	16.0
12	Use computers for grade keeping.	16.0	30.0	32.0	22.0
13	Select and evaluate educational software.	28.0	30.0	26.0	16.0
14	Create and organize computer files and folders.	20.0	18.0	20.0	42.0
15	Remove computer viruses.	18.0	32.0	26.0	24.0

Scale: No competence=1, Little competence=2, Moderate competence=3, Much competence=4

As illustrated in Table 4.8, over half of the informants (52%) indicated that they were much competent at the use of keyboard, 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 organizing computer files and folders (42%), in Excel (30%), in Access (30%), and for Powerpoint presentations (28 %). Less competence was reported in the use of Photoshop, a graphic program, as only 16 % of informants reported that they were able to use it with much competence.

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 4.9.

Table 4. 9 : 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**

4.2.3.4. 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 4.10).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 Table5.10.

Table 4. 10 : Distribution of Mean Scores on the Computer Access Scale

Computer Access Scale	**Never**	**Rarely**	**Sometimes**	**Often**	**Very Often**	**Mean Score**	**S.D**
	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**

As illustrated in Table 4.10, "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. Classroom was the third 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 (S.D =0.70), which implies that EFL teachers had access to a computer.

4.2.4. Research Question Three: Relationship between Teachers' Attitudes and Independent Variables

This section addresses the third research question concerning the relationship between teachers' attitudes toward ICT integration and the five main independent variables of this study: computer attributes, cultural perceptions, computer competence, computer access, and demographic characteristics (including computer training background). The conventions used to determine the strength of correlations came from Davis in 1971, who suggests that a coefficient of 1.00 signifies a perfect relationship. A coefficient of .70+ indicates a very strong relationship. A coefficient between .50 and .69 shows a substantial relationship, between .30 and .49 a moderate relationship, between .10 and .29 a low relationship, and between .01 and .09 a negligible relationship. To this end, the current research relied on calculating a correlation coefficient "r" in order to verify whether the study variables (teachers'attitudes and the independent variables) are totally independent or correlated.

Different correlation coefficients exist for different types of data. The Pearson Product Moment correlation is used with interval variables, while the Spearman rank ordered correlation is used when variables are ordinal. Pearson Product Moment correlation was employed to describe the relationship between the informants' attitudes toward ICT as 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 4.11). The title row of the matrix contains the dependent variable (attitudes) and five independent variables that were found to be significantly related to computer attitudes. The rest of the matrix shows the power and direction of the relationships amongst these variables and with the rest of the independent variables.

Table 4. 11 : Pearson Product-Moment Correlation Matrix of Attitudes and Independent Variables

Variable	Attitude	Attributes	Culture	Competence	Access	Training
Attitudes	1.00					
Computer Attributes	.479**	1.00				
Cultural Perceptions	.575**	.564**	1.00			
Comp.Competence	.269**	.439**	.402**	1.00		
Comp.Access	.268**	.453**	.341**	.643**	1.00	
Training	.103*	.111	-.014	.166	.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

As Table 4.11 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. Experimental studies discovered that there was a boost in the participants' attitudes as they became more confident with technology (Ouardaoui, Legrouri, Darhmaoui & Loudiyi (2012).

Overall, the above associations were significant at the .01 level of significance (and also at the .05 level of significance).

Table 4. 12 : Correlation of Attitudes Scale with Subscales of Computer Attributes

Variable Training	Attitudes	Advantage	Compatibility	Complexity	Observability
Attitudes	1.00				
Relative Advantage	.437**	1.00			
Compatibility	.329**	.414**	1.00		
Complexity	.505**	.570**	.440**	1.00	
Observability	.191**	.591**	.377**	.490**	1.00

As Table 4.12 illustrates, a moderate positive relationship exists between attitudes toward ICT and perceived computer attributes. Based on further analysis, it was revealed that there were positive associations between teacher's attitudes and each of the four subscales of computer attributes. The strongest positive relationship was found between informants' attitudes toward ICT and informants' perceptions of complexity (r =.505, $p < .01$). The relationship between attitudes toward ICT and perceptions of relative advantage was the second in strength, with a correlation coefficient of .437 at the .01 level of significance. Analysis of the other two subscales of perceived ICT attributes resulted in a moderate and a low positive relationship with respondent attitudes toward ICT (compatibility, r = .329; observability, r = .191, $p < .01$, respectively).

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 4.13, 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.

Table 4. 13 : Spearman Correlations Between Attitude and Teachers' Characteristics

Variable	Attitude	Gender	Age	School location	Degree	Teaching experience	Teaching Method
Attitude	1.00						
Gender	.088	1.00					
Age	-.239*	-.021	1.00				
School location	.117	-.240*	-.388**	1.00			
Degree	-.280*	-.105	.002	-.079	1.00		
Teaching experience	-.183	-.033	.864	-.434**	.017	1.00	
Teaching Method	.147	.076	.009.	054	.020	-.132	1.00

4.2.5. Summary of the Quantitative Analysis

This section has presented the statistical findings of the quantitative data collected during Stage One of this study. At this stage, the data were collected by a six-part questionnaire from 50 Secondary School EFL teachers employed in the public schools of the Western District of Chlef during the academic year 2016-2017. The analysis of the quantitative data began with conducting preliminary analyses in which the issues of missing values and assumption of outliers and normality were addressed.

With regard to Research Question One, percentages, frequencies and descriptive analysis of means and standard deviations revealed that Algerian Secondary School EFL teachers generally appeared to have positive attitudes toward ICT with an overall mean of 3.87 and a standard deviation of .45.

Further analysis for the second research question indicated that the informants had somewhat positive perceptions of the attributes of computers. They were relatively neutral about the cultural relevance of ICT to Algerian society and schools. The teachers also reported moderate levels of computer competence, access, and training.

To address the third research question, both Pearson product-moment and Spearman rank-ordered correlations were used to determine the relationship between the independent variables of ICT attributes, cultural perception, computer competence and access, and teachers' demographic characteristics, and the dependent variable, EFL teachers' attitudes toward ICT.The Pearson product-moment revealed that computer attributes and cultural perceptions were the only independent variables that significantly correlated with teachers' attitudes toward ICT .Whereas, the rest of the independent variables – Computer Competence , Computer Access and

Training– had a low positive association with teachers' attitudes toward ICT.

As mentioned in Chapter 3 , the integration of ICT was also explored using qualitative interviews with Algerian Secondary School teachers to provide an in-depth understanding, particularly in responding to the thirteen open-ended questions of the semi-structured interviews that seek to understand ''how'' EFL Secondary School teachers in the Western District of Chlef perceive ICT integration into their classroom practices. The next section presents the qualitative analysis of the interviews' findings.

4.3. Qualitative Data Analysis (Interview)

In addition to data collected through a quantitative questionnaire, semi-structured face-to-face interviews were conducted with 6 EFL teachers from the Western District of Chlef to gain a deeper understanding and elaborate on the results of the quantitative analysis, including the explanation for the teachers' positive attitudes toward ICT, cultural perceptions and moderate levels of computer competence, access, and training. As Gay et .al (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. Additionally, the interview is a widely used means of qualitative research methods because interviews provide the researcher with unique opportunities and original thoughts that would not be uncovered by other data collection techniques.

The aim of this section is to present the analysis of the qualitative data. Key findings from the qualitative data analysis are presented with the following themes: (a) teachers' attitudes toward ICT in education, (b) computer attributes, (c) cultural perceptions, (d) computer competence, (e) computer access, and (f) computer training. These heading themes— each based on sub-themes that emerged from the data analysis—are organized in relation to the research questions. Specifically, the findings are related to research questions 1 and 2 (descriptive data), and they also help explain research question 3 (relationships between attitudes and the other variables).To this end, this study made use of semi-structured , face-to-face interviews so as to triangulate and corroborate the findings of the quantitative analysis.

4.3.1. Teachers' Attitudes toward ICT in Education

As this study aims to shed light on EFL teachers 'attitudes toward ICT integration, the semi-structured interviews (Appendix G) were developed in the form of a list of questions that guided the conversation while also allowing for flexibility and providing interviewees the freedom to discuss the topic of each question according to what they considered important or interesting, as recommended by Denzin and Lincoln (2008). Semi-structured interviews depend on open-ended questions that follow the interviewees' lead. This investigation used open-ended questions to facilitate extended, in-depth responses from the participants.

The qualitative data (Interviews) provided key cues for understanding the positive attitudes of EFL teachers toward ICT in general and in education in particular 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 globalization , ' 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 categorized into personal, educational, and technological.

At the personal level, the teachers suggested that ICT was very important in granting opportunities for self-development , and professional development and as a pivotal means for increasing our 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. Additionally, they all pointed out that ICT opened up easy access to valuable information just in few seconds, which could have taken ages for past generations to obtain. One interviewee emphatically pointed out that "the wealth and availability of large amount of different information that the Internet so generously makes accessible to everyone, everywhere and at any time makes teaching far much easier to perform". He made it clear that his life could have been tougher without the Internet as he lives in the countryside. Not only did ICT offer access to information, but also to different people around the world via social networking websites such as Facebook,Skype, Instagram ,Twitter, Viber or Google—a factor that some teachers considered as justification for their positive attitudes toward it.

From the educational level, there was 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.' The teachers believed that students could achieve autonomy in learning if they were provided with guidance and orientation from their teachers. Moreover, the interviewees seemed to suggest that the affordances of the Internet would empower students with life-long learning and endow them with skills that would render them resourceful and insightful 21st century citizens. In addition, the teachers seemed content that computers can be exploited by parents to educate their children.

As for the technological level, for successful adoption and integration of ICT into teaching, most of the interviewees perceived technology as better than previous practice, consistent with their existing values, past experiences and needs, ease to 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. Some teachers were not reluctant to change the way of their teaching via the ICT integration. 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.' Another one claimed that 'people feel threatened that if they apply the innovation, they will be exposed and show their incapability. The solution to this problem will come through familiarization.'

When asked what source is responsible for the current limitations of ICT integration in education, only a few interviewees laid blame on the Higher Authorities. The majority of them felt that more achievements were desirable but unrealistic within few years. One interviewee stated, 'ICT is a necessary evil so the Authorities must provide every single help to make the educational system compatible with what is going on internationally.' Moreover, the existence of quality software, aligned with the official curriculum, can enable the use of ICT by teachers. Therefore, as another teacher claimed, “The Ministry of National Education should try to produce its own software on every subject to be pertinent to our curriculum.’ Besides, other teachers ascribed their low level of using the computer in the classroom because of the large number of students. As one interviewee urged: ‘Computer use can be a useful means in teaching foreign languages in schools providing that the class is not crowded.” Another respondent also stated similar words with regard to her access to computer: ‘I personally agree on using computers in Teaching Foreign Languages as “a language” i.e. “Spoken” but not teaching “Grammar” or “Reading Comprehension” phases…the “number” of learners has to be taken into account before introducing the use of computers in classrooms.’ In all the above mentioned cases , there was a clear indication that there was a general positive consensus among EFL teachers in the Western District of Chlef about the greater need for ICT integration at the educational level. Finally, another barrier that has been identified by the interviewees is “the demanding official curriculum which puts significant stress on teachers.” Since teachers feel stressed with the national curriculum, it is doubtful they will try to integrate ICT in their classroom practice because it is a time consuming process. Especially the “teachers who are not very capable with computers, feel that computers delay them” from covering the syllabus of the official curriculum.

4.3.2. Computer Attributes

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 of the functionality of the software. She proposed ‘Computer should be supplied with special software that blocks all pornographic [Immoral] websites.’ In the above cases, the interviewees were knowledgeable about the difference between computer hardware and the Internet content.

Generally speaking, interviewees' positive attitudes toward ICT were of great importance when it came to computer attributes .Their responses focused mainly on the relative advantage aspect of these tools. The analysis revealed that there is an overwhelming awareness of the benefits of being able to use computers for educational purposes. The interviewees hardly mentioned the other computer attributes such as compatibility, complexity, and observability. Even more importantly, informants showed that the use of computers can benefit education in the following ways: (a) simplify complicated lessons for students, (b) save time and efforts in getting information on wide range topics for some lessons, (c) get rid of the daily routine , (d) optimise the quality of teaching-learning process, (f) minimize the pressure on the teacher's part, (g) prepare lessons of all the four language skills (h) write exam and test questions (i) add a special flavor to the teaching/learning process. Also, the majority of the interviewees considered that computers can serve as (j) a means of grade keeping, (k) a huge library for getting varied types of information, (l) a means of presentation of lessons through the use of Projector, and (m) a tool for project-based and research-based learning.

Also, participants pointed to the special advantage of computers for learning foreign languages. Most of them stated that computers are vital for developing students' listening and speaking skills where learners are asked to listen and do tasks. In the same vein, one respondent emphasised, 'thanks to my Personal Computer, I can find numerous listening scripts via the Internet, and in this way, learners are exposed to the authentic spoken language rather than bookish artificial one.' Hence, the common attitude and belief among the six interviewees was that teaching becomes more interesting to teachers and far more motivating for students, with the use of technology.

Most of the interviewees indicated that they just saw or heard about the advantages of the computer not only through direct experience but also via other channels. For instance, an interviewee stressed that , 'I appreciated a lot to study computing at university because my friend who was studying Informatics [Computing]...and the day of his graduation had a deep impact on me.' As the comment illustrates, teachers' lack of direct experience in using computers did not hinder them from approaching ICTs from other positive sources.

4.3.3. 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. On one hand, informants considered ICT as a new gate opened on the outside world. What interviewees particularly valued about this feature was not only getting updated with the events of the world but also staying in touch with different cultures and different people. To some interviewees, this helps enhance "cultural education" with the added advantage of having a way for communicating directly with people around the world. In one of the participants' terms, cultural education indicates that '…both teachers and students have the capacity to write to people from other countries and learn about their cultures and lives…these are distinguishing things that they cannot find available in the school books.' One of the respondents reported that:

> Today, the widespread of different forms of ICTs enables us to stay connected with the outside world not solely getting news , but it goes further by communicating (facebooking ,twittering) with other people from different cultures only with one-click. We are no longer isolated in this Information era.

Therefore, it is clear that when teachers and students use the Internet while communicating with people all around the world, they have the chance to learn how they think and how they behave.

The 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. 'Finally, building a culture of collaboration and knowledge-sharing among teachers can enhance ICT integration. "… I believe that administrative incentives have the power to facilitate the use of computers by more teachers," one teacher proposed.However, another participant was disappointed about the low level use of Arabic on the Internet in comparison with other main languages on the international stage. One interviewee mentioned that " I cannot imagine a language as great as Arabic….with huge number of people speaking it …has such low and shy presence on the net. According to me, Arab citizens in general and students in particular are indeed deprived from a lot of benefits from exploiting this international network."

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. This concern was also viewed with a mixture of hope and despair on the part of the participants. 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.

Another respondent also stated the similar words with regard to the moralities behind computer and the Internet:

> I strongly disagree with those who said that using ICTs in our schools or society is threatening our Identity or Culture as Muslims. Whilst you know where you came from, you surely know where you are going.

However, most of the interviewees were hesitant that the diffusion of immoral websites may influence younger generation. Thus, they recommended strongly that children should never use the Internet on their own. For example, an interviewer remarked that, 'making computers and Internet available for children never means giving them the total freedom to do what they wish but parents should all the time be after them .So, it is our responsibility as teachers, parents and authoritarians to guide computer users (pupils, students) to a safe and secure utilization.' In the same vein, another interviewee asserted that, 'We as teachers and parents teach and encourage our students to use the computers but we should keep an eye on them because it is nowadays a real threat ...We can consider the Internet as a double-edged sword. Therefore, we must be alert when students use this means and the government should control immoral websites.' More importantly, one of the respondents unequivocally commented in a few words, "Do what you Know and Know what Do as far as the uptake of technology is concerned ." In accordance with such claim of that respondent, most of the teachers' responses seemed to believe in that it is humankind who manipulates computers in the way they prefer and dictate their values and ethics depending on how they put them to use .According to some interviewees, allowing these culturally inappropriate websites to emerge for the common Algerian people, is just another way of facilitating "a cultural invasion" in this digital world. As one interviewee indicated, "it seems there are people who are dedicated to spreading immorality amongst the members of our society…I really do not understand what the point of this is (…)…what we can do is to block these pornographic websites…otherwise we would be aiding this form of cultural invasion to go deeper into our society. One has to be always cautious when children are using it.' Moreover, three other interviewees considered the widespread of Immoral websites as a new emerging form of 'Cultural Imperialism" .One informant stated, 'Most of the developing countries nowadays do not follow their culture and values in doing something but they actually tend to be influenced by the values and cultures of West.'

To gain a deeper understanding about English teachers' attitudes concerning the cultural non-neutrality of computers, the researcher asked interviewees about their reactions to the statement, "Computers are said to reflect only the values and ways of thinking of those who make them." The statement provoked a mixed reactions amongst participants. On the one hand , one of the inteviewees strongly agreed by making an analogy with the relationship between language and culture , 'We cannot learn a language without its culture . Surely they [Computers] bring new values and morals from western civilization.' On the other hand, three of the interviewees agreed reluctantly to the statement, 'Computer is a means… indeed it is a flexible one and we can use it in the way we want.I can say that computers are made for every human being regardless sex, age,ethnic group,and religion.'In the same vein, another teacher stated:

> Unless you open the door,your Identity won't be threatened whatever you do.Therefore,when surfing on the net, exchanging views, opinions and dealing with foreigners, this indeed enrich your background as a human being except if you forget who you are because the aim behind the use of technologies is to connect and share your views, customs and traditions with others but not to adopt their own.

In the stance of the majority of the interviewees, the problem is not directly related to the computer itself as 'hardware' but instead to the 'appropriate software' that people want to use.

As for the school culture, most of the interviewees suggested that if computers were to be used in teaching and learning, the Ministry of National Education should specify adequate programs that educate students "morally and culturally" about the improper material on the Internet. Also, they insisted on providing surveillance on students from the part of both their teachers in schools and from their parents at home. In other words, the use of the Internet or any forms of ICT by students is under the responsibility of everyone in the society. One of the respondents proposed, 'the Ministry of National Education ought to foster sensitive programs in school milieu on the dangers of the improper aspects of the Internet for the benefit of our students.' To sum up, most of the interviewed teachers showed their anxiety about the morally damaging effects of certain materials found on the net.

4.3.4. Computer Competence

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 got loads of stuff to do every day. But I care a lot for developing my skills in the use of computer in my career.’ another similar words were stated by an interviewee, ‘I am too old. I am not interested to develop my computer competence. I have other things to do. Besides, I am going to retire. I no longer bother myself with additional loads.’

Nearly all of the interviewed teachers expressed their strong desire to attend training sessions either at the level of 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 just increasing their overall computer literacy. However, some interviewees thought that this was not a present priority for them because of the insufficient number of computers available for teaching in their schools. Yet, they expressed their readiness to increase their expertise once computers are more available in schools.

4.3.5. Computer Access

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 to even think about integrating ICT into their classrooms 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. Similarly, another teacher spoke of the time issues caused by a heavy workload imposed by the reformed curriculum. An interviewee stressed:

> Concerning the class time, it is inadequate. Now, with the reformed curriculum, the new strategies and worksheets…they want us to do all that within 60 minutes only. This absolutely hampers the integration of technology in the classroom.

A great majority of the interviewees stated that one of the influential factors that impede the implementation of computer technology in language teaching and learning process is the lack of technological tools at schools. In this respect, the respondents complained that they either did not have any computer labs at schools or had very limited ones in their schools. In other words, if there is a computer lab at a school, this lab is shared by all the teachers of the school, which results in a limited use of computer lab by teachers. One of the respondents stated that:

> I have four classes to teach English this year … we are five EFL teachers how can I teach in the same computer lab while other teachers simultaneously do also demand for using computer lab.

In addition, three participants suggested that the Administration should help the teachers gain better access to computers in schools. According to them, this can be achieved by providing a computer room for teachers, where they can use computers during their free time, or by increasing the number of computer labs in every school. ‘All people expect you to be innovative .At the same time, they do not provide you with necessary encouragement ...we need only incentive, be it material or symbolic,’ an interviewee said sarcastically.

Teachers also reported that there were always outdated computers which did not work properly. Therefore, all of these technological inefficiencies hampered the effective use of computers for language teaching practices at schools. According to the majority of the interviewees, the shortage of some technological equipment such as Projectors and computers in the classrooms was considered one of the main barriers for technology use by teachers. In relation to this, one of the interviewees pointed out that:

> Projector and the Internet access remarkably facilitate my class activities inside the classroom with my learners. In the course of the lessons, it is possible to download a listening script from the Internet related to the listening skill which is dealt with in the classroom. I wish I had a computer, and Projector and the Internet access fixed in my classes permanently.

Most of the interviewed teachers stated that they had brought their own devices to their schools because of the absence or non-availability of means of Xeroxing[8].

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[8] Non-availability of means of Xeroxing is what Professor Bouhadiba has termed the failures of all kinds such as out of order *machines*, electricity cuts, or *simply* a lack of paper to print and reproduce the projects to present in class (Bouhadiba, 2015, p. 12).

However, some of the interviewees attributed their low level of computer access particularly to the large number of students in one classroom. To support this view, one of the respondents claimed that "computer use can be a useful means in teaching Foreign Languages in schools providing that the class is not crowded with a lot of students." Another respondent also stated the similar words with regard to her access to computer: 'I personally agree on using computers in Teaching Foreign Languages …the "number" of learners has to be taken into account before introducing the use of computers in classrooms.' Another obstacle that has been identified by the teachers is "the demanding official curriculum which puts significant stress on teachers." Since teachers feel stressed with the national curriculum, it is doubtful they will try to integrate ICT in their classroom practice because, as mentioned before, it is a time consuming process.

4.3.6. Computer Training

The six participants were asked in the interviews to explain the reasons that stood behind the lack of their computer training. The two main reasons that were given for this phenomenon were the lack of time, and training opportunities. For instance, one interviewee acknowledged that although she benefited a lot from computers and would like to develop computer skills, her modest training was due to the lack of time. Similarly, a teacher pointed out,

> I personally do not have enough time to use computer because there are much pressing matters such as homework to correct, lesson plans to prepare , materials to write ,and students to teach and plus pressure to cover the syllabus in due time

Nearly all 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 the quality of the training courses provided seemed to be focusing more on teachers' technical proficiency as opposed to pedagogy. All training courses, however, were about general computer skills rather than on using the technology for educational purposes. In fact, the findings indicated that most of those teachers took their only courses a long time ago, some of them more than ten years ago. One teacher asserted, ‘If we want to be full adopters of ICT in our teaching practices, we should receive ongoing pedagogical and technological training specifically in teaching English. This continuous training should start at the University and continue during work.’ To further stress the importance of training, Ely (1990) considers training as part of the skills and knowledge teachers should have because training leads to both of them.

Three teachers stated that they had received training courses from Vocational Training Centers in collaboration with the Ministry of National Education, and which aimed at increasing the skills of teachers in computer use that might aid the reform plan proposed by Ministry of National Education. It is worth noting that teachers who attend such courses are more positive in their responses and more willing to use ICT tools in the teaching process. However, they request much more specialized training courses particularly in teaching the English skills and areas because this is very important for their professional development. An interviewee stressed, ‘I did undertake training for duration of six months last year from the Vocational Training Center, I got a general training about the basic things in the computer such as Word, Excel, Power Point. It involved the technical side .But, the pedagogical side was absent.’

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. The Ministry of National Education can play an important role by organizing training sessions for the benefit of all teachers, especially on the software, programs that are sent to the schools by the Ministry. As one interviewee finalized 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.’

4.3.7. Summary of the Qualitative Analysis

We have in this section tried to present the analysis of the qualitative data collected during Stage Two of this study. In this stage, the data were collected by semi-structured interviews conducted with 06 Secondary School EFL teachers employed in the public schools of the Western District of Chlef during the academic year 2016-2017.

With regard to the Thirteen Open-ended Questions of the Interviews, content analysis method was employed. The qualitative data analysis supported the findings from the questionnaire by offering explanations to the positive attitudes toward ICT in general and in education in particular that were reported in the quantitative survey data. Without exception, the six participants expressed a positive attitude toward ICT implementation in classroom practices. They were optimistic about the integral role of ICT in education. Also, they stressed the simplicity of the use of computers vis-à-vis other computer attributes. Despite the fact that teachers welcomed the notion of sharing information with people from different cultures ushered in by ICT, they were simultaneously aware about the culturally inappropriate content of materials available on the Internet. The qualitative stage pointed to the fact that computer competence is greatly related to access and training opportunities. In conclusion, the qualitative data added a new dimension to the quantitative data by providing an explanation for EFL teachers' positive attitudes toward ICT, their cultural perceptions, and their lack of computer competence, access, and training. These findings are highly significant, since they demonstrate a readiness among Algerian EFL teachers to use computers in the classroom. In the next part of this chapter, the researcher will discuss the findings and arrive at implications and recommendations in the light of the outcomes of the study.

Part II: Discussion of the Findings

In part one we have presented the findings that emerged from the data on the basis of both the questionnaire and the semi-structured interview. This part will take us to a more in-depth and abstract analysis of these findings as an attempt to provide interpretations in light of theory on EFL teachers' attitudes toward ICT integration in education. An important point to note is that the findings are only limited to the sample of teachers who participated in this study, and therefore the interpretations that this part will give are only restricted to the case under study.

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 be influencing them, including perceived computer attributes, cultural perceptions, perceived computer competence, perceived computer access, and demographic characteristics (including training background). The current study made use of the theoretical framework emerging primarily from the Theory of Diffusion of Innovations by Rogers (2003) and the Theory of Reasoned Action by Ajzen and Fishbein (1980). This was meant to provide a better understanding of the position of Algerian teachers with regards to integration of ICT and to explore what factors affect this integration. More specifically, the objectives of this study were:

- To explore the attitudes of Secondary School EFL teachers in the Western District of Chlef toward ICT integration in Algeria

- To identify the factors associated with the attitudes of Secondary School EFL teachers toward ICT

- 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

To achieve these objectives, a sequential mixed method design was adopted through conducting two stages of data collection. Stage One involved surveying 56 Secondary School EFL Teachers employed in the public schools of the Western

District in Chlef during the academic year 2016-2017. The quantitative questionnaire was used to examine Secondary School EFL teachers' attitudes toward ICT integration, and some other variables, including: the Computer Attributes, Cultural Perceptions, Computer Competence, Computer Access, and Computer Training. Additionally, data from the quantitative survey were used to examine the relationships between the dependent variable (teachers' attitudes toward ICT integration) and some of the independent variables, for example, teachers' Demographic Characteristics. In Stage Two, the integration of ICT was further explored using qualitative interviews with 6 Secondary School EFL teachers to provide an in-depth understanding and elaborate on the results of the quantitative analysis**,** including the explanation for the teachers' positive attitudes toward ICT, cultural perceptions and moderate levels of computer competence, access , and training**.** Also, this qualitative element was employed to ensure the trustworthiness of the quantitative findings.

Both quantitative and qualitative data methods were used to analyse the data in order to answer the research questions. The analysis of the quantitative data began with conducting preliminary analyses in which the issues of missing values and assumption of outliers and normality were addressed. Percentages, frequencies and descriptive analysis of means and standard deviations were calculated as a means of describing the informants' attitudes toward ICT, as well as their perceptions of ICT attributes, their cultural perceptions of ICT, their levels of ICT competence, and levels of access to ICT. Pearson and Spearman correlation coefficients were performed in order to predict which of the independent variables (the Computer Attributes, Cultural Perceptions, Computer Competence, and Computer Access and Training) have the greatest impact on EFL teachers' attitudes toward ICT integration (dependent variable). The analysis of the qualitative data involved employing content analysis method in order to understand how EFL teachers perceive the integration of ICT in education, positively or negatively. The results of the analysis of the quantitative and the qualitative data were presented in Part One of this Chapter. In this second part of Chapter 4, we will try to discuss the integrated findings derived from both stages (quantitative and qualitative data).

4.4. Attitudes of Algerian EFL Teachers toward ICT Integration

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 Algerian EFL teachers had overall positive attitudes toward ICT in education, with an overall mean score of 3.87 and standard deviation of 0.45.The means for the three components of attitude surpassed the average threshold (affective, μ = 3.99; cognitive, μ = 3.92; and behavioral, μ = 3.62) indicating a strong positive attitude about ICT integration in education. Not only did the data from the interview reiterated the positive attitude reported in the questionnaire but it also provided explanations for why teachers held such an attitude.

It was evident that the highest mean score among EFL teachers was on the affective subscale, indicating that the EFL teachers' explicit feeling toward ICT is positive. The majority of the EFL teachers (86%) enjoyed using computers and felt comfortable about ICT (84%). Almost all teachers (92%) expressed their happiness about the increase of computers in general and in education in particular. Also, most of informants (76%) stated that they had no anxiety in using computers. Past research conducted in other Arab educational contexts also reported high positive values for the affective domain toward ICT integration in education (Albirini ,2004; Abu-Samak, 2006; Zyad , 2016).As for the behavioural domain, it was apparent that teachers had a willingness to incorporate ICT in education, which was reflected in their value for behavioral intention to use technology in the classroom (μ = 3.62). The survey conducted by Abu-Samak (2006) drew the same conclusion about EFL teachers' readiness to use technology in Jordan.

Teachers' positive attitudes exhibit their initiation into the Innovation-Decision Process (Rogers, 2003). It seems that teachers have already gone through the Knowledge and Persuasion stages (Rogers, 2003) and are probably going on to the Decision phase. As many theorists have indicated in the literature, attitudes can often foretell future decision-making behavior (Ajzen & Fishbein, 1980). Having constructed positive attitudes toward ICT in education, informants are expected to be using ICT in their classrooms once computers become more available to them.

Teachers' positive attitudes in the current study have a special significance given to the barriers that may hamper the successful integration of ICT in Algerian schools: insufficient computer resources, and lack of time and training opportunities. Interviews showed that participants were aware that ICT implementation was still in its formative stages in Algeria and that problems were unavoidable at this stage—a factor that made them accept the recent obstacles in the implementation process. To put it in a nutshell, EFL teachers' positive attitude toward ICT integration in the Algerian Secondary Schools was the common denominator from both the quantitative and qualitative results.

4.5. The Perceptions of EFL Algerian Teachers in Relation to the Independent Variables

4.5.1. Computer Attributes and Teachers' Attitudes

Only four of the five innovation attributes identified by Rogers (2003), that is, relative advantage, compatibility, complexity, and observability, were investigated in the current study. Therefore, the mean score for each of the four subscales of computer attributes surpassed the average threshold (relative advantage, μ= 4.01; compatibility, μ= 3.56; complexity, μ= 3.66; and observability , μ= 4.15) indicating statistically significant predictors of ICT integration in education by EFL teachers .

The informants' positive perceptions varied across the four computer attributes examined in this study. The informants were most positive about the observability of computers. The participants' mean score was 4.15 on a 5-point scale ranging from Strongly Disagree (1) to Strongly Agree (5). 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 quantitative 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 subjective accounts of other individuals who may have experienced or came in contact with the new media. Also, industrial and corporate forces were themselves responsible for associating computers with the imagery of “the new, positive change and renewal, and of economic survival” (Watson, 1998; p. 188). These images seem to be nowadays in place in Algeria just as they are in most developing countries (see Watson, 1998; Fodje, 1999).

In 2001, as part of the economic recovery, a pilot operation consisting of “A Dinar 3 Billion Program” was launched by the Algerian authorities to equip all Algerian Secondary Schools within two years with computers. That program planned the installation of 20 to 30 computers per school, and 5 computers for the libraries. These media were assigned in priority to the schools achieving highest scores on end-of-year examinations. More than 1,200 Secondary Schools, selected from different directorates, were to be connected to the Internet by the end of 2012 as well, as part of an agreement between the Algerian Ministry of National Education (AMoNE) and the Ministry of Posts, Information Technology and Communications (MPTIC) .Other Public Schools were to be connected thereafter in an effort to achieve full connectivity of all public schools in Algeria.

The Algerian EFL teachers’ perceptions of the relative advantages of ICT had the second highest mean score; 4.01.This is a clear indication that the informants were most positive about the relative advantage of computers. This confirms Rogers’ 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. Those attitudes would also be compatible with their existing values and so adoption of ICT for educational purposes may occur more readily. 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. Also, Prensky (2001) maintains that it is imperative to use digital technology in education to serve a generation of learners who speak the digital language of computers and video-games. It seems that the teachers' perceptions of the observable benefits of ICT as well as its advantages over other teaching methods were related significantly to their positive attitudes toward ICT.

Teachers' perceptions of computer simplicity ranged between neutral and positive (mean=3.66). Half of the participants stated that they had no problem understanding the basic functions of computers, operating them, and using computers in teaching. This is a clear indication given to the fact that most of the informants have minimal computer access, little training, and modest competence. In fact, this has often been the norm for teachers around the world (Harper, 1987; Al-Oteawi, 2002; Na, 1993). This implies that teachers' familiarity with computers may boost their perceptions of this important computer attribute.

As was the case with computer complexity, 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. However, twenty-eight percent (28%) of the Algerian EFL teachers had a neutral position concerning the place of computer use in the curriculum. 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.

Most of the informants also thought the class time is too limited for computer use. Teachers' concern about the incompatibility of computers with the existing curricula as well as the insufficiency of the class time indicate that educational change cannot simply be attained by placing computers in schools (Hodas, 1993). For a change to occur, many renovations need to be made at the structural level as well as the pedagogic level (Albirini, 2004). Otherwise, a consistent mismatch will occur between the industrial models of schooling and the information-age teaching devices. Salomon (2002) refers to this mismatch as a "Technological Paradox" resulting from "the consistent tendency of the education system to preserve itself and its practices by the assimilation of new technologies into existing instructional practices" (pp. 71-72).

Hence, the introduction of ICT innovations into education requires equal innovativeness in pedagogical and curricular approaches.

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 ($r=.19$, $p< .05$). The findings are consistent with those of Rogers' Innovation Attributes sub-theory in which observability was the most influential factor related to the teachers' attitudes toward ICT in education.

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 utilized by EFL teachers in Algeria, teachers first need to see *visible* positive 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 the existing socio-cultural 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; Sooknanan, 2002).

4.5.2. Cultural Perceptions and Teachers' Attitudes

In his Diffusion of Innovations Theory, Rogers (2003) indicated that an understanding of the culture and local environment in which a technology is introduced is a prerequisite to understanding how best to promote its adoption. The notion of attitudes was central to the concept of adoption. Thus, culturally-related perceptions may have a strong influence on attitudes that ultimately lead to adoption decisions. Clearly, one of the main challenges that the current study undertook was to investigate teachers' perceptions of the cultural relevance of ICT to the Algerian society and schools.

Researchers and scholars from different parts of the world suggest that force-fitting the culture to the technology can create an unfavorable climate for the acceptance of ICT in different organizations in the importing country. For example, Hill, Loch, Straub and El-Sheshai (1998) assert that, unless taken into consideration, socio-cultural factors may put ICT transfer at risk in certain developing countries. Likewise, Thomas (1987) indicates that the transfer of technology from industrialized societies to developing countries should take into account the cultural conditions of the importers. Rogers (2003) asserts that social norms play a vital role in determining the rate of an innovation's adoption within the boundaries of a social system. Correspondingly, Thomas (1987) and Rogers (2003) note that, despite their indisputable importance, cultural conditions and/or social norms have not been sufficiently studied in the innovation-diffusion research. Hill et. al. (1998) argues that:

> Information technology transfer is not an easy task, and seems to be particularly daunting for developing countries. As most technology is designed and produced in developed countries, it is culturally-biased in favor of those developed countries' social and cultural systems. This bias creates cultural and social obstacles for developing countries to transfer technology into practice.(Hill et. al. , 1998, p. 29)

Despite the availability of educational technology and a growing trend to employ computers and the Internet in schools , some researchers still see this imported technology as being imposed on society and warning that it could conflict with local needs because it was created in different social contexts and for different cultural backgrounds. Martinez (1999), for example, found that one of the major challenges facing developing countries is to make technology an essential part of the culture of the people. Similarly, Zhuang & Thomas (1987) warned that importing a technology into developing countries without enough understanding of the indigenous culture could result in an incompatibility between the home culture and the technology. Additionally, it is undeniable that imported computer technology is essential if teachers are to be prepared to face the borderless world we now live in. I think a further point to consider is that the production of materials is a business, and marketing educational products is tightly related to supply and demand. Therefore, in the absence of quality local technology, any society is bound to use and promote imported materials (Boukadi , 2014 , p. 86).

The paucity of studies examining ‘cultural conditions’ might be ascribed to the difficulty involved in capturing this construct. To be researchable, cultural perceptions were investigated in this study to mean Algerian teachers’ perceptions of the value, relevance, and impact of ICT as it relates to the cultural norms in the Algerian society and schools. Even with this focused working definition, the use of both quantitative and qualitative measures was still necessary for pinpointing this construct.

The study of cultural perceptions has been found essential for accounting for teachers’ overall attitude toward ICT and for anticipating their future adoption of the new tools (Thomas, 1987). In fact, Abu-Samak (2006) and Albirini (2004) consider cultural perceptions among five main factors that may determine ICT adoption by educators. Therefore, for a new technology to be placed into an organization’s culture there must be a match of organizational and technological values (Hodas, 1993). Within the school organization, if the technology is not received well by teachers, there must be a mismatch of values between the culture of schools and that of the technology.

Informants’ responses to the 16 items on Cultural Perceptions scale ranged between neutral and positive with a mean score of 3.49. From a school-culture perspective, the great majority of informants recognised that students need to know how to use computers for their future jobs and that computer usage will transform their classrooms, schools, and lives. Therefore, they perceived that computers should be a priority in education. However, a high percentage of them were neutral about whether or not students prefer learning from teachers to learning from computers. Moreover, approximately half of the EFL teachers thought that possessing knowledge of computers earned one the respect of others and guaranteed privileges not available to others. In addition, the majority of informants stated that the increased proliferation of computers would make their lives easier and contribute to improving their standard of living. Similarly, most of the informants agreed that using computers does not hinder Arab generations from learning their traditions. Likewise, more than half of the informants thought that the use of computers does not encourage unethical practices. The majority of respondents disagreed that computers increase national dependence on foreign countries or dehumanize society. Also, the majority of them felt that there were more persistent social issues that should take priority over computer use in the schools. It was therefore not a complete surprise that the majority of the informants (84%) agreed that computers are proliferating too fast. In addition, most of the interviewees expressed their enthusiasm toward computers' programmes that better reflect and suit the Arabic culture and identity.

Concerning teachers' cultural perceptions of ICT, the overwhelming majority of the interviewees were content with the use of ICT. Through computer technologies, people had the chance to communicate with people from other countries who talk different languages. They formed intercultural communications and learned each others' cultures and languages .They have become well aware of new type of communications such as chat, e-mail and all these new means of communication have brought about new "authorships" and discourse of communication (Kern, 2006). In this respect, people have become critical of what is stated or put on the Internet. For example, people have been more aware of the latest news and developments on the globe with just one-click. Accordingly, all these benefits of computers and the Internet have contributed to the overall development of education and humanity.

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 and 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. According to a statement made by the Cordes and Miller (2000) in Alliance for Children , "Too often, what computers actually connect children to are trivial games, inappropriate adult material, and aggressive advertising. They can also isolate children, emotionally and physically, from direct experience of the natural world ” (p. 1). 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. For example, Freire (1972, as cited in Albirini, 2004) warns of the consequences of cultural invasion: ‘Cultural conquest leads to the cultural inauthenticity of those who are invaded; they begin to respond to the values, the standards, and the goals of the invaders” (p. 118). It sounds apparent that the cross-cultural benefits of ICT were moderated in the participants’ views by being more anxious about its morally damaging effects on young Arab generations. This may justify the somewhat neutral cultural perceptions of informants during the survey stage of the study. Also, this concern has been tackled by educators and researchers from other parts of the Arab World (e.g., Albirini , 2004 ; Al-Oteawi, 2002).

From the findings of both the surveys and the interviews, most of the EFL teachers responded that they were less concerned about the computer itself and more about its related programs and software that would better serve the Algerian identity and culture. They enthusiastically showed their eagerness to utilize Arab-made software that integrates the values, ethics, and customs of the Arab people .This claim is consistent with Fodje’s (1999) argument in the International Conference for Technology in Education:

> What the world needs today is not talent in producing new technologies but talent in understanding the impact of technology on the society and individuals…Educational programs in the third world heretofore have been designed around the Western ideals. These need to be reworked to reflect the indigenous cultures and promote human values while at the same time producing the talent for ‘controlled’ technological advancement. (Fodje , 1999, p. 1).

Apparently, the creation of local computer applications and software may foster the initial cultural acceptance of ICT as well as future behaviour regarding its usage.

The majority of the interviewees expressed little concern about the cultural non-neutrality of computers; they thought it is the user who ultimately determines how these tools are used. This is in line with what Chandler (1996) calls a ‘voluntarist’ approach: the individual chooses a tool and controls its use. In addition, teachers were reluctant to endorse the Internet for teaching and learning ‘because of concerns about the evil aspects of the Internet.’

The Pearson correlation analysis showed a substantial positive relationship between teachers’ attitudes toward ICT and their cultural perceptions (r = .575, p < .01). It seems that the cultural perceptions of ICT among EFL teachers in Algeria were similar to those of EFL teachers in Syria, Jordan, and other parts of the Arab World (Albirini, 2004; Abu-Samak , 2006 ; Al-Oteawi, 2002).Interestingly, cultural perceptions were the first most important predictor of computer attitudes in this study. This conclusion points to the need for considering cultural factors in studies conducted in developing countries. The majority of respondents regarded computers as pertinent to both Algerian schools and society and viable means for improving education and standards of living in general.

4.5.3. Computer Competence and Teachers’ Attitudes

A large number of studies showed that teachers’ computer competence is a significant predictor of their attitudes toward computers (Na, 1993; Berner, 2003).The findings of the current study suggest that there is a direct link with results from past research. The Perceived Computer Competence Scale consisted of 15 items on a four-point scale ranging from *no competence* (1), to *little competence* (2), to *moderate competence* (3), to *much competence* (4). The items focused on the common uses of computers in education: software installation (item 1), basic hardware (items 2-3), productivity software (e.g., word processing, items 4-7), telecommunication resources (items 8-9),basic troubleshooting (item 10), graphic application (item 11), grade keeping (item 12), educational software evaluation (item 13), organization tools (e.g., use of folders, item14), and virus handling (item 15). A low positive relationship was found between informants’ attitudes and their level of computer competence (r = .269, p < .01).

In the current investigation, almost two thirds of the participants used the Internet with moderate to much competence. The majority of the EFL teachers in this study reported that they had moderate competence to much 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, organization tools, and virus handling. The only computer function at which the informants seemed to have no competence was the use of the Photoshop. Hence, the mean score of computer competence in the current study was 2.73. This result is in compliance with the findings of Abu-Samak (2006).

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. Besides, two participants indicated that the development of their computer competence was not a present priority for them because of the non-availability of computers in schools. These constraints have been reported by several researchers in studies carried elsewhere (Al-Oteawi, 2002; Na, 1993). Moreover, the teachers' accounts of their computer competence underline the significant role of computer training and access in equipping teachers with the competencies needed for utilizing ICT.

Technologically speaking, the findings suggested that teachers had low to average ICT skills which could be considered as an influencing factor for the limited use of ICT in their teaching. Most of the interviewees described themselves as having a moderate level of ICT skills. They all indicated that they had knowledge on using the available presentation devices, searching the Internet for resources related to their lesson content, and using email and some Microsoft Office software applications, such as Word and PowerPoint. Overall, these claims are consistent with the findings of Slaouti and Barton (2007) who concluded that the ICT most commonly used by teachers was word-processing, PowerPoint and the Internet. 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 (e.g., Albirini, 2004; Pelgrum, 2001; Al-Oteawi, 2002; Boukadi, 2014). Such feelings are anticipated since teachers believe that ICT optimises the quality of teaching and learning. However, a few teachers were particularly unconcerned about their present lack of competence since computers were not available for teachers' use in schools.

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 level of computer competence usually have negative attitudes toward computers (Summers, 1990; 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 (Albirini,2004 ; Abu-Samak , 2006 ; Na, 1993; Berner, 2003). In addition, the relationship between computer attitudes and competence suggests that higher computer competence may foster the already positive attitudes of teachers and eventually result in their use of computers within the classroom (Albirini , 2006).

4.5.4. Computer Access and Teachers' Attitudes

The questionnaire asked the teachers to identify how often they have computer access in five contexts including the computer lab, library, classroom, home, and Internet cafes. These contexts reflected typical educational facilities, home access, and Internet cafes. Computer access, as an independent variable, was quantified by the informant's score on the five access-related items, each measured according to a 5-point scale, ranging from Never (1), to Rarely (2), to Sometimes (3), to Often (4), to Very Often (5).It was found that the relationship between the informants' level of computer access and their attitudes toward ICT was positive ($r = .268$, $p < .01$) but not as strong as that shown for the other first two variables.

The findings of this study indicated the highest perceptions of access to computers were at home (88 % "often" or "very often") and in the classroom (54% "often" or "very often"), while lowest perceptions of access were identified in computer laboratory (26% “often” or “very often”). Furthermore, the most frequent perceptions of lack of access to computers were in library (86% “never” or “rarely”) and in the Internet Cafes (68% “never” or “rarely”).

While a relatively high percentage of the respondents (92%) had computers at home, only 32% of the respondents had access to computers at school. The latter percentage is a clear indication of the insufficiency of computers at schools, particularly for teacher use. As noted above, the paucity of computer resources available for teachers has been widely reported in the literature as a major obstacle to technology integration in education (e.g., Abas, 1995a; Na, 1993). Although the shortage of computers did not seem to have notable impact on the teachers’ attitudes toward ICT in this study, it may theoretically have its effects on their future uses of ICT in the classroom.

English language teachers’ responses show that despite the fact that schools have insufficient numbers of ICT resources, these resources are not always freely open to teachers’ use. On the contrary, teachers complain that they have limited access to the available ICT tools in their schools particularly modern technological tools such as the Internet. This in turn means that lack of accessibility to technological tools in schools hampers integrating these tools in the teaching practices. These results were also affirmed by the qualitative results where teachers ensured that tools such as printers, computers, projectors, computer labs, and other tools are not easily accessible to teachers at any time when they want because these are the responsibility of the secretary or the technology teacher.

The qualitative data showed that a high proportion of teachers in the study reported that the 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 of respondents suggested that the Ministry of National Education should help them in obtaining better access to computers in the school. According to them, the latter step can be achieved either by assigning a computer room for teachers’ use or increasing the number of computer labs in schools. As literature indicates, the more teachers have access to computers, the more they use them. Accordingly, as teachers use computers more, they tend to incorporate them in their teaching practices (Karakaya , 2010).

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.

4.6. The Relationship Between the Attitudes And the Independent Variables

4.6.1. Computer Training and Teachers' Attitudes

Scholars and researches from different parts of the world have repeatedly stated that lack of training is a potential source for teachers' low levels of confidence and negative attitudes toward computers (Cox, Rhodes & Hall, 1988). Brand (1998) has stated, "If students are going to be prepared for a technological society, they must be taught by confident and skilled teachers. This can only be done by adequate training and development of teachers" (p. 13). Hardy (1998) listed a lack of adequate professional training as one of the barriers that hinders teachers' ability to integrate ICT in the classroom.

In this study, Algerian EFL teachers were asked to report on whether they received any training, and also to specify the length of training in relation to the number of days. Most of the survey informants (76%) stated that they had received computer training. Fifty two percent (52%) of the teachers had between 1 to 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 finding of the current study highlights 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 the teachers in Algeria. This work is in line with the AMoNE philosophy that teachers are the "most important" agents in the educational process. In another initiative, the Ministry of National Education is already preparing its "troops" for ICT. Since 2000, it has been mandatory for the Ecoles Normales Superieures that train teachers for Secondary Education to organize ICT training courses. It is evident that all the investments produced positive and astounding results as shown in the sample of this study (World bank, 2003, p. 55).

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; Na, 1993, Albirini,2004 ; 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. All respondents suggested that the Ministry of National Education should provide teachers with adequate training during holidays or short breaks. Some of them remarked that the Ministry should not merely provide training on how to use computers but also on how to use them in teaching and learning. This is in line with the view of Karakaya (2010), who argued that there is an urgent need for teachers to be trained on how to integrate technology in language teaching. For this reason, in-service trainings can be organized and teachers become more skilled and use computers in their classes. Similarly, Wozney et al. (2006) highlighted that 'the amount of technology-related in-service training was significantly related to computer use in the classroom. Teachers in our study generally reported the need for in-service training and when asked what resources could make their implementation easier, teachers referred to applied training that goes beyond skill development.' (Karakaya, 2006, p. 194).Additionally, Lin, Lee and Chen (2004) also proposed a set of important changes that should be considered while offering technology courses or training :

- The randomly offered individual courses should be replaced by a well organized sequence of courses so that teachers can learn ICT skills systematically.
- The courses should connect training material to real classroom experiences so that it can better convince teachers of relevance and value of integrating ICT.
- In addition to training on software tools, there should be training in methodologies and practices of ICT integration so that teachers can have clearer ideas of how to apply their ICT skills in teaching.
- Some training in basic hardware troubleshooting and maintenance is necessary.
- Each training course should be adequately paced to reduce teachers‟ anxiety about learning (Lin, et al., p.146).

Such suggestions complement the current calls by many researchers to provide teachers with specialized training that would allow them to integrate ICT into their everyday teaching practices (e.g., Abas, 1995; Al-Oteawi, 2002 , and Boukadi , 2014).

Some of the teacher participants stated that they had taken only one training course in their entire profession at the level of vocational training centers. The lack of the number of training courses could be a main factor in teachers' limited knowledge to use computers. Also, the absence of training that dealt with practical methods for effective ICT implementation in schools could be the direct cause of the teachers' low level of computer competence and training .Nearly all of the interviewees indicated the importance of and the need for professional development in order to raise their knowledge skills in ICT. Acquiring knowledge of ICT is therefore essential, but understanding how to use it pedagogically and critically is much more important. They called for increasing the number of training courses provided by the Ministry of National Education for the benefit of teachers. Teacher training and an environment that promotes reflection on teaching practice are vital to support the pedagogical integration of ICT into EFL.

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 a weak relationship between the length of computer training and attitudes toward ICT ($r = .10$, $p <.01$). This result is consistent with the findings from previous studies on computer training (Albirini , 2004 ; Abu-Samak , 2006). Nevertheless, the correlation was positive, implying that as teachers receive more training, their attitudes toward ICT increased positively.It seems that the length of training is a significant factor that requires further investigation. For instance, Earle (2002) stipulated that second-order barriers such as attitudes are more difficult to change and they required the prolonged use of technology rather than a one-day workshop to overcome them.

Also, it seems that the participants were more knowledgeable about the great importance of technical and pedagogical training reflected in the high proportion of teachers who said that there was a lack in this respect. This is consistent with the findings of a study by Smith (2000) who put forward that while “debate rages hotly over the advantages and shortcomings of using technology in a myriad of ways in all walks of life, language teachers struggle to catch up or keep up with the heap of newly invented digital gadgets to effectively adopt them for their own agenda of language pedagogy”.

4.6.2. Teachers’ Characteristics and Teachers’ Attitudes

Previous research has produced conflicting results about the impact of teachers’ characteristics on their attitudes toward ICT. Despite the lack of sufficient empirical evidence about their relationship with teachers’ attitudes toward ICT, a selected set of demographic variables (Gender, Age , Teaching Experience, School Location, Education, and Teaching Method) were examined mainly for the purpose of controlling extraneous variables (Gay & Airasian, 2000). 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, such 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. However, this finding may be specific to the Arab culture, which is highly relationship-based. In the Arab culture, an individual’s attitudes, decisions, and actions are greatly influenced by the opinions of his/her family or community members. Similarly, it seems that computer “privileges” (access, training, and competence) are more significant in determining teachers’ attitudes toward ICT than personal differences.

Furthermore, the current study found that there was no relationship between 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 democratization process of ICT with men and women having equal chances of accessing the computer and the Internet and hence allowing them to develop positive attitudes toward ICT. Besides, the study revealed that age correlated negatively 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. In addition, it was evident in this study that the younger generation of teachers was more computer-oriented because they were in contact with computers during their school years as students and pre-service training at the universities or Teacher Training Institutes (ENS).

Additionally, school location and teaching methods that EFL teachers use often were not found to be significant characteristics that might affect teachers’ attitudes toward ICT. 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 with Abu-Samak’s study (2006) which reported significant relationship between the educational background of Jordanian teachers and their attitudes toward computers.

4.7. 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.

4.7.1. Implications for Policy and Practice

The findings of the current study have several implications for policy and practice for all those responsible for promoting ICT integration in education. Most of these implications relate directly to strategies that can be implemented by policy-makers to ensure the optimum success of their technology initiatives and target their efforts in areas that will increase the effectiveness of ICT integration as well as by teachers to get the most out of their ICT experience. Understanding the important aspects of and the requirements for effective ICT integration sheds lights on those areas that need more attention. Findings from this study indicated that teachers generally had positive attitudes toward ICT despite the different barriers that impede its implementation in the Algerian Secondary Schools. It is essential for policy-makers to sustain and promote teachers' attitudes as a prerequisite for deriving the benefits of costly technology initiatives. Since positive attitudes toward ICT usually foretell future computer use, policy-makers can make use of teachers' positive attitudes toward ICT to better prepare them for the pedagogical integration of ICT into ELT.

Having a shared vision within the educational community about the role ICT should play in education is the first step toward enhancing effective ICT integration. To incorporate ICT in the field of education, the educational community must have a clear vision of the desired model of teaching it is hoping to foster. This will assist in shaping a clear rationale for the adoption of ICT by considering the attitudes of agents of change i.e. teachers. It will then provide direction about how ICT might best be integrated into school and classroom practices. This means moving from focusing merely on technology itself (for example, starting by providing more ICT resources), and instead be able to do a systematic analysis of the barriers that impede ICT integration that need to be solved. Without such a vision and a clear rationale, ICT will be less effective. Showing a clear vision and meaningful connection between technology and larger educational goals will promote successful implementation of ICT by teachers. This also will help in evaluation of whether the investments for the integration of ICT in education are effective or not.

The next step is to articulate an ICT implementation planning by providing clear detailed policies of the steps needed to translate the educational community vision into reality. Several issues are deemed essential to be considered during the development process of an ICT integration plan. The most significant issue is related to teachers. As it is teachers who will use ICT in their classroom practices, there is a definite need to start with a consideration of teachers' needs. The findings of this study suggested that teachers' attitudes were the most influential factors impacting ICT integration in education. The current study indicated that the attitudes of teachers toward ICT in education need to be targeted and given much care in order to achieve effective ICT integration. This will be by providing ongoing practical professional development opportunities for all teachers.

Other general issues that need to be considered in the ICT integration planning process relate to contextual factors. These serve as general important requirements for effective ICT implementation in education. The current study highlights the importance of considering all of the requirements and the vital ingredients needed for achieving successful implementation of ICT in education. This includes, for example, ensuring adequate ICT resources, administrative incentives and maintenance services. The lack of ICT resources and the poor quality of such resources when available were shown to be unavoidable issues that must be overcome with a view to make technology an ordinary scene of Algerian classrooms. Accordingly, policy masterminds and decision makers need to allocate funding to equipping schools with both hardware (computers, head projectors, and broadband Internet connection) and software (educational programs and learning systems). According to the results of the current study, a high percentage of the teachers felt that ICT does not match the existing curricula nor fit within the class-time frame. Thus, calls must be made for ICT to be a built-in component of the Algerian curriculum so that it would not be approached by the teachers as an additional, supplementary element in their teaching methodology. This is consistent with Albirini's comment that "equal innovativeness in structural, pedagogical and curriculum approaches" (2006, p. 385) is compulsory for further ICT integration in the educational system. Both policy-makers and teachers share this responsibility. Time proves, however, to be the greatest obstacle in the face of change, whether it is the lack of it for teachers with full teaching and administrative loads or , the time needed for change to be accepted by teachers. 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 the teachers.

Teachers' deep anxiety about the morally and culturally inappropriate materials on the web and their unwelcome effects on Algerian children and students should receive its due attention on the part of the Ministry of National Education. The Ministry may need to employ Internet content blocking systems, apply stringent rules about Internet use, and/or implement awareness programs in schools for the benefits of students. Such steps would alleviate the teachers' concern and simultaneously motivate them to use ICT in their classrooms with the least amount of anxiety. It is also necessary for teachers themselves to increase their awareness of the importance of this issue in order to be able to guide students in the right way during their access to the Internet.

A common denominator among the quantitative and qualitative data was the optimism and eagerness of the EFL teachers for the need of software and programs that are compatible with the Arabic character, values, and customs. Policy-makers should spare no effort to address this issue. Adequate funds should be allocated for the creation of software that is pertinent to Arab students and acceptable to Arab teachers. Also, the findings of this study revealed that Algerian society becomes remarkably more receptive and enthusiastic toward ICT integration in the Arab region. In less than fifteen years since the AMoNE has initiated ICT educational reform in 2003, EFL teachers in Algeria have accepted ICT and have demonstrated no resistance toward its integration in school in general and in Teaching English as a Foreign Language in particular.

In accordance with teachers' moderate level of access to school computers and the significant relationship between access and attitudes toward ICT, policy-makers need to allocate funds to increase the numbers of computers for schools and for teacher use in particular. The last step may aid teachers in experimenting with ICT before being able to use it in their classrooms.

A final implication from the findings of the current study was the great willingness of EFL teachers for more training opportunities. Hence, the Ministry of National Education should ensure that all teachers receive adequate training. This measure would be part of the human professional development, which is essential for technology implementation. Training should not merely focus on computer literacy skills but also present ways to integrate ICT in teaching and learning. In addition, training should include a cultural awareness element. With such training, teachers can act as agents of educational change and cultural safeguard within their school culture. Accordingly, as teachers use computers more, they tend to incorporate them in their teaching practices. Therefore, teachers should be trained on how to integrate technology in language teaching. If teachers possess advanced knowledge of ICT but do not manage the integration of it into pedagogical practices, this could impede rather than foster the learning process. For this reason, in-service trainings can be organized and teachers become more skilled and use computers in their classes.

4.7.2. Recommendations for Further Research

In view of the findings of the study and the implications arising from them, the following recommendations can be made for consideration. They are related to strategies that policy-makers can utilize for future development and that researchers can use if they are interested in conducting additional studies about ICT in the Arab world in order to provide a greater wealth of knowledge in this area.

1) The survey instrument that was developed by other Arab researchers and used in the current study with some modifications can be utilized to examine EFL teachers' attitudes toward ICT in different educational settings in the Arab region and with populations similar to the population of the study, which is EFL teachers in an Arabic speaking country. Also, the methodology used in this study may be utilised to repeat this study to collect data about EFL teachers in other parts of Algeria whether urban, suburban or rural, and other Arabic speaking EFL teachers in the region.

2) A further study can be conducted as a longitudinal research. After collecting data about the attitudes of EFL teachers in the Western District of Chlef through the combination of quantitative and qualitative research methods at a single point of time, the third stage of the study can be conducted at schools. Teachers can be observed and seeing teachers in real classroom setting can provide the researcher with more observable actual ICT integration practices of teachers. The researcher may also compare teachers' responses to survey study with their real classroom applications at a deeper level.

3) This study aimed at investigating the attitudes of in-service EFL teachers toward ICT integration in Secondary Education. This research also explored the factors affecting the attitudes of teachers toward the uptake of ICT in 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. As attitudes are affecting the level of ICT adoption of teachers, it may be useful to probe into details of attitudes of teachers.

4) Since this study used a mixed paradigm research, by employing both a questionnaire and semi-structured interview as the media of data collection, it is suggested that future research could employ other data collection instruments like interviews, focus groups and classroom observations so as to collect a more in-depth information regarding the teachers' attitudes and especially to understand more on the challenges that they encountered in using ICT in teaching literature lessons.

5) The findings of the current study were generally similar to those found by other researchers in the Arab World such as Albirini (2004) in Syria, Abu-Samak (2006) in Jordan **,** Sadik (2006) in Egypt , Zyad (2016) in Morocco , and Nejah (2010) in

Algeria . It appears that EFL teachers in those countries had positive attitudes toward ICT and were willing to learn and change their practices. Yet, the results of this study bear further replication, and other researchers interested in EFL teachers in the Arab region may wish to use the current study as model. As Schneider (2004) has argued, the lack of replication in education studies has produced disparate results that undermine the education research community's ability to accumulate knowledge. In Schneider's view, replication represents an important and unifying concept, and as such, a starting point for a constructive dialogue that might help to unite a community of diverse paradigms and methods.

6) I believe that a regional center or a research group centered in Algeria would contribute to building a knowledge base and will add to the understanding of the relationship between EFL teachers and ICT in the Arab world. Further, such a center would be informative to regional policy makers and could serve as a starting point for conducting comparative studies across the Arab world to start with. Accordingly, an atmosphere of comradeship among Arab researchers would be developed, one that would lead to future joint efforts for wider ICT integration in education in the Arab region.

7) The survey instrument used in this study was appealing to the researcher for one reason: its theoretical framework. In light of the scarcity of educational research instruments that are culturally and linguistically appropriate for the populations in the Arab region, it is recommended that this instrument be tested meticulously to establish greater validity and reliability for future administration with populations similar to the one in the current study.

8) Since this study is the first of its kind in the Algerian Secondary Education, it is evident that more similar studies are needed to contribute to the growing body of knowledge in the field of EFL instruction and ICT in the Arab region, a matter closely linked to economic and social development. It is recommended that future research be conducted in other disciplines (i.e., other than English as a Foreign

Language) or with the same population in geographical settings other than the Western District of Chlef , Algeria.

9) Given the significant weight of cultural perceptions in determining EFL teachers' attitudes toward ICT, future studies should examine the role of culture on EFL teachers' attitudes toward ICT and the rate of adoption of such innovations in settings other than Algeria in the Arab region. It is evident that culture is a significant factor especially in developing countries, where technology is often seen as an alien tool that may or may not fit within the existing school or domestic culture. First and foremost, future researchers need to pinpoint this construct within their respective research settings. In-depth qualitative procedures or a combination of both qualitative and quantitative methods will be necessary to attain this goal.

10) 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, complexity, etc.) in predicting attitudes. Studies also need to examine computer attributes that were excluded in this study (e.g., trialibility, adaptability).

11) Teachers expressed their strong desire for professionally developed software and programs in the Arabic language. The AMoNE policy makers should spare no effort or time to address this issue by allocating adequate funding for the creation and development of software that suits the Arab culture and identity and , most importantly, fulfills the aims and objectives of the curriculum.

12) This study identified a need for more training opportunities. Hence, the MoNE should ensure that all teachers receive adequate training. Training should not merely focus on basic ICT skills but should also present methods for integrating ICT in teaching and learning. In addition, training should be in the form of continuous professional development courses with flexible training hours as well as in-school training. Teachers should also receive ongoing training as they master previously learned skills and will therefrom feel more confident. Through school training on ICT , teachers are practicing what they have learned during training courses and can implement and integrate ICT in their teaching. It is recommended that ongoing professional development should be provided for teachers to model the new pedagogies and technological tools for learning with the aim of enhancing the teaching-learning process.

13) The present study also suggests some recommendations for EFL Inspectors. It is recommended that Inspectors conduct ICT-trainings for the benefit of EFL teachers, training them on how best ICT can be used not only as a presentational tool but also as a pedagogical device that actively enhances students' learning in the creation of language projects. Moreover, EFL Inspectors have a crucial role to play in the preparation of a clear national strategy for the integration of ICT in the EFL curriculum. Beside this, it is recommended that EFL inspectors conduct action research and sensitize teachers on the pedagogic benefits of using ICT in the teaching of EFL in Algeria, helping to disclose areas in the integration of ICT, and providing ways as to how to overcome these problems.

14) This present study has shown that many of the barriers to the integration of ICT in the teaching of EFL can be targeted at the level of the Ministry of National Education. First, the non-availability of ICT resources has been reported as a main barrier to ICT integration among teachers. Therefore, the Ministry of National Education should have a clear policy for the integration of ICT in the educational system. It is not enough to provide schools with materials and the teachers be given a few 'one-size-fits all' *technical* workshops.

I would like to highlight that the above recommendations are only proposed to provide an initial platform upon which teachers, as responsible social agents, might have the opportunity to voice their concerns to the policy-makers in relation to the integration of ICT in their daily teaching practices .Therefore, an integral objective of the present research was to provide a channel through which the informants could voice their concerns, and share their lived experiences and perceptions toward the implementation of ICT with other teachers in Algeria and in the Arab world. It is hoped that if this dissertation is read by teachers and policy-makers in Algeria, it might lead them to reflect on and to explore further some of the issues raised. To finalise, all the decision-makers should have a road map for the integration of information and communication technologies in the educational system.

Additionally, I believe in the importance of interviewing policy makers to investigate their views on the current status of the implementation of ICT in schools and procedures taken to promote supporting factors and reduce the effect of hindrances. Comparing their visions of the future of education with those of EFL teachers in the current research would reveal interesting comparisons and assist in bridging the gap between policies and preferable futures with the deployment of technology in education.

In sum, this piece of research could have an impact on the field of educational research in Algeria, and subsequently may be a step towards the enrichment of knowledge of ICT integration in education, not only for Algeria but also for other countries in the Arab world.

4.8. Personal Reflections on Conducting Research

According to me, conducting research in the field of education is considered as a constant process of reflection during all the stages of this study. From the time I commenced with my research questions until I finished this dissertation, I have been asking myself questions of "how" and "why". The "how" questions came because I had to learn as a novice researcher how to conduct systematic research, how to formulate research questions, how to collect data, how to analyse and how to write interpretations of the findings. I discovered that there is always something new emerging in qualitative and quantitative research methods . As a result, a mix of qualitative and quantitative paradigms is for me like a trundling snowball where we are involved in an infinite process of exploration. Researchers have therefore to constantly adapt to new situations as they are created by the process of research. The "why" questions were important because I had to continually justify every decision I made throughout the dissertation. This was very important in ensuring that the research was systematic and that the findings were consistent with my research questions. In this respect, I read an extensive review of literature on the theory of teachers' attitudes toward the uptake of ICT in the field of education, and about methodology in mixed methods research developed by researchers from different educational background. The literature on methodology was extremely helpful since it allowed me to learn, compare, contrast, or confirm my methodology with what other researchers had experienced. I also read some Magister and PhD dissertations, which in this case were extremely important because I was able to read advanced research, and I could learn about the different styles for the presentation of academic research. I was aware as a researcher that in the process of my research, I belonged to a community of researchers, and therefore reading their works, and later sharing mine with them, would be mutually helpful. This, I believe, is what community is about; it is about “interaction” and “sharing” especially in this new era of digital flows. Finally, one important thing that the present study has shown is that teachers’ attitudes can be studied from another perspective. I might have overlooked some points, but I believe this is part of my process of learning to conduct research. I continue to rely on the feedback given to me to improve my research skills and to expand my knowledge in the field of teachers’ attitudes. In conclusion, I believe the big picture is not yet complete because educational research is an ongoing endeavour, where one task ends another begins.

4.9. Limitations of the Study

The dissertation explored the attitudes of EFL teachers’ attitudes toward ICT in the Algerian educational system. Based on a geographically limited data, I believe that the research questions outlined in general introduction were answered appropriately in the different chapters of the dissertation and that appropriate methodology was used to that end. Nevertheless, I believe that it is important in this final section to highlight the limitations within which the study was conducted. These can grouped into four main areas, as discussed below.

First, it is important to note that attitudes are hard to investigate. It was discussed in chapter one that teachers’ attitudes are hard to research and that the area of teachers’ attitudes is still surrounded with ambiguity and inconclusiveness. Consequently it was argued that researching teachers’ attitudes represented a challenging task, insofar as teachers’ attitudes are complex and therefore difficult to assess. In the process of conducting the present research, I discovered that identifying teachers’ attitudes was a complex task. This was a challenge I acknowledged as a limitation in this dissertation.

Furthermore, the attitudes profiled in this study are not exhaustive. The dissertation only gave a sample of what these attitudes were as identified by the researcher, and it is possible that if the same study was conducted by another researcher, it could possibly generate different attitudes from the ones profiled in this dissertation. In this respect, it is important to point out that it was not my intention to claim certainty of the findings or to challenge current theory; rather my aim was to attempt to use theory as a framework in order to profile and to provide interpretations of attitudes as they were articulated by the participants and identified by the researcher in a specific context.

Second, while I believe that a mix of qualitative and quantitative paradigms offered a rich amount of data, more data could have been added to the study through direct classroom observations and focus groups. Hence, researchers are also required to minimise bias through using different strategies which increase the credibility and trustworthiness of the findings, and which the present study used as discussed in chapter three.

Third, other limitations were related to the sampling and selection of teachers for the study. The study was oriented only in one particular region consisting of twenty three Secondary Schools in the Western District of Chlef, Algeria, which could be considered as a limitation due to the fact that the conclusions drawn from this particular case, although they reflect the reality of these schools, may not be extrapolated to the general population. The results were not generalizable because the researcher could never know whether the case was representative of the wider body of "similar" instances or not (Creswell, 2014).

Fourth, the dissertation has pointed out that the parameters of the study were only limited to the sample of teachers who participated in the research, and therefore it was also highlighted that the findings, interpretations and conclusions drawn from the study were only restricted to the case and sample under study. The research did not also include learners, administrators, managers and policy makers who could have given the study a more balanced picture of what is happening toward the implementation of ICT in the Algerian education system. This point was raised in recommendations for further research in this chapter (See section 4.7.2).

4.10. Conclusion

In this chapter we have analysed and discussed the findings of this study referring to the research questions. Findings from both questionnaire and interview data unraveled that Secondary School EFL teachers in the Western District of Chlef demonstrated positive attitudes toward ICT in education. The further analysis of the interview data indicated that EFL teachers had moderate level of computer competence, access and training. This was linked to a number of barriers. Teachers' lack of time and training opportunities were found to have the greatest impact on their moderate level of ICT implementation. The absence or non-availability of ICT resources and rationales for effective ICT integration could also be responsible for most of the barriers related to ICT integration. Such findings may well provide useful information for the Algerian Ministry of National Education to supplement existing educational reform programs.

General Conclusion

The purpose of this study was to explore the attitudes of EFL teachers in the Western District of Chlef (Algeria) toward ICT integration in Secondary Schools and then to gain a deeper understanding of the relationship between teachers' attitudes and factors that are thought to be influencing them. More precisely, the objectives of this study were:

- To explore the attitudes of Secondary School EFL teachers in Algeria toward ICT integration in the classroom
- To identify the factors associated with the attitudes of Secondary School EFL teachers toward ICT
- 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

In order to pursue these objectives, the following research questions were formulated, which the present research sought to address:

1) What are the attitudes of Secondary School EFL teachers in Algeria toward ICT in education?

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

a• ICT Attributes?

b• Cultural Perceptions of ICT?

c• Computer Competence?

d• Computer Access?

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

The research's methodology designed to answer the research questions combined two successive stages. The first stage consisted of a questionnaire in which both descriptive and inferential statistics were used to analyse the quantitative data. The second stage consisted of semi-structured interviews which were analysed by using content analysis technique. A total of fifty Secondary School EFL teachers (30 females, 20 males) participated in this study, from which 6 interviews were drawn on the basis of reputational sampling. Of the 56 questionnaires distributed to participating schools, 50 were successfully completed and collected.

Findings from this study revealed that Secondary School EFL teachers in the Western District of Chlef demonstrated positive attitudes toward ICT integration in education. The more in-depth interview procedure used in this study provided the opportunity to look behind this enthusiasm that has become popular among teachers from different parts of the world. With little exception, teachers attributed their positive attitudes to ICT potential for national development and self-enhancement (on educational, personal, and professional levels).

Another major finding in this study was the teachers' somehow positive perceptions of computer attributes. More specifically, informants underscored the observability of computers as an educational tool at the expense of the other computer attributes: relative advantage, compatibility, and complexity. Teachers' positive perceptions about the computer attributes had a very strong correlation with their attitudes toward ICT in education. This corroborates the proposition that the attributes of the technology itself play a major role in determining its receptivity.

Moreover, teachers' cultural perceptions of the relevance of ICT as it relates to the cultural norms in Algeria ranged between neutral and positive. The qualitative data showed that while teachers were enthusiastic about the cultural and cross-cultural aspects of ICT, they were markedly concerned and eager to know more about the proliferation of morally and culturally inappropriate websites and the dangers they may pose for Algerian children and students. The latter concern was enough to prevent their enthusiasm for the cultural and cross-cultural promises that ICT offers. Teachers' cultural perceptions were significantly related to their attitudes toward ICT. Those teachers who had positive perceptions about the cultural relevance of ICT for Algerian society and schools also had highly positive attitudes compared to those with less positive cultural perceptions.

Teachers' perceived computer competence was notably moderate in almost all major computer applications and functions. The modest computer competence of Algerian EFL teachers in the Western District of Chlef epitomizes a globally voiced obstacle to technology implementation. This obstacle has often been more prevalent in countries where technology has only recently appeared on the educational. The teachers' limited computer competence is a natural outcome of their lack of access, training, ICT resources, and time as well as their priorities among competing responsibilities. Interestingly, teachers who had high computer competence had simultaneously more positive attitudes than those who did not.

Participants had moderate levels of access to computers due to many hindering factors such as time constraints, lack of training opportunities and absence or non availability of technological tools in the Algerian schools. Interestingly, those who had a higher degree of computer access had more positive attitudes toward ICT than those with less access. The study also indicated that the majority of the EFL teachers had little computer training and only few of them had no training at all. As was the case with computer access, those who had greater chances for undertaking computer training held more positive attitudes toward ICT than those who did not.

The demographic statistics revealed yet more subtle insights into the level of computer use among EFL teachers in Secondary Public Schools. Thus, only the age and the degree had a negative significant relationship with teachers' attitudes toward ICT. Apparently, the more educational qualification that teachers held, the more likely they have positive attitudes toward the use of computers for learning and teaching purposes. Age, as a predictor of computer attitudes, provides advantages for younger teachers according to the findings. The increase in computer use between teachers in their twenties and those in their thirties suggests that the younger a teacher is, the more positive the attitudes toward ICT become. This conclusion was expected due to the little empirical support of the role of demographic variables in determining attitudes toward ICT.

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APPENDICES

Appendices

APPENDIX A

DESCRIPTION OF ALGERIA'S GEOGRAPHY, POPULATION AND ETHNICITY

Algeria (People's Democratic Republic of Algeria) is located in Northwestern Africa, bordering the Mediterranean Sea between Morocco and Tunisia. Algeria has an area of almost 2.4 million square kilometers, more than four-fifths of which is desert. Algeria is the tenth largest country in the world and the largest in Africa (CIA, 2016) . The population is of 40,263,711. Algeria shares borders with Morocco, Mali, Libya, Tunisia, Niger, Mauritania, and Western Sahara. Algeria's northern border stretches along the southern edge of the Mediterranean Sea from Tunisia in the east to Morocco in the west

As of July 2016, Algeria's population was estimated to total 40,2 million. The population was growing at an annual rate of 1.2 percent. More than 90 percent of the country's population is concentrated along the Mediterranean coast, which constitutes only 12 percent of the country's land area. Therefore, the overall population density of 14.2 people per square kilometer is deceptive. About 59 percent of Algeria's population is urban (CIA, 2016).

Algeria is a gateway between Africa and Europe. It is sometimes called the 'land of the million martyrs', as over a million Algerians were killed in the fight against France for independence, which it eventually achieved in 1962.(Hamdy,2007)

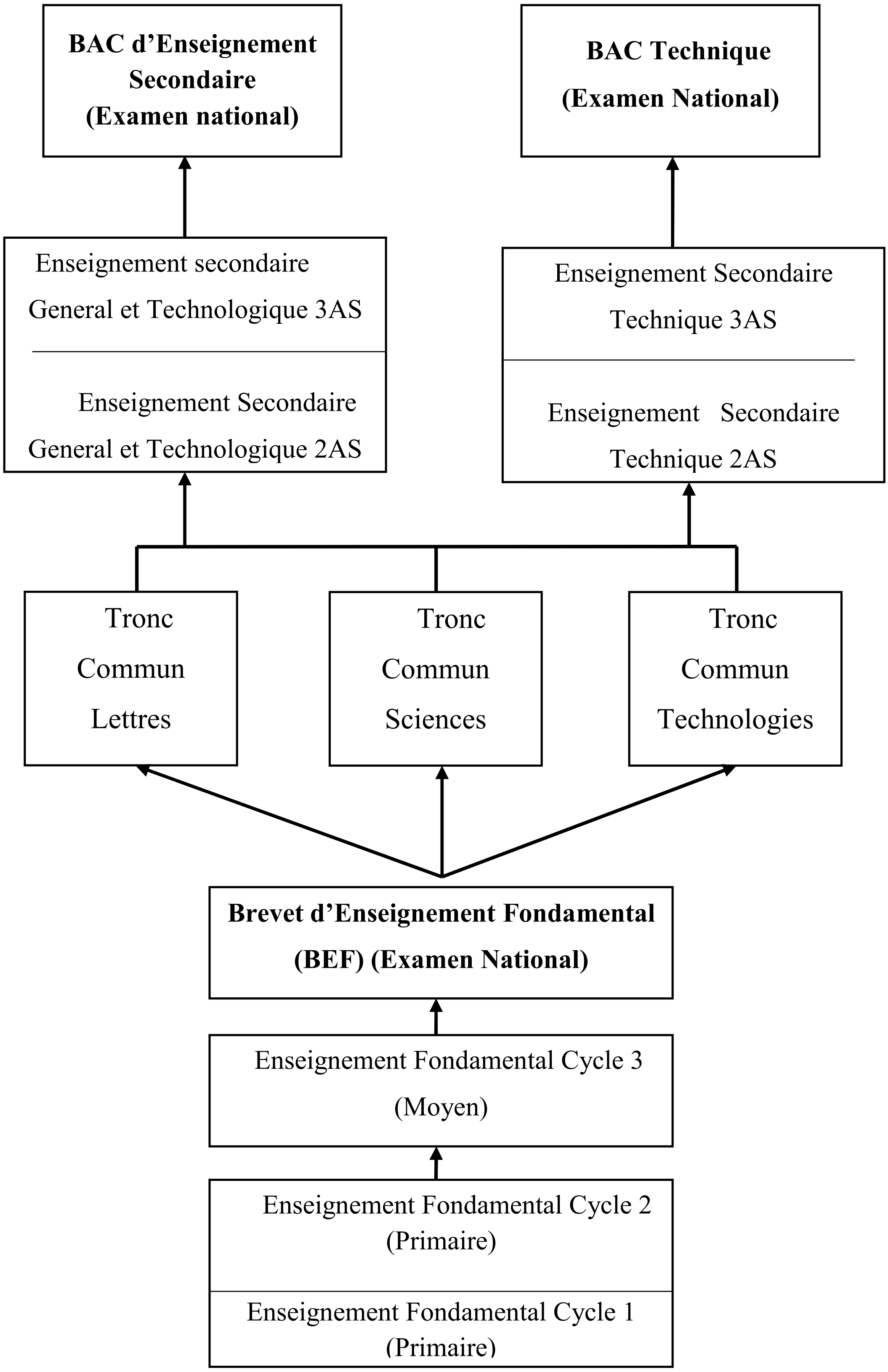
Algeria is a heteroglossic country (Ennaji, 1991; Ezzaki and Wagner, 1992). Different languages and dialects dominate the social structure of each region in the country. Thus the official language is Arabic, which could be divided into Classical and Modern Arabic, the language of schooling, media and administration, and Vernacular/dialectal Arabic, the language of the dayto-day social interactions outside official settings (Murphy, 1977, Ennaji, 1991). French, a former colonial language, is also spoken by a considerable proportion of Algerians. Although Algerians are considered to originate from Berber descent, only a minority speaks Berber language (Wikipedia, 2016), mostly in rural and mountainous regions (Ennaji, 1991). Education in Algeria is free and compulsory to the age of 16 (Wikipedia, 2016).

In 2016, population distribution by age was as follows: 0–14 years, 29.06 %; 15–24 years, 15.95 % ; 25–54 years, 42.88% and 55 years and older, 12.11 % . As this distribution indicates, Algeria has a very young population, which poses a challenge for the labour market and the education system.

A Map of Algeria (Source: World Factbook , CIA 2016)

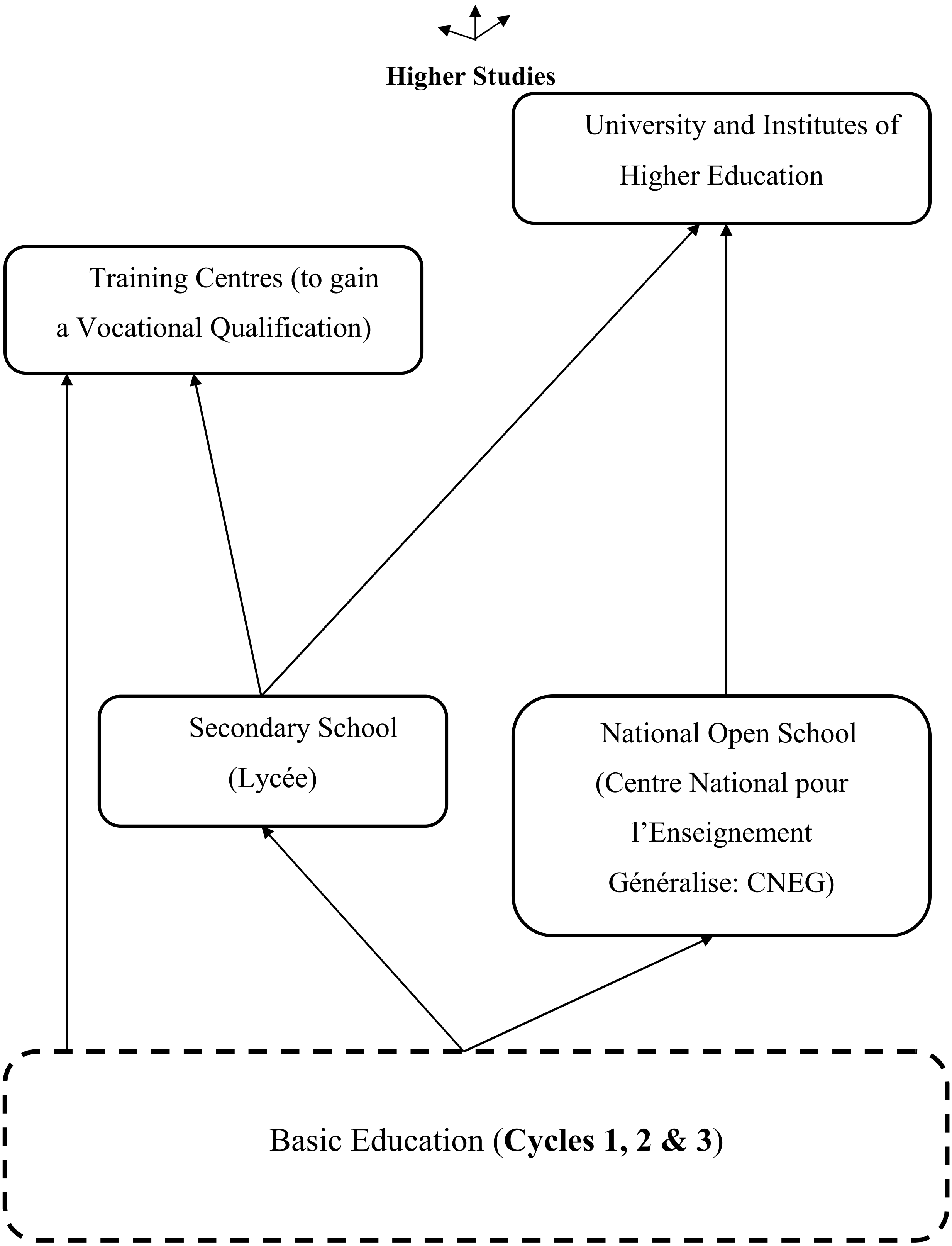
APPENDIX B

STRUCTURE OF THE ALGERIAN SCHOOL SYSTEM (BELLALEM, 2008, P. 113)



APPENDIX C

ALTERNATIVE ROUTES FOR EDUCATION AND TRAINING IN ALGERIA



APPENDIX D
COVER LETTER

University Of Abou El Kacem Saâdallah , Algiers 2
Faculty Of Letters And Languages , Bouzareah

Dear Informant ,

I am currently conducting a research on Information and Communication Technology (ICT). The study aims at exploring the attitudes of Secondary School EFL teachers toward ICT integration in Algeria in the Western District of Chlef and the factors that may influence these attitudes. Bearing this in mind, the invaluable information about technology status in the Algerian education comes from you, the teacher who is a key change agent at schools. This type of information is of paramount importance in decision making in relation to future technology implementation plans.

Taking this survey is voluntary, and your job will not be affected in any way by whether you take the survey or not. This survey will take approximately 10-15 minutes to complete. Please complete the survey and feel free to make notes on the survey as needed. All information will be treated confidentially. Further, responses will be treated only as group data in the final written report.

Thank you for providing this valuable information. If you would like to receive the results of this study, please contact me via my e-mail at makhlouf.cherchell@yahoo.com.Your time and effort in completing the survey are greatly appreciated.

Yours Sincerely,
Kouider MAKHLOUF

APPENDIX E

INFORMED CONSENT FORM

University Of Abou El Kacem Saâdallah , Algiers 2

Faculty Of Foreign Languages , Bouzareah

CONSENT FOR PARTICIPATION IN RESEARCH

I consent to participate in research entitled " An Exploration of EFL Teachers' Attitudes Toward Information and Communication Technology (ICT) in Algeria: The Case Study of Secondary School Teachers in the Western District of Chlef.

Kouider MAKHLOUF has explained the purpose of the study, the procedures to be followed, and the expected duration of my participation .Possible benefits of the study have also been described.

I acknowledge that I have had the opportunity to obtain additional information regarding the study and that any questions I have raised have been answered to my full satisfaction.

Furthermore, I understand that I am free to withdraw consent at any time and to discontinue participation in the study without prejudice to me.

Finally, I acknowledge that I have read and fully understand the consent form. I sign it freely and voluntarily. A copy has been given to me.

Date: -- Signed: --

(Informant)

Signed: --

Kouider MAKHLOUF

Note: Please indicate whether or not you would like to participate in a follow-up interview by checking one of the following boxes. Participation is totally voluntary.

☐ Yes, I would like to participate in a follow-up interview.Signature…(please sign here).

☐ No, I do not like to participate in a follow-up interview.

APPENDIX F

QUESTIONNAIRE INSTRUMENT

General Instructions: The purpose of this questionnaire is to examine your attitudes toward the introduction of Information Technology into the Algerian Secondary Schools. The questionnaire consists of six sections. Each section begins with some directions pertaining to that part only. As you begin each section, please read the directions carefully and provide your responses in the format requested. We assure you that your responses will be kept strictly confidential, and will be used for research purpose only. Your help is greatly appreciated.

E-mail: **makhlouf.cherchell@gmail.com**

Section 1: Teachers' Demographic Characteristics
The following items relate to ***your general and professional characteristics***. Please indicate ***your current status*** by filling in (●) the item.
1. **Gender**
❍Male ❍Female
2. **Age**
❍20–29 ❍30–39 ❍40–49 ❍50–59 ❍over 59
3. What type of **school district** do you teach in**?**
❍Urban ❍ Suburban ❍Rural
4. What is your highest completed **Academic Degree?**
❍ Teacher Certificate (ENS) ❍ Bachelor (Licence) ❍ Master's ❍ Doctorate
5. Including **the current year, how many years** have you **been teaching for?**
❍ Less than one year ❍1–5 ❍6–10 ❍11–15 ❍16–20 ❍over 20
6. Have you ever attended any **training course,workshop,**or **seminar** on **using computer?**
❍Yes ❍No If" yes",please specify the number of months and/or days:______months_____days.
7. Including the current year, how many **years** have you been **using computers** in general?
❍1–5 ❍6–10 ❍11–15 ❍16–20 ❍over 20
8. What **is the teaching method** you use most often?
❍Active Discussion ❍Collaborative Learning ❍Role Playing ❍Computer-Assisted Instruction ❍Other (please specify) _______

Section 2: Attitude toward computers

The following items relate to *your attitude toward computers*. Please indicate your ***level of agreement or disagreement*** by filling in (●) the appropriate number. *Make sure to respond to every statement.*

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
		1	**2**	**3**	**4**	**5**
1	I feel comfortable using computers	❍	❍	❍	❍	❍
2	I am fearful about computer use	❍	❍	❍	❍	❍
3	I am glad there are more computers these days.	❍	❍	❍	❍	❍
4	I like all teachers in Secondary School to use computers for instruction.	❍	❍	❍	❍	❍
5	Using computers is enjoyable.	❍	❍	❍	❍	❍
6	I prefer to deliver lessons using computers.	❍	❍	❍	❍	❍
7	Computers save time and effort.	❍	❍	❍	❍	❍
8	Schools would be a better place without computers.	❍	❍	❍	❍	❍
9	Students must use computers in all subject matters.	❍	❍	❍	❍	❍
10	Learning about computers is a waste of time.	❍	❍	❍	❍	❍
11	Computers would motivate students to study more.	❍	❍	❍	❍	❍
12	Computers are a fast and efficient means of getting information.	❍	❍	❍	❍	❍
13	I do not think I would ever need a computer in my classroom.	❍	❍	❍	❍	❍
14	Using computers makes the academic climate in school more intellectually stimulating.	❍	❍	❍	❍	❍
15	Computers do more harm than good	❍	❍	❍	❍	❍
16	Computer use increases the usual teacher workload	❍	❍	❍	❍	❍
17	I would rather do things by hand than with a computer.	❍	❍	❍	❍	❍
18	I would avoid computers as much as possible.	❍	❍	❍	❍	❍
19	I would like to learn more about computers.	❍	❍	❍	❍	❍
20	I have no intention to use computers in the near future.	❍	❍	❍	❍	❍

Section 3:Computer Attributes

Please indicate your reaction to each of the following statements by filling in (●) the appropriate number that represents your ***level of agreement*** *or* ***disagreement*** *with it. Make sure to respond to every statement.*		**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
		1	**2**	**3**	**4**	**5**
1	Computers will improve education.	❍	❍	❍	❍	❍
2	Teaching with computers offers real advantages over traditional methods of instruction.	❍	❍	❍	❍	❍
3	Computer technology cannot improve the quality of students' learning.	❍	❍	❍	❍	❍
4	Using computer technology in the classroom would make the subject matter more interesting.	❍	❍	❍	❍	❍
5	Computers are not useful for language learning.	❍	❍	❍	❍	❍
6	Computers have no place in schools.	❍	❍	❍	❍	❍
7	Computer use fits well into my curriculum goals.	❍	❍	❍	❍	❍
8	Class time is too limited for computer use.	❍	❍	❍	❍	❍
9	Computer use suits my students' learning preferences and their level of computer knowledge.	❍	❍	❍	❍	❍
10	Computer use is appropriate for many language learning activities.	❍	❍	❍	❍	❍
11	It would be hard for me to learn to use the computer in teaching.	❍	❍	❍	❍	❍
12	I have no difficulty in understanding the basic functions of computers.	❍	❍	❍	❍	❍
13	Computers complicate my task in the classroom.	❍	❍	❍	❍	❍
14	Everyone can easily learn to operate a computer.	❍	❍	❍	❍	❍
15	I have never seen computers at work.	❍	❍	❍	❍	❍
16	Computers have proved to be effective learning tools worldwide.	❍	❍	❍	❍	❍
17	I have never seen computers being used as an educational tool.	❍	❍	❍	❍	❍
18	I have seen some Algerian teachers use computers for educational purposes.	❍	❍	❍	❍	❍

Section 4: Cultural Perceptions

Please indicate your reaction to each of the following statements by filling in (●) the appropriate number *that represents your* ***level of agreement or disagreement*** *with it. Make sure to respond to every statement.*

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
		1	**2**	**3**	**4**	**5**
1	Computers will not make any difference in our classrooms, schools, or lives.	❍	❍	❍	❍	❍
2	Students need to know how to use computers for their future jobs.	❍	❍	❍	❍	❍
3	Students prefer learning from teachers to learning from computers.	❍	❍	❍	❍	❍
4	Knowing about computers earns one the respect of others.	❍	❍	❍	❍	❍
5	We need computers that suit better the Arabic culture and identity.	❍	❍	❍	❍	❍
6	Computers will improve our standard of living.	❍	❍	❍	❍	❍
7	Using computers would not hinder Arab generations from learning their traditions.	❍	❍	❍	❍	❍
8	Computers are proliferating too fast.	❍	❍	❍	❍	❍
9	People who are skilled in computers have privileges not available to others.	❍	❍	❍	❍	❍
10	Computers will increase our dependence on foreign countries.	❍	❍	❍	❍	❍
11	There are other social issues that need to be addressed before implementing computers in education.	❍	❍	❍	❍	❍
12	The increased proliferation of computers will make our lives easier.	❍	❍	❍	❍	❍
13	Computers dehumanize society.	❍	❍	❍	❍	❍
14	Working with computers does not diminish people' relationships with one other.	❍	❍	❍	❍	❍
15	Computers encourage unethical practices.	❍	❍	❍	❍	❍
16	Computers should be a priority in education.	❍	❍	❍	❍	❍

Section 5:Computer Competence

	*Please indicate your current **computer competence level** (i.e., both your knowledge of and your skill in using computers) by filling in (●) the appropriate number. Make sure to respond to every statement.*	**No Competence**	**Little Competence**	**Moderate Competence**	**Much Competence**
		1	**2**	**3**	**4**
1	Install new software on a computer.	❍	❍	❍	❍
2	Use a printer.	❍	❍	❍	❍
3	Use a computer keyboard .	❍	❍	❍	❍
4	Operate a word processing program (e.g., Word).	❍	❍	❍	❍
5	Operate a presentation program (e.g., PowerPoint).	❍	❍	❍	❍
6	Operate a spreadsheet program (e.g., Excel).	❍	❍	❍	❍
7	Operate a database program (e.g., Access)	❍	❍	❍	❍
8	Use the Internet for communication (e.g., email & chatroom)	❍	❍	❍	❍
9	Use the World Wide Web to access different types of information.	❍	❍	❍	❍
10	Solve simple problems in operating computers.	❍	❍	❍	❍
11	Operate a graphics program (e.g., Photoshop).	❍	❍	❍	❍
12	Use computers for grade keeping.	❍	❍	❍	❍
13	Select and evaluate educational software.	❍	❍	❍	❍
14	Create and organize computer files and folders.	❍	❍	❍	❍
15	Remove computer viruses.	❍	❍	❍	❍

Section 6 : Computer Access

Please identify ***how often*** *you have* ***computer access*** *in the following contexts* by filling in (●) the appropriate answer.		Never	Rarely	Sometimes	Often	Very Often
		1	**2**	**3**	**4**	**5**
1.	In a computer lab	❍	❍	❍	❍	❍
2.	In a library	❍	❍	❍	❍	❍
3.	In a classroom	❍	❍	❍	❍	❍
4.	In your home	❍	❍	❍	❍	❍
5.	Other (like Internet cafes, etc.) ………………………..	❍	❍	❍	❍	❍

Thank you very much for your cooperation

APPENDIX G

SEMI-STRUCTURED INTERVIEW SCHEDULE

1. How do you feel about the spread of computers in Algeria?
2. How would that affect you, your children, your students, or your family?
3. How would that affect Algerian society and schools?
4. Computers are said to reflect the values and ways of thinking of those who make them? What is your opinion about this saying? / What do you think of culturally inappropriate websites?
5. Do you think that computers would be different if they were made by Arab people? How?
6. If you were to design a computer, what would it be like?
7. How do you feel about the entry of Computers into Algerian Education?
8. In general, in what ways do you think Computers can be beneficial for Education? (Did you know these advantages through direct experience? Or through other means (channels)?
9. Do you think you are competent enough to use a computer?
10. How do you use Computers while Teaching English?(In what areas of the lesson?)
11. What kind of Difficulties do you Encounter in the Technology Integration Process?
12. What Training Opportunities do you think should be provided for Teachers in order to use Computers in Teaching? Or What do you think of in-service trainings on technology?
13. Would you like to add anything else?

Thank you for your Responses and Time

APPENDIX H
INTERVIEW TRANSCRIPTION KEY

… Incomplete thought or change of thought

(…) Speakers' words edited out

[ ] Explanation added for clarification of meaning

استكشـاف اتجاهــات أساتذة اللغة الإنجليزية كلغة أجنبية تُجاه تكنولوجيا الإعلام والاتصـال في الجـزائر : دراسـة حالـة لأساتذة المدارس الثانوية في المنطقة الغربية من الشلف.

ملخـــــــــــــــــص

هدفت هذه الدراسة إلى استكشاف اتجاهات أساتذة اللغة الإنجليزية كلغة أجنبية تُجاه تكنولوجيا الإعلام والاتصال في المدارس الثانوية الجزائرية بالناحية الغربية من ولاية الشلف. بالإضافة إلى ذلك، فإن الدراسة خاضت في البحث عن العلاقة بين اتجاهاتهم وخمسة متغيرات مستقلة :الخصائص الشخصية (بما في ذلك خلفية التدريب على استخدام الحاسوب)، سمات الكمبيوتر، التصورات الثقافية، الكفاءة الحاسوبية، والوصول إلى الحاسوب،حيث تم فحص اتجاهات الأساتذة عن طريق الجمع بين إطارين نظريين متصلين هما : الانتشار الواسع للا بتكارات لروجرز ROGERS (2003) و نموذج العمل المنطقي لأجزن و فيشبين (1980)AJZEN and FISHBEIN.

تم استخدام الطرق الكمية والنوعية لجمع البيانات من قبل أساتذة اللغة الإنجليزية كلغة أجنبية في المنطقة الغربية من الشلف خلال العام الدراسي 2016-2017. تم ذلك اولا عن طريق إعداد استبانة وتوزيعها على عينة متكونة من 56 أستاذا الذين تم اختيارهم عشوائيا. أعقبت مرحلة الاستبانة مقابلات شبه منظمة مع عينة متكونة من ستة 6 أساتذة حيث أجريت كل من الإحصاءات الوصفية والاستنتاجية وكذلك تحليل المحتوى وذلك من اجل تحليل البيانات.

لقد كشفت نتائج كل من الاستبيان وبيانات المقابلة أن أساتذة المدرسة الثانوية للغة الإنجليزية كلغة أجنبية أظهروا اتجاهات إيجابية تُجاه تكنولوجيا الإعلام والاتصال في التعليم.علاوة على ذلك، تبين أن الأساتذة المشاركين كان لديهم تصورات إيجابية إلى حد ما عن خصائص الحواسب.وقد تبين أن المفاهيم الثقافية الإيجابية للأساتذة عن مدى ملائمة تكنولوجيا الإعلام والاتصال للمجتمع الجزائري كانت المؤشر الأفضل على فعالية اعتمادها،حيث أظهر التحليل الإضافي لبيانات المقابلة أن أساتذة اللغة الإنجليزية كلغة أجنبية يتمتعون بمستوى معتدل من الكفاءة الحاسوبية والوصول للحاسوب والتدريب على استعماله الذي يرتبط بعدد من الحواجز. وتشمل هذه الحواجز نقص في موارد تكنولوجيا الإعلام والاتصال ، وعدم توفر التخطيط و سياسة تكنولوجيا الإعلام والاتصال بما في ذلك عملية التحفيز والحاجة إلى تنمية مهنية منظمة، والقيود الزمنية، ونقص فرص التدريب، كما أشار تحليل البيانات إلى وجود ارتباطات إيجابية ذات دلالة إحصائية بين اتجاهات الأساتذة تُجاه تكنولوجيا الإعلام والاتصال وخمسة متغيرات مستقلة، بما في ذلك سمات الكمبيوتر، التصورات الثقافية، الكفاءة الحاسوبية، الوصول إلى الحاسوب والتدريب عليه.

كما وُجد أن العمر والمؤهل العلمي لهما علاقة ارتباطيه سلبية مع الإتجاهات ، في حين أن موقع المدرسة وطرائق التدريس التي يستخدمها أساتذة اللغة الإنجليزية كلغة أجنبية في أغلب الأحيان لم يكن لها تأثير على اتجاهاتهم. ، إضافة إلى ذلك وُجد أن الخبرة في عملية التدريس لا ترتبط ارتباطا وثيقا بالمواقف تُجاه تكنولوجيا الإعلام والاتصال.

استنادا إلى النتائج، من المستحسن أن يحافظ صانعو السياسات على المواقف الإيجابية للأساتذة تُجاه تكنولوجيا الإعلام والاتصال ، وأن يوفر لهم المزيد من فرص التدريب، وأن يتخذوا خطوات للتخفيف من انشغالات بعض الأساتذة بشأن المواد غير الملائمة ثقافيا على شبكة الإنترنت.

الكلمات الرئيسية: اتجاهــات تُجاه الإعلام والاتصال، أساتذة اللغة الإنجليزية كلغة أجنبية، التعليم الثانوي، طرق البحث المختلط.