

**Use of ICT in Secondary Schools in Libya:
A Teachers' Perspective**

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ABSTRACT

The purpose of this study is based on the selection of schools and recognizing the importance of ICT in education in Libya. Despite the fact that Libya is a country with a high standard of living; it has the highest literacy rate in North Africa. Before the war, ICT was restricted to the public sectors only, but today the Libyan government is providing ICT to private Schools to boost modern education and prepare for global competitiveness. The Ministry of Education has facilitated the integration of ICT into educational institutions across the country.

This study used selected schools in Libya to collect data to conduct the research through the set of questionnaire. Quantitative research method was used to analyze the data and the results obtained overall were significant. The research investigated 87 secondary school teachers from 8 secondary schools in Libya. The beneficial impact of ICT usage in the Libyan educational system proved significant on national development.

The results of this research therefore indicate that the use of ICT in schools in Libya will go a long way to develop the young generation of students and increase their knowledge and abilities in information and communication technologies and also signified by teachers that there is a huge unavailability of ICT for its use by teachers in the classroom.

Keywords: Information Technology, ICT in Education, ICT in Libyan Education.

ÖZ

Bu çalışmanın amacı, Libya'da okulların seçiminde ve eğitimde BİT'in öneminin farkındalığını yaratmaktır. Libya yüksek bir yaşam standardına sahip bir ülke olmasının yanında; Kuzey Afrika'da da en yüksek okuma yazma oranına sahiptir.

Bu çalışmada, Libya'daki seçilmiş okullarda araştırma seti aracılığıyla ve anket formuyla veri toplanarak analizler kullanılmıştır. Verilerin analizinde nicel araştırma yöntemi kullanılmış ve sonuçların toplamı anlamlı bulunmuştur. Araştırmada, Libya'daki 8 orta öğretim okulundan 87 orta öğretim öğretmeni ile çalışma yapılmış ve sonuçta BİT kullanımının Libya eğitim sistemindeki olumlu etkisinin, ulusal kalkınmada önem taşıdığı görülmüştür.

Bu araştırmanın sonuçları, bu nedenle, BİT'in Libya'da okullarda kullanılmasının genç nesil öğrencileri geliştirmede ve bilgi ve iletişim teknolojileri alanındaki bilgi ve yeteneklerini arttırmada önemli olduğu tesbit edilmiştir. Öğretmenlerin büyük bir kısmının bilgiye erişemediğinin ortaya çıkması da yapılması gereken birçok uygulamanın olduğu ve uzun bir yol kat edilmesi gerektiği ortaya çıkmıştır. BİT'in sınıftaki öğretmenler tarafından kullanılmasının bu eksikliklerin giderilmesi açısından önemine vurgu yapıldı.

Anahtar Kelimeler: Bilgi Teknolojileri, Eğitimde BİT, Libya Eğitiminde Bilgi ve İletişim Teknolojileri.

DEDICATION

I will like to dedicate this thesis to my father and my mother who just passed away. May they rest in perfect peace. They were waiting for my graduation and were wishing me good career but time and nature did not permit them to see me through. I also dedicate this thesis to the current government of Libya for awarding me a scholarship to study and complete my master degree.

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LIST OF ABBREVIATIONS

ATM	Automated Teller Machine
HDI	Human Development Index
ICTE	Information and Communication Technologies in Education
IDP	Internally Displaced Persons
NCES	National Center for Education Statistics
UNDP	United Nations Development Program
UNESCO	United Nations Education, Scientific and Cultural Organization
UNESCO	United Nations Education, Scientific and Cultural Organization

Chapter 1

INTRODUCTION

1.1 Background

In this 21st century, Information and Communication Technology (ICT) in Education has become a very important aspect of academic development. This is very evident in the fact that every field of human endeavor is now digitalized (Zheng et al., 2017; Albion & Tondeur, 2018). Information Technology has made many important activities very easy accessible and easy to conduct. And so it is no surprise that Education, which is intrinsic to human development and advancement, has adopted many forms of digitization to further its cause in teaching and learning. Every part of the developed world has capitalized on used highly sophisticated modes of Information Technology to foster the various styles of Teaching and Learning and this has brought about critical improvement on cognitive processes as well as old methods of pedagogy. It is for this reason that Libya which is a very important country in Africa as well as one that is currently convalescing from a Civil War that took place six years ago.

A large number of schools and educational institutions in some developed countries rely on technology for successful teaching and learning. Libya is a developing country in North Africa with huge educational potentials in ICT in education. In the context of ICT in education from the perspective of teachers using ICT to lecture in secondary school has become important. For the past decades the traditional method

of teaching has been completely replaced by the use of ICT in Libya (Amro, 2015). However, this modern approach is taking time to develop in various secondary schools. The new ways of teaching and learning is also essential as the population of the country is growing daily. The ministry of education has therefore increased the number of teachers and computers in each secondary school to deal with the task. Libya has become the most important country in Africa to use ICT by teachers for daily teaching activities (Murcia, 2014; Lim & Hang, 2003; Jaffer, Ng'ambi & Czerniewicz, 2007). Training programs supported by the ministry of education in Libya are organized at the end of each semester for teachers to upgrade their skills in the use of the ICT tools in the teaching process in schools. ICT has a positive contribution to education in many countries including Libya. Because of this high contribution, the government of Libya has invested in a lot of resources in training teachers to use tool create an interactive environment between students and teachers (Wang et al., 2009; Wang, 2008). It is believed that with the use of ICT promotions in schools an interactive tool for teaching will help students develop strong educational skills.

1.2 Aim of the Study

The purpose of this study is to examine teachers' opinions about the use of ICT in Libyan secondary schools. The study analyzed the integration and the utilization of ICT in various selected secondary schools across the country. Due to the reasons that teachers are profoundly involved in the teaching of ICT in the secondary schools, their opinions about the program will play important role in the Libyan educational system with regards to the use of the application. Based on teachers perceptions and opinions about the use of the ICT application in the school can lead to suggestion and early correction of unforeseen problems.

1.3 Research Questions

The purpose of research questions is to address the study objectives. This research, therefore, seeks to answer the following questions to clarify the aim of the study.

1. What are the teachers' opinions about using ICT in secondary schools in Libya?
2. What are the teachers' opinions about using ICT in secondary schools in Libya according to gender?
3. What are the teachers' opinions about adopting ICT in secondary schools in Libya according to age?
4. What are the teachers' opinions about adopting ICT in secondary schools in Libya according to the educational background?
5. What are the teachers' opinions about adopting ICT in secondary schools in Libya according to teaching experience?

1.4 Significance of the Study

Libya is a developing country in North Africa with huge educational potentials in ICT in education. In the context of ICT in education from the perspective of teachers using ICT to lecture in secondary schools has become important (Lindberg et al., 2017). For the past decades, the traditional method of teaching has been completely replaced by the use of ICT in Libya (Alayyar et al., 2018). However, this modern approach is taking time to develop in various secondary schools. The new ways of teaching and learning are also essential as the population of the country is growing daily. The ministry of education has therefore increased the number of teachers and computers in each secondary school to deal with the task (Brambilla, 2018). Libya has become the most important country in Africa to use ICT with trained teachers for daily teaching activities (Kirkscey, 2012). Training programs supported by the

ministry of education in Libya are organized at the end of each semester for teachers to upgrade their skills in the use of the ICT tools in the teaching process in schools (Amro, 2015). Furthermore, ICT has positive contribution to education in many countries including Libya. Because of this high contribution, the government of Libya has invested in a lot of resources in training teachers to use ICT tools to create and discuss with learner and instructors (Kirkup et al., 2005).

It is believed that with the use of ICT promotions in schools an interactive tool for teaching will help students develop strong educational skills. This study intends to investigate the teachers` capabilities of using ICT in their teaching and what effects it brings on the students learning levels, in order to facilitate and implement higher Education level.

1.5 Limitation of the Study

The samples involved in the research were 87 teachers using ICT as a tool to teach students in secondary schools. The research was conducted in spring 2017 in Libya. ICT in schools is not a simple cure for problems solution and underachievement.

1.6 Using ICT in Secondary School

The importance of ICT in education lies primarily on the various benefits it provides to both teacher and learner alike. One very profound effect that ICT has on students is the enhanced attention and motivation it provides. In almost every case, the students suddenly become fully attentive and engaged in classrooms with SMART-BOARDS and projectors. Such amplified heights of attentiveness always allow for profound motivation (Hill & Hannafin, 2011). The tasks and activities involved in such technology are usually fun-based with very attractive designs that have a feel of a game rather than arduous schoolwork. This factors in an innovative new style of

teaching which gives a feel of learning through playing and such an approach has a lot of benefits, most especially seen in institutions that teach language (Gokturk 2012). Such heightened motivation and eagerness to learn and participate in an innovative pedagogical technique which can greatly influence student performance and willingness to learn and understand (Thongnoppakun & Yuenyong, 2018; Adeyeye et al., 2018; Graham, 2017).

Moreover, the inclusion of ICT into the educational sector has brought about an unmistakable change from “teacher-centered approach” whereby the students had to listen and focus on their instructors to “learning-centered approach” which constitutes a balanced teaching technique whereby student and instructor interact and share ideas for a better understanding of what needs to be learned. The role of a teacher as that centralized force could disrupt the traditional learning process if ICT is introduced into the classroom (Kler,2014; García-Valcarcel, 2009; Anwar,2018).

Today, teachers or instructors play the role of facilitators. In this way, they become individuals who facilitate learning in a classroom environment. Communication and fostering of group work is what this learning based approach encourages and so no student is left behind as they constantly interact with their peers.

This groundbreaking innovative method of teaching was brought about by ICT and its now contributing to the augmentation of independent thinking which should be the main of any educational system (Savignon 1997). This epistemological change is known as constructivism whereby learners construct sensible and logical concepts which have a sound basis and relationship with the external world is what educationists now realize to be the breakthrough brought about by the introduction of

technology into the classroom (Sobral, 2014). ICT has transformed the classroom into a place that supports multiple perspectives and interpretations of reality through the logical construction of knowledge and experiential memories (Jonassen, 1991). Furthermore, ICT in education provides access to information and research materials on the internet which allows teachers and students alike to put up their works online. E-libraries, Internet Archives and academic articles can easily be accessed from anywhere across the globe and this can easily be done using the Internet. These can also easily be updated, analyzed, debated upon and/or criticized by people thereby bringing about new ways of thinking about issues and their solutions (Ramey 2012). E-learning can be done anywhere from the planet despite the vast distances between teacher and student. Technology into education has also identified various modes of learning which are particular to individuals.

In addition ICT has proven that every human learn things better depending on whether they see it being done (i.e. Visual); whether they hear about how it is being done (i.e Audio) and whether they are made to do it by themselves This system is for Visual Audio Learning Modes and is widely used in countries that utilize ICT in their educational system. Many studies have shown that even back in the early 90s, computer-based learning has positive effects on the performance of students, especially when compared with traditional pedagogical practices (Nikou & Economides, 2018; Shyr & Chen, 2017; Chee, Yahiya & Ibrahim et al., 2018).

Besides, the successful utilization of ICT to achieve the positive effects in teaching and learning can prove challenging when the pedagogical methodology, personal beliefs and knowledge base of the teacher comes into play. In many schools, the

teacher is almost always the one who is responsible for making decisions on the kind of pedagogical practice that will be applied in the classroom. Individual preference or disposition has a great influence on how and why a teacher may choose to allow for the use of technology in the classroom (Perera et al., 2018; Davis, 2018). For instance, a teacher in a secondary school may feel that students in the classroom should learn to read and write in the traditional way. The teacher may prefer written assignments than typed ones because of the belief that writing will improve the handwriting of the students. Other teachers may favor typing and reading skills because of the belief ICT can improve the skills of typing documents (Hillesund, 2007; Bannigidad & Gudada, 2016).

This by no means testifies to the fact that ICT is used in English classes as there are many English teachers who use it effectively in teaching writing skills (Zhao & Frank, 2003). Moreover, some Mathematics teachers prefer to teach the subject using the teacher-centered approach because of the fact that the subject requires repetition and imitation. Hence, most teachers will adopt the pedagogy that best fits their beliefs and preference on what they view as the best way to teach (Norton et al., 2000).

Another challenge can be observed when a teacher's negative disposition towards using technology stems from poor ICT skills and knowledge. It has been observed in many case studies that teachers with good ICT skills used it and encouraged its use more than those that have little or poor ICT knowledge base (Woreta et al., 2013). The teachers that used technology in their classrooms were very comfortable with using due to their advanced knowledge of its applications and software. These

teachers were able to harness the true potential of technology in education thus bringing into effect that paradigm shift from teacher centered to learning-centered pedagogy. These teachers appeared to be more in control of the flow of their skill in innovative pedagogical practices than their peers who had little ICT skills.

Those teachers that do not have many skills in ICT prefer to undergo some learning to be able to use the ICT approach to conduct lectures. Many even confess that the reason for this is because of their lack of computer know how and thus lack of confidence in using it in their classrooms should be changed to the new innovative technology of ICT (Yunus, 2007). Furthermore, lack of infrastructural facilities such as computers, smart-boards, projectors, internet and electricity can give rise to problems which hamper the use of ICT in schools (Adomi & Kpangban, 2010).

These problems can easily be circumvented with government policies to provide necessary infrastructure as well as provide training and development to teachers that need it. The training programs also need to provide awareness as to the successful achievements and breakthroughs ICT has to offer. This is because in many societies, ICT is sometimes viewed in a negative light due to the drastic changes it brings about to the curricula and pedagogical practices. Such problems are brought about by the deep rooted traditions and beliefs of educational systems in society. This even poses a bigger problem than lack of skill on the teachers' part. It may take years before the complete integration of ICT is attained globally.

The changes which it brings into school curricula are immense. It may take a long time before it is realized. Established pedagogical policies and practices are taken for

granted and hardly ever reviewed. The difficulty in changing the system is a different case study in itself and is greatly underestimated by government policymakers in the educational sector (Maclean et al., 2018).

Libya now uses ICT to teach different courses. This has led to the improvement in communicative skills such as speaking and listening (Sabitha et al., 2013). Language classes now rely on computer-assisted language learning courses to teach the students English. This has greatly reshaped and restructured the way the language is being taught and it is one very crucial element in determining the effectiveness of using ICT in education in Libya. The use of ICT in language learning shows greater assurance in producing students that are very competent in speaking and listening (Farooqui, 2007).

The students' skills in communication and interaction in English is better and more fluent. In learning a language, it is better and more effective to use audio-visual materials so that the students can learn correct pronunciation of words and phrases in the language. Technology has provided these, allowing them to study more interactively. Moreover, computer-assisted language learning is a very effective tool that can be harnessed in teaching foreign languages. Lecturers use information and communication technologies (ICT) to teach in all levels of schools in Turkey (Yildirim, 2007). Furthermore, the research of Gulbahar and Guven (2008) indicates that ICT plays important role in the Turkish educational system. The studies of Rhema and Miliszewska (2010) suggest that government of Libya encourages the use of ICT in higher educational institutions in the country. It is further demonstrated that government via the ministry of education in Libya is deeply involved in the promotion and the utilization of ICT in secondary schools across the nation. A

research in large and small scale was conducted over several years to investigate the influence and impact of ICT in on teaching and learning qualities among various schools in Cyprus (Mama & Hennessy, 2013).

Table1: Use of ICT in various countries

Country name	Use of internet in percentages	Training teachers to use ICT to teach(ICT Skills)
Cyprus	60.3 (unlimited access)	Good ICT Skills
France	83.6(unlimited access)	Good ICT Skills
Italy	80.45(unlimited access)	Good ICT Skills
Belgium	90.01(unlimited access)	Good ICT Skills
Germany	98.04(unlimited access)	Good ICT Skills
Sweden	97.89(unlimited access)	Good ICT Skills
Norway	94.09(unlimited access)	Good ICT Skills
Libya	56(limited access)	Average

This table demonstrates that the various countries listed about based on internet usage statistics have no limitation to the access of internet there the use of ICT in school is vibrant (Igboaka, 2010). On table 1 it is observed that because Libya is recovering war and recession, it is not all parts of the country that has access to internet but the school and colleges where ICT is being introduced have internet to use the tool as a strategy to conduct the lessons.

Chapter 2

LITERATURE REVIEW

2.1 ICT in Education

ICT has in a large way been gradually adopted in almost every developed nation where it is a driving force for capacity building and rapid economic growth. This paradigm shift in teaching and learning has left educational institutions no choice but to adopt ICT into their curricula. In this digital age such a development must be embraced considering how rapidly the world is utilizing ICT in all facets of human endeavor (Ali et al., 2010).

In addition, proper integration of ICT into educational systems brings about qualitative and innovative methods of teaching styles and pedagogical approaches which transform the traditional methods of teaching and learning to ICT approach (Wilson et al., 2017).

From elementary school up unto the end of preparatory school, Libyan education is free. In most cases, the government even sponsors a good number of individuals abroad to study. The educational system in the country is very diverse and widespread, even catering for nomads and rural dwellers in far flung regions as well as providing extra support and other amenities to those who excel in courses of national importance. (Van Vught, 2008; Riehl, 2009).

The research of Sam and Snowden (2005) defined ICT as a useful technological resource for communicating, creating, dissemination and managing various type of information. The application of ICT tools in classrooms are increasing exponentially and are having a very critical effect on pedagogical approaches. ICT are tools used to facilitate information sharing and resource assessment among teachers and students (Selwyn, 2007). Due to the use of ICT by teacher in schools, many aspects of teaching in various fields have changed (Mbam, 2017).

The adoption of ICT in education greatly depends on the experience and level of skills of the teachers. ICT role in teaching and learning hinges on its capacity to modify and enhance teaching styles and learning experience. It facilitates accessing and sharing of information and this in itself has allowed for the paradigm shift in educational approaches in this age. Its potential lies in its capacity and applications in this age of information. It can be applied in almost every field of human endeavor as it offers solutions to problems encountered in every facet of life.

The easy access to information which ICT has brought about facilitates innovative ideas on global scales (Mondal et al., 2012). The application of ICT in teaching and learning must be of utmost importance to every nation because it makes available educational materials, resources and information to individuals from different backgrounds and different modes of learning. The first step in accomplishing this will, thus, be to provide teachers and instructors with tools and training on ICT so that they can begin to apply them to their teaching pedagogical approaches. ICT has the capacity to modify and enhance learning experience through its uses in its audio

and visual features (Poria et al., 2016). The digital world today has made ICT a very important aspect of education.

Teachers who have access to information and a wide array of resources to help them improve their skills use different styles in getting their message across to the learners via the use of ICT (Guerza, 2015). The application and implementation of ICT in education greatly alter the traditional approach of learning which has a lot of impact on not just the learner but also the teacher as well. ICT provides a learning environment which encourages communication and exchanging of ideas and concepts between teacher and learner. This style of learning allows for free flow of information and dissecting of knowledge in order to reach clearer and more logical conclusions on concepts. This pedagogical approach, which ICT has brought about, has altered the learning environment into a place where concepts and information are shared and built upon (Bento et al., 2003).

The internet has eased the flow of information and resources across the globe. It is one of the major factors that have made the world a global village. Distance and International protectionist barriers are virtually disregarded as a result of the internet's application in daily life. Its vast amount of resources and information make it a very important aspect of education, especially in higher institutions. Advancements in information technology have revolutionized how things are conducted in the human world. Finding information on almost every aspect of life can easily be obtained from the use of ICT in research and fact-finding activities. The uses of ICT tools, such as the Internet allows teachers and students alike to have access to educational resources and information at any given time. This has a very

positive impact on the smooth flow of teaching and learning. Hence, the uses of ICT tools, which facilitate access to the Internet, is increasing rapidly in educational institutions.

The NCES (National Center for Education Statistics) investigated the rapid growth of Internet usage in high schools in the United States of America. This upsurge in ICT usage brought about an increased demand for teachers that had competent skills in such technologies so as to prepare the educational environs for adopting such technologies inside the classrooms. The adoption of ICT tools in education is applied in areas such as audio and video tutorials and other tutoring based programs which greatly assist and enhance the learning experience (Sobral, 2014). This pedagogical approach has as its basis, epistemological and philosophical viewpoints on how cognitive processes can be improved through stimulating responsiveness and motivation in learners. (Samuel & Rahman, 2018).

ICT tools have a wide array of applications in educational settings which have the capacity to provide empowerment to both teacher and learner in unprecedented ways (Brown, 2003; Falk-Rafael et al., 2004). Motivation and enhanced learner experiences allow individuals to express their ideas and viewpoints. Thus, learners become central in the classroom and are given the opportunity to engage in critical thinking which allows them to build upon concepts in order to arrive at logical conclusions which reflect reality (Stevenson 2011). The application of ICT in a classroom also has the effect of magnifying the teachers teaching abilities, thus, allowing for more effective teaching styles that have a greater impact on the students (Zeitouni & Milstein, 2017).

There is an exponential rise in the uses of ICT tools, especially smartphones and computers over the years, and this is mainly due to the fact that they have become essential tools in communication and information sharing. However, Smartphones are the most commonly used ICT device in the world and it can be used to do a number of things which are very important in the daily lives of human beings such as communication, calculation, research, security, social networking, banking and commercial activities.

In addition, Louw & Rankhumise (2017) further stated that the use of ICT tools have the capacity to have adverse effects on society as there is no barrier regarding information and communication restrictions especially with regards to smartphones. Many researchers have come up with varying factors that show that ICT use in daily life is not necessarily the bed of roses that most people view it to be.

Aside from the fact that one must keep up with the pace at which technologies are produced, ICT has some serious setbacks in its implementation in human society (Badia et al., 2017). It was probably to prevent such setbacks from gaining ground in the educational settings that Culp et al, (2003) suggested that teachers and instructors need to undergo training in order to ensure that they understand its implications and applications in education. Some researchers hold the view that ICT, in itself, does not improve learning experience. Instead, what it does is that it improves the already established pedagogical approaches and styles used by a teacher or school. Hence, the ICT uses in classrooms must be viewed as a means to an end and not an end in itself (Baldaque, 2014).

The application of ICT, no doubt, has numerous benefits in classroom settings as it has positive impact on the teaching and learning. Many researchers have pointed out that these benefits can easily be observed in the Apple Classroom of Tomorrow Project. The pedagogical approach shifts from teacher-centered to learner-centered. The learners are not just listeners but have a greater berth of participation in the teaching and learning going on in the classroom and having the freedom of expressing their ideas and building upon them. Another benefit of ICT based learning can be observed in its capacity for using simulations of models that mimic processes in reality. This has a very positive effect on the students understanding of concepts being explained especially in areas such as the Pure Sciences. Another instance regarding the benefits of ICT in education can be seen in Rodrigues (2003) investigation which examined the upsurge of motivation levels of students as they used multimedia tools in the classroom.

ICT has also inspired innovation in pedagogical approaches and teaching techniques which have beneficial effects on the cognitive and productive capabilities of students and teachers. The innovative styles of learning and paradigm shift from the traditional approach have resulted in increased interaction and participation among students as well as improved assimilation and cognition in the conceptualization of designs and knowledge (Majumdar, 2015).

Advancement in information and communication technology and its application into educational institutions has had a very powerful impact on learning. It has resulted in the move from traditional teacher-centered pedagogy to the more robust and

interactive learner-based style of teaching. Hence, teachers become facilitators and must therefore adopt ICT in their classrooms in order to enhance their skills as well as use various innovative styles of teaching to achieve maximum productivity. (Leach, 2008). Studies have indicated substantial evidence on the positive impact ICT has on both teacher and learner (Berhane, 2012).

2.2 Implementation of ICT in Libyan Education

The main aim of integrating and implementing ICT in Libyan educational policy is to provide capacity building and intellectual support for the populace. Its proper use ensures accessibility to resources and materials which facilitate research and development in think tanks and focus groups. The capacity building of human resources is able to attain its peak with ICT support invested in its endeavors. Foreign agencies such as the UNDP (United Nations Development Program) and UNESCO (United Nations Education, Scientific and Cultural Organization) collaborate with the Libyan government in order to attain the smooth implementations of these goals and objectives. Such collaborations provide opportunity for countries to work together in encouraging the growth and development of ICT integration on a global scale (Broeck et al., 2011).

The use of ICT gives room for different styles of teaching and learning which can be tailored to suit the needs of different individuals in different circumstances. Since ICT integrated modes of teaching and learning are slightly different from the traditional approach, most school curricula require some major modifications and alterations in their structure in order to allow for effectual integration of ICT (Andersson & Grönlund, 2009). Educational policy makers must be able to design courses and educational programs based on specifics which facilitate the instilling of

ICT tools in the curriculum. It must be noted that this actually compounds the problems and challenges which the Libyan educational system is already facing as policy makers must also ensure that all modifications are in line with the recommendations of the Ministry of Education (Gaudio et al., 2010).

Hofstede (1980) defined culture “as the collective programming of the mind that distinguishes the members of one group or category of people from another” (Hofstede, 1980, p. 25). This definition brings to mind the idea which may explain the reasons for people’s differed views and attitudes towards ICT in teaching and learning. Hence, this issue must be factored into how ICT educational programs are to be designed. They must be tailored to suit the cultural backdrop of different cultures. The design and structure of software and applications must be conducted with the consideration of the cultural and ethical sensitivities of the individuals involved (Elbeltagi et al., 2005).

Global statistics indicate a high HDI (Human Development Index) for Libya, ranking it in the first three countries on the African continent. Libya has always recognized the need to ensure proper education for its populace. Its government has been formulating reforms and large scale plans in developing ICT infrastructure It has also been working towards integration of ICT related schemes into its national curriculum (Lai & Pratt, 2004; Kirkscey, 2012). All this is because of the nation’s aspirations to become the major role player in initiating global standards and competitiveness in Africa.

The main drive and incentive from previous studies and backgrounds point towards the various ways which technology has taken over mostly every facet of human endeavor. The world is now a digitalized environment with everything running on computers and software. ICT tools and applications are used and applied to solve problems and facilitate processes in daily life. A country such as Libya, which has one of the highest Human Development Index in the African continent, must ensure it maintains its national standards as well as play an exemplary role to other countries to follow (Kenan et al., 2011). The Libyan government has been making reforms which lean towards ensuring that ICT is integrated in every educational institution in the country. The citizens of the country are thus motivated to conduct case studies on the effectiveness and feasibility of the integration of technology in its schools.

The realization of such plans must result in the consolidation of Libya's position as one of the most developed countries in Africa (Abod-her, 2013; Elzawi & Wade, 2012). Moreover, the widespread adoption and integration of ICT in education across developed countries cannot be discounted as this serves as an unmistakable indication of its importance and effectiveness as a vital element in capacity building as well as national growth and development furthermore (Rhema & Miliszewska, 2014; Othman et al., 2013). In Libya, its effectiveness in education can be especially observed in case studies that shows its value in language learning classes. Audio and Video components have facilitated learning in the aspects of improved pronunciation as well as listening and speaking skills. For using ICT in English language classes has boosted competence and confidence in students in classrooms (Elzawi et al., 2012; Abidin et al., 2011). The English language has become a very important language and over the years it has become a requisite for obtaining good jobs and

career boost in every country around the world. Another motivated standpoint can be observed in case studies which focus on the effect of using ICT on the relationship among students and teachers. It has also brought about innovative styles of teaching and learning patterns.

In addition it has also provided accessibility and possibility of distance learning tools via its various tools and equipment (e.g. computer, internet, smartphones, tabs). Furthermore many studies have presented findings which indicate improved assimilation and engagement of students through the use of ICT in classrooms (Biagi & Loi, 2013) Substantial evidence exists in a great number of case studies support the claim that incorporation of ICT into education offers excellent pedagogical systems and learning environment which are effectual for both teacher and learner alike. It can be inferred that a major motivating factor for the study of the importance of ICT is its effectiveness and efficiency in the role it plays in overall development.

Chapter 3

METHODOLOGY

3.1 Introduction

The objective of this chapter is to discuss the research methodology, participants, data collection tool and techniques, and data analysis, which employed for the current study.

3.2 Research Methodology

The research is carried out based on quantitative method and design via the use of survey questionnaire. The research intends to investigate the use of ICT by teachers as an interactive tool to discuss lectures in the classroom environment in Libya.

Quantitative method focus on practical evaluation and the mathematical measurement of information gotten via survey instrument or through manipulating pre-existing mathematical information by adopting computational strategies. Quantitative studies concentrates on putting measurable information and generalizing such information across several groups of individual or to analyze a type of situation (Babbie, 2010).

3.3 Participants

The participants in this study are 87 teachers from secondary schools in Libya who are involved in the use of ICT to conduct teachings in their various subjects in the classrooms. This research intend to provide insight into issues of the use of ICT in secondary schools and to develop ideas for the quantitative research method intended

to be used in this research. Set up questionnaire will be distributed to the participant to decide on the use of ICT in secondary schools in the destination stated previously.

Table 2: Demographic Information of the Teachers

		Frequency	Percent
Gender	female	42	45.2
	Male	45	48.4
Age	20-25	13	14.0
	26-28	16	17.2
	29-30	20	21.5
	30 and above	38	40.9
Teachers experience	1-5 years' experience	6	6.5
	6-10 years' experience	26	28.0
	11-15 years' experience	20	21.5
	More than 15 years' experience	26	28.0
Educational level	Diploma	22	23.7
	Bachelor degree	49	52.7
	Master degree	16	17.2

As it can be seen in table 2 above, the participants for the study are made up 45.2% (42) female and 48.4% (45) male teachers. For their ages, 14.0% (13) falls within the ranges of 20-25 years of age, while 17.2% (16), 21.5% (20) and 40.9% (38) of the teacher participants fall within the ages of 26-28, 29-30 and 30 years and above age respectively. According to the teachers' years of teaching experience level showed that 6.5% (6) fall within the range of 1-5 years of experience, also, 28.0% (26), 21.5% (20) and 28.0% (26) all fall within the range of 6-10 years of experiences, 11-15 years of experience and above 15 years of experience respectively. According to the educational level of the teacher participants, it can be seen that 23.7% (22) of the

teachers have diploma certificate, while, 52.7% (49) and 17.2% (16) have bachelor and master degree certificate respectively.

3.4 Sample Size Calculation

Based on sample size calculation formula, 95 percent confidence interval with a rate of 1.96^2 was marked. The standard deviation was noted to be 18^2 and the error rate was 4^2 . The formula was therefore tabulated below to indicate the sample size.

$$N = \frac{1.96^2 * \sigma^2}{E^2}$$
$$\frac{1.96^2 * 18^2}{4^2} \quad N= 87$$

This suggests that the sample size through the use of the formula is; 87. Though 120 questionnaires were distributed to the respondents 33 of them were destroyed due to inappropriate answers and some were blanks meaning respondent did not provide any answers to them (Peyre et al., 2011).

3.5 Data Collection Tools

There are many ways or methods of collecting data for a research but the two most important popular methods are mixed research approaches. In this research the quantitative method is utilized.

3.6 Questionnaire

Questionnaires are used as tools for data gathering to find out the viewpoints of teachers' opinions towards using ICT in education.

The questionnaire set for this investigation were developed and set to get appropriate response for the subject matter. The respondents were requested to select their answers based on the Likert scale of strongly disagree =1 to strong agree = 5. The questionnaire had only one section which was the measurement of the teacher's opinion about the use of ICT in the secondary schools in Libya.

The use of questionnaire are preferred by majority of researchers because questionnaire provides, clear, accurate and specific response to participants and respondents are able to express their views freely mostly especially teachers who are too busy to attend personal interviews. Questionnaire instrument used for this research was developed by Eid Alharbi (2014) in his work "A Study on the Use of ICT in Teaching in Secondary Schools in Kuwait".

3.7 Data Analysis

The collected data of this study were analyzed through SPSS software, version 22. Moreover, independent sample t-test was computed to consider the significance variance among males and females. Furthermore, one way ANOVA test was employed to test if there are significant differences based on the teachers' experiences, their ages and quantitative data significance was considered based on $p < 0.05$.

3.8 Reliability and Validity

It is important for reliable and valid questionnaire to be developed, researchers have to take into consideration the detail of the information they are searching for to create the data in connection with the study questions (Anderson, 2004). Good research questions produce great evaluations through which the study aims to respond to the research study questions. The recent survey questionnaire was created to target the

ICT in education teachers with Cronbach alpha for teacher categorized item 0.952, 0.897, 0.678 and 0.923 Alharbi (2014).

Because the research is focus on the nature of ICT in education teachers in Libya, it is significant to distribute questionnaire related to teachers in all the selected schools. This will also further help in the analysis of the questionnaire when they are distributed to the respondents to test the understanding of Science, Mathematics, physics, chemistry and biology through the use of ICT.

Table 3: General Reliability Statistic Test

N of Items	Cronbach's Alpha
12	.74

The outcome showed that all the scales have Cronbach's alpha value above the standard scale of 0.7. The result of the Cronbach's alpha coefficient showed in Table 4 containing evaluation of scores which is according to the research participants, (n=87), (.74). Hence the outcome shows a huge amount of reliability for all items of this study.

(Sekeran, 2003) stated that, scale reliability finds how strong a survey item toolset and more connected to one another and also to the research question. (Pallant, 2001) stated that, item reliability also focuses on how close the items are arranged to evaluate the topic of research. The most famous way to measuring the consistency in relation to the measurement is adopting Cronbach's Coefficient alpha.

“Besides, Joope (2000) discussed that, the qualitative validity of level in research identifies the correctness of research’s evaluation and result, in addition validity of qualitative study can be determined by posing questions and examining other investigators.”

3.9 A Pilot Study

Pilot study is used to strengthen validity and the reliability of the use of the survey question (Cohen, 2008). The research of George et al., (2011) reveals that the most acceptable way of piloting is to test survey question with a sample of people who have relevant expertise in the field of the study to predict any problem or any source of misunderstanding in the research questions. Pilot studies are therefore always conducted to make sure the questionnaires are understandable to collect data before the final research is done.

In the case of this study, a group of teachers and students outside the selected schools were used for the pilot study and the questionnaire was found understandable. Questionnaire was directly distributed to the above stated relevant expertise to answer as a based to find out the reliability and understandability of the questionnaire before the final distribution to stated respondents. Since errors or misunderstanding of the questionnaire was not noticed, the questionnaire was used for the intended study.

3.10 The Result of Pilot Study

After the completion of the pilot study, the questionnaire was accepted as prepared in their right format and was approved by the supervisor. A letter was then sent to Libyan ministry of education to ask for permission to conduct the study in the various selected schools. The permission was obtained and a date was set to travel to

the various schools to conduct the interviews. The researchers were allowed to distribute questionnaire directly to the teachers in the schools. The questionnaire were categorized, numbered and collected.

Chapter 4

FINDINGS AND ANALYSIS

This section of this research work focuses on evaluating data obtained through the study. The analysis tools computed on the data contains descriptive analysis (mean, standard deviation) and frequency on the demographic. Furthermore, independent sample t-Test analysis is applied to the gender, which includes two groups. Moreover, ANOVA analysis is calculated on the ages of the teachers, teachers' experience, and educational levels of teachers. Subsequently, variables with significant differences are analytically discussed.

4.1 Teachers' opinions about adopting ICT in secondary schools in Libya

Table 4 illustrates the descriptive analysis of secondary school teachers' opinion regarding use of ICT in education.

Table 4: Descriptive Evaluation of secondary school teachers' opinion regarding use of ICT in education

Questi ons	SD		D		U		A		SA		Mean \bar{X}	SD
	N	%	n	%	n	%	n	%	n	%		
Item1	0	0	0	0	0	0	17	18.3	70	75.3	4.80	.399
Item2	0	0	14	15.1	0	0	0	0	70	78.5	4.84	.370
Item3	0	0	0	0	0	0	17	18.3	70	75.3	4.80	.399
Item4	0	0	0	0	0	0	21	22.6	66	71.0	4.76	.430

Item5	0	0	0	0	0	0	27	29.0	60	64.5	4.69	.465
Item6	0	0	0	0	2	2.2	28	30.1	57	61.3	4.63	.531
Item7	0	0	0	0	0	0	18	19.4	69	74.2	4.79	.407
Item8	2	2	0	0	0	0	19	20.4	66	71.0	4.69	.704
		.										
		2										
Item9	0	0	0	0	0	0	41	44.1	46	49.5	4.53	.502
Item10	0	0	0	0	0	0	19	20.4	68	73.1	4.78	.416
Item11	0	0	0	0	3	3.2	37	39.8	47	50.0	4.51	.568
Item12	0	0	0	0	0	0	20	21.5	67	72.0	4.77	.423

In Table 4, all of the participants has a huge reply in their behavior regarding using ICT, $\bar{x}=4.51$. Moreover, the whole items mentions the advantage of using ICT not only into school but also into everyday work activity. Besides, over 70% of the individual items have a maximum points between agree and strongly agree to the positive item statements towards ICT usage, thereby proving an acceptable attitude towards ICT by the teacher participants of this study.

Kennewell (2005), found in his study, which carried out in schools in Wales about “ICT integration for teaching and learning”, found that instructors have grown enough in either instruction and content via both personal and interactive inclusion of ICT within their instruction process, with a mean thresholds of above (3.98) for all his selected items in his instrument.

In addition, Table 5 demonstrates a significant mean point for item 1, item 2 and item 3 by having the highest score of 4.80, 4.84 and 4.80 respectively. This shows that teachers indulge a high practice of adopting ICT tools for teaching and learning practices, attaining their teaching targets and objectives and also adopting other

internet related functions for their daily work activities. This is also visible from the high rate of responses by the teachers, by agreeing and strong agreeing that they generally use ICT for teaching and learning purposes.

Underwood (2006) in his study “digicompetency in education” found similar results proving that instructors use technology enhanced learning approaches to support and encourage novel educational settings to benefit their learners, showing a positive display of over 88% of respondents’ choices falling under agree and strongly agree for all his positive item statement toward the use of ICT in his study.

4.2 Teachers’ opinions about adopting ICT in secondary schools in Libya based on gender

This aspect focuses on the mean variables on gender in the research, via adoption of T-test measurement. Pallant (2007) stated that the outcomes gotten via measuring of gender shows the differing significant between two separate groups.

Table 5 Teachers opinions toward using ICT in Education based on gender

	gender	N	X	Sd	df	t	P
Item1	male	45	4.78	.420	85	-.647	.195
	female	42	4.83	.377		-.650	
Item2	male	45	4.84	.367	85	.139	.781
	female	42	4.83	.377		.139	
Item3	male	45	4.73	.447	85	-1.746	.000
	female	42	4.88	.328		-1.764	
Item4	male	45	4.80	.405	85	.927	.067
	female	42	4.71	.457		.924	
Item5	male	45	4.64	.484	85	-.937	.064
	female	42	4.74	.445		-.940	
Item6	male	45	4.62	.535	85	-.180	.819
	female	42	4.64	.533		-.180	
Item7	male	45	4.76	.435	85	-.889	.075
	female	42	4.83	.377		-.893	
Item8	male	45	4.76	.679	85	.903	.273
	female	42	4.62	.731		.901	
Item9	male	45	4.56	.503	85	.514	.476

	female	42	4.50	.506		.513	
Item10	male	45	4.84	.367	85	1.470	.004
	female	42	4.71	.457		1.459	
Item11	male	45	4.42	.583	85	-1.428	.381
	female	42	4.60	.544		-1.432	
Item12	male	45	4.78	.420	85	.174	.729
	female	42	4.76	.431		.174	

Table 5 shows the outcome analysis of the teachers participant responses based on their gender disparities. From table 5 above it is also visible that there is a significant differences between selected teacher participants based on gender on item 3, $t(85) = -1.746$ for male and -1.764 for female and item 10, $t(85) = -1.470$ for male and 1.459 for female.

However, other items showed a P value $> (0.05)$ significant point set for the study, which statistically represents that male and female teacher respondents holds no differences regarding gender in their various usage and adoption of ICT for teaching and learning practices via ICT, attainment of teaching objectives using technological tools such as PowerPoints, spreadsheets and excel, to carryout teaching practices in classrooms.

Furthermore, teachers' opinions based on their gender disparities hold similar responses on views about ICT making their teaching activities easier, enjoying its adoption in classroom, and not facing any problems regarding usage of such ICT tools.

Adam (2002) in a similar study “implementation practices of ICT tools for pedagogical skills” with $P > 0.05$ (0.63) found thus, experienced teachers either male or female integrate ICT tools in their daily work activities.

In addition, as Table shows, item 3 proves that there is a huge significant difference in the opinions of teachers according to their gender varieties, having a P value (.0001) < (0.05) standard score set for the study. This statistically proves to show that female teachers with mean (4.88) adopts functions related to internet in their teaching activities for their students than male teachers that holds (4.73) as the mean point of the item in the study.

Martin (2011) in his work “gender space in ICT” found that there seem to be a growth in the digital access for female in the education setting as more women are proving competent in using ICT tools in classrooms than male teachers. The study showed a mean score of 4.18 for female, higher than that of male of 4.10.

Table 5 also showed that in item 10 there is a great significant difference in the opinion of teachers according to their gender varieties, having a P value (.004) < (0.05) standard score set for the study. This statistically proves to show that male teachers with mean (4.84) believes that ICT is very important in teaching processes more than the female teachers that holds a mean score of (4.71) as the mean sore of the item in the study.

According to Laura (2014), stated that in their work “digital divide between the two gender” displayed that male continuously prevails more than the female in public use of ICT such as public technology areas, libraries and classrooms are either in late

90's and late 2000's. according to their evaluation, among each 2 girl users, there is 3 boy users, also 40% girl to 60% boy and 61% boy to 39% girl between the periods under investigation; late 90's and late 2000's.

4.3 Use of ICT in Libyan Secondary School According to Age Differences, Years of Experience, and Educational level

In other to find the significant variance amongst more than 2 groups the One Way ANOVA analysis method is computed.

4.3.1 Teachers' opinions about using ICT in secondary schools in Libya according to age

Table 6: Teachers' opinion regarding use of ICT according to Ages

		N	Mean	Std. Deviation	Sig. Diff Between and Within Groups
1. teaching and learning practices via ICT	20-25	13	4.77	.439	.887
	26-28	16	4.88	.342	
	29-30	20	4.80	.410	
	30 and above	38	4.79	.413	
2. ICT attainment targets	20-25	13	4.85	.376	.694
	26-28	16	4.75	.447	
	29-30	20	4.90	.308	
	30 and above	38	4.84	.370	
3. Internet related teaching via ICT	20-25	13	4.77	.439	.652
	26-28	16	4.81	.403	
	29-30	20	4.90	.308	
	30 and above	38	4.76	.431	
4. Using power points to teach in class	20-25	13	4.85	.376	.385
	26-28	16	4.63	.500	
	29-30	20	4.85	.366	
	30 and above	38	4.74	.446	
5. <i>ICT related objectives of the school</i>	<i>20-25</i>	<i>13</i>	<i>4.69</i>	<i>.480</i>	<i>.038</i>
	<i>26-28</i>	<i>16</i>	<i>4.88</i>	<i>.342</i>	
	<i>29-30</i>	<i>20</i>	<i>4.45</i>	<i>.510</i>	
	<i>30 and above</i>	<i>38</i>	<i>4.74</i>	<i>.446</i>	
6. I enjoy learning with computers	20-25	13	4.54	.660	.405
	26-28	16	4.50	.516	
	29-30	20	4.60	.503	

	30 and above	38	4.74	.503	
7. I do not face problems using ICT in class	20-25	13	4.85	.376	.667
	26-28	16	4.88	.342	
	29-30	20	4.80	.410	
	30 and above	38	4.74	.446	
8. ICT makes teaching easy in schools	20-25	13	4.46	1.127	.567
	26-28	16	4.63	1.025	
	29-30	20	4.75	.444	
	30 and above	38	4.76	.431	
9. I use power points to teach in class	20-25	13	4.46	.519	.870
	26-28	16	4.50	.516	
	29-30	20	4.50	.513	
	30 and above	38	4.58	.500	
10. ICT is very useful in teaching processes	20-25	13	4.92	.277	.321
	26-28	16	4.88	.342	
	29-30	20	4.70	.470	
	30 and above	38	4.74	.446	
11. I use spreadsheet to teach students	20-25	13	4.46	.519	.382
	26-28	16	4.31	.793	
	29-30	20	4.50	.513	
	30 and above	38	4.61	.495	
12. I use Excel and power point to teach	20-25	13	4.69	.480	.083
	26-28	16	4.94	.250	
	29-30	20	4.60	.503	
	30 and above	38	4.82	.393	

Table 6 shows the outcome analysis of the teachers' opinion based on their age variances, there is a significant difference among them. The result of item 5 shows that teachers are agreed about using ICT makes relation to be study subject to be delivered at school.

Besides, in the rest items, the responses shows that teachers' opinion are similar since there is no significant difference occurred and the result of the p for all is greater than .05.

William et al (2010), carried out a study about “age and ICT attitude of teachers across primary and secondary schools in Scotland”. They found out that secondary schools teachers have are having different perceptions based on the age groups. Hence, the majority of teachers had similar opinions regarding positive influence of ICT in education.

Table 7: Teachers’ opinion regarding use of ICT in related objectives of the school based on ages

Ages of Teachers	N	X	SD
20-25	13	4.69	.480
26-28	16	4.88	.342
29-30	20	4.45	.510
30 and above	38	4.74	.446

Table 8: Attitudinal differences towards teachers’ opinion of using ICT based on teachers’ ages

Source of Variance	Squares of Sum	Degree of freedom	Square`s Mean	F	P
Between Groups	.025	2	.012	.089	.038
Within Groups	11.722	84	.140		
Total	11.747	86			

According to the Table 7 and 8, there are significant differences on the opinions of teachers based on their age, f (0.86) and P value of (0.038) > (0.05). This statistically means that age of teachers between 26-28 tend to show a higher response with a mean score of (4.88) on their usage of related ICT tools in carrying out their objectives in the school.

In addition, teachers who are over 30 years showed higher response with a mean score of (4.74) to the adoption of ICT tools for education compare to those who are

within the range of 20-25 by having a mean score of (4.69). The teachers with the lowest mean set score of (4.45) are those in the range of 29-30, which rarely adopt ICT tools for their usual school objectives, believing that other ways to achieve such objective could be very proficient for their adoption.

Davis (2006) in his study “ICT and its implementation” found that age is in a positive relationship with the attitude towards technologies, p value (0.01) where older teachers were always using ICT for teaching than younger teachers.

4.3.2 Teachers’ opinions about adopting ICT in secondary schools in Libya based on years of experience

Table 9: Teachers’ opinion regarding use of ICT according to years of experience

		N	Mean	Std. Deviation	Sig. Diff Between and Within Groups
1. teaching and learning practices via ICT	1-5 years	26	4.88	.326	.592
	6-10 years	20	4.80	.410	
	11-15years	26	4.73	.452	
	More than 15 years	15	4.80	.414	
2. ICT attainment targets	1-5 years	26	4.88	.326	.129
	6-10 years	20	4.95	.224	
	11-15years	26	4.81	.402	
	More than 15 years	15	4.67	.488	
3. Internet related teaching via ICT	1-5 years	26	4.81	.402	.261
	6-10 years	20	4.95	.224	
	11-15years	26	4.73	.452	
	More than 15 years	15	4.73	.458	
4. Using power points to teach in class	1-5 years	26	4.85	.368	.471
	6-10 years	20	4.80	.410	
	11-15years	26	4.69	.471	
	More than 15 years	15	4.67	.488	
5. <i>ICT related objectives of the school</i>	<i>1-5 years</i>	<i>26</i>	<i>4.58</i>	<i>.504</i>	<i>.000</i>
	<i>6-10 years</i>	<i>20</i>	<i>4.40</i>	<i>.503</i>	
	<i>11-15years</i>	<i>26</i>	<i>4.92</i>	<i>.272</i>	
	<i>More than 15 years</i>	<i>15</i>	<i>4.87</i>	<i>.352</i>	
6. <i>I enjoy learning</i>	<i>1-5 years</i>	<i>26</i>	<i>4.85</i>	<i>.368</i>	<i>.001</i>

<i>with computers</i>	<i>6-10 years</i>	20	4.85	.489	
	<i>11-15years</i>	26	4.42	.578	
	<i>More than 15 years</i>	15	4.33	.488	
7. I do not face problems using ICT in class	1-5 years	26	4.73	.452	.456
	6-10 years	20	4.75	.444	
	11-15years	26	4.81	.402	
	More than 15 years	15	4.93	.258	
8. ICT makes teaching easy in schools	1-5 years	26	4.73	.452	.350
	6-10 years	20	4.90	.308	
	11-15years	26	4.54	.859	
	More than 15 years	15	4.60	1.056	
9. I use power points to teach in class	1-5 years	26	4.46	.508	.746
	6-10 years	20	4.60	.503	
	11-15years	26	4.50	.510	
	More than 15 years	15	4.60	.507	
10. ICT is very useful in teaching processes	1-5 years	26	4.73	.452	.477
	6-10 years	20	4.75	.444	
	11-15years	26	4.77	.430	
	More than 15 years	15	4.93	.258	
11. I use spreadsheet to teach students	1-5 years	26	4.54	.508	.029
	6-10 years	20	4.35	.489	
	11-15years	26	4.38	.697	
	More than 15 years	15	4.87	.352	
12. I use Excel and power point to teach	1-5 years	26	4.73	.452	.235
	6-10 years	20	4.65	.489	
	11-15years	26	4.81	.402	
	More than 15 years	15	4.93	.258	
			4.88		

Table 9 shows the outcome analysis of the teachers' opinion based on their years of experience disparities. It can also be seen that there is a significant differences between selected teacher participants based on years of experience in item 5, item 6 and item 11. Nevertheless, other items in are all proved a strong similarity of responses or no significant difference occurred on their various usage of ICT regarding their years of experience differences.

Table 10: Teachers' opinion regarding use of ICT in education based on years of experiences

Ages of Teachers	N	X	SD
1-5 years	26	4.58	.504
6-10 years	20	4.40	.503
11-15years	26	4.92	.272
More than 15 years	15	4.87	.352

Table 11: Attitudinal differences towards teachers' opinion of using ICT related according to years of experience

Variance Source	Sum of Squares	df	Mean Square	F	P
Between Groups	3.895	3	1.298	7.318	.000
Within Groups	14.726	83	.177		
Total	18.621	86			

Table 10 and 11 demonstrated the significant difference between teachers' responses according to the various years of experiences. It can be seen that the significant point F (7.318), P (0.00) is < (0.05) significant point set for the study. This statistically means that teachers with high level of experience ranging from 11-15, (mean=4.92), and more than 15 years of experience, (mean=4.87), usually use ICT tools for school objectives. However, teachers within 1- 5 years of experience, (mean=4.50), and 6-10 years of experience (4.40) find it usually uninteresting to adopt ICT tools for school objective in their daily tasks.

Moreover, Kelvin (2013), conducted a related study of about "adoption of technology for classroom optimization", hence he found that difference occurred in opinion from the outcome F (9.243), p=.011. Also it is stated in his hypothesis that a difference among levels of experience of instructor regarding ICT usage occur,

proving that older experienced teachers have the mastery to integrate ICT into objectives of the lesson than teachers with lower experience.

Table 12: Teachers' opinion about use of ICT in education according to years of experiences

Years of experience of teachers	N	X	Std. Deviation
1-5 years	26	4.85	.368
6-10 years	20	4.85	.489
11-15years	26	4.42	.578
More than 15 years	15	4.33	.488

Table 13: Attitudinal differences towards teachers' opinion of using ICT related to item 6 according to years of experience of teachers

Variance Source	S S	df	Ms	F	P
Between Groups	4.616	3	1.539	6.511	.001
Within Groups	19.614	83	.236		
Total	24.230	86			

Table 12 and 13 showed a significant difference point on the responses of teacher regarding how they enjoy learning with computers based on their years of experiences. The P values showed a point $(0.001) < (0.05)$ and F (6.511). This statistically mean that younger experienced teachers having 1-5 years of experience with mean (4.85) highly enjoys learning with computer and smart gadget as opposed to traditional methods of text and hard copies materials. Also, teacher with 6-10 years of experience proves to have same passion of learning via computer gadgets and material having similar mean outcome of (4.85).

Furthermore, teachers that has 11 to 15 years and above 15 years of experience showed (4.43) and (4.33) mean score respectively. This shows that the majority of high experienced teachers still adopt the traditional method for acquiring knowledge in teaching their students as against the contemporary way of teaching with ICT tools these days.

Hassan and Abdullah (2013) carried out a study about “the impact of teacher’s age in using ICT for EFL teaching”, so they discovered that old instructors are lower in confidence in handling ICT compare to the younger instructor that had high mean response of 4.89 against the older teachers with mean score of 3.4.

Table 14: Teachers’ opinion in regards to the adoption of ICT in education based on years of experience

Years of experience of teachers	N	X	Std. Deviation
1-5 years	26	4.54	.508
6-10 years	20	4.35	.489
11-15years	26	4.38	.697
More than 15 years	15	4.87	.352

Table 15: Attitudinal differences towards teachers’ opinion of using ICT according to years of experience

Variance Source	S S	df	MS	F	P
Between Groups	2.848	3	.949	3.165	.029
Within Groups	24.899	83	.300		
Total	27.747	86			

According to Table 14 and 15, it is showed that there is a significant difference point on the responses of teachers in regards to how they use spreadsheet to teach students based on their years of experiences. The result showed a point of $F(3.165)$, $P(0.029) < (0.05)$, which is the significant point set for the study. This statistically mean that younger experienced instructors who have more than 15 years of experience with mean (4.87) are highly enjoy using spreadsheets to teach students as opposed to traditional methods of manual manipulations of scores and text during classroom learning. Furthermore, teachers with 1-5 years of experience proves to have similar passion of adopting spreadsheets for classroom activities by having slightly close mean outcome of (4.54).

Teachers who have 6-10 and 11-15 years of experience are having mean score of (4.35) and (4.38) respectively, which showed a low motivation in the adopting of spreadsheet for data classification, auto-calculation and analysis of large data sets. Hence, this can stem from the issue of lack of possible skills to adopt such ICT tool and rather poor integration of such tools into the pedagogical patterns of classroom activities.

This finding is similar to established studies in the background of this work, which states that, more experienced instructors adopts ICT in their teaching processes. Such as, Egbert (2002) discovered that instructors that adopts CALL practices usually are those teachers that have ideas of it.

4.3.3 Teachers' opinions about adopting ICT in secondary schools in Libya based on educational levels

Table 16: Teachers' opinion towards the use of ICT in education according to educational level

Years of educational level of teachers	N	X	Std. Deviation
Secondary school	22	4.33	.456
Bachelor degree	49	4.53	.504
Master degree	16	4.75	.447
Total	87	4.53	.502

Table 17: Attitudinal differences towards teachers' opinion of using ICT based on educational level

Variance Source	Sum of Squares	df	Mean Square	F	P
Between Groups	2.110	2	1.055	4.530	.014
Within Groups	19.568	84	.233		
Total	21.678	86			

As Table 17 and 18 shows, there is a significant difference point on the responses of teacher regarding how they use PowerPoint to teach students based on their educational level. The outcome showed a point of F (4.530), P (0.014) < (0.05) significant point set for the study. This statistically mean that teachers with masters level of education whom has a mean score of (4.75) prefer to use PowerPoint to instruct their students as against the traditional method of writing on the chalk or white board. Similarly, teachers with bachelor degree prefer to adopt the use of PowerPoint tool to teach their students showing a mean score of (4.53) while teachers with secondary school cert having the lowest mean score of (4.33) do not always adopt PowerPoint tool for instructional purpose. This may be as a result of

poor handling of such tool or lack of competency in knowing how to utilize such ICT tool for classroom activities.

Furthermore, according to Russel and Bradley (1997), who pointed out in their work “competency for ICT adoption”, that the instructors hoped that more idea about computer is essential to feel confident during use of ICT tools within the class. Moreover, they stated that majority of teachers with a low level skill and qualification are tend to boycott the use of ICT tool that are vital to their teaching as a result incompetency and lack of required skills.

Table 18: Teachers’ opinion towards adoption of ICT in education according to educational level

Years of educational level of teachers	N	X	Std. Deviation
Secondary school	22	4.56	.213
Bachelor degree	49	4.76	.434
Master degree	16	4.96	.512
Total	87	4.77	.423

Table 19: Attitudinal differences towards teachers’ opinion of using ICT based on educational level

Variance Source	S S	df	M S	F	P
Between Groups	1.449	2	.725	4.362	.016
Inside Groups	13.953	84	.166		
Total	15.402	86			

As it can be seen in Table 19 and 20, there is a significant difference point on the responses of teachers regarding how they use excel and PowerPoint to teach students based on their educational level. The P values showed a point of F (4.362), P (0.016)

< (0.05) significant point set for the study. This statistically mean that teachers with masters level of education having a mean score of (4.96) prefer to use excel and PowerPoint to instruct their students as against the traditional method of writing on the chalk or white board and conducting manual calculation and manual analyses of large data set. Similarly, teachers with bachelor degree prefer to adopt the use of excel and PowerPoint tool to teach their students showing a mean score of (4.76) while teachers with the lowest mean score of (4.56) do rarely adopt excel and PowerPoint tool for instructional purpose, but tend to implement more traditional method to teaching their student as they deem it fit for their convenience. This may be as a result of lack of required skills in operating such ICT tool for daily teaching and learning processes.

Besides, this finding strongly relates to the background literature of the study of Teo (2008), he discovered that levels of educational qualification and computer adoption has a positive relationship to confidence of using ICT. Stating that highly qualified teachers who frequently adopts technology tends to be more confident in their adoption of ICT tool in classroom activities.

Chapter 5

CONCLUSION

This research focused on using ICT application by teachers in secondary schools in Libya. The result shows how teachers' opinions are vary relayed on gender, years of experience and age. Totally, 87 secondary school instructors has participated in this research in Tripoli, Libya.

The outcomes of the study has outlined that high school teachers have got a higher perception of the importance of ICT and obviously its adopted in their daily school lives.

Moreover, according to the outcome of the study, secondary school teachers showed that there is a huge significant difference in the opinion of teachers according to their gender varieties proving to show that female teachers adopts functions related to internet in their teaching activities for their students than male teachers.

Besides, the study proves to show that male teachers agreed to use ICT tools in education against female teachers. On top of that, this study shows that there is a significant difference on teachers' opinion according to their age.

Additionally, teachers between 26-28 are tend to show a higher response on their usage of related ICT tools in carrying out their objectives in the school. Also, teachers who are over 30 years showed a higher degree of agreement for adopting

ICT tools in education compare to female teachers. The teachers with the lowest mean set score of (4.45) are those who in the range of 29-30, they rarely adopt ICT tools for their usual school objectives, believing that other ways to achieve such objective could be very proficient for their adoption.

This study also showed a significant point of teachers opinions according to the level of experience ranging from 11-15 and more than 15 years. However, teachers within 1- 5 and 6-10 years of experience find it uninteresting to adopt ICT tools for school objective in their daily tasks. Furthermore, the study proved that younger experienced teachers are having 1-5 years of experience with mean highly enjoys learning with computer and smart gadget as opposed to traditional methods of text and hard copies materials. Additionally, teacher with 6-10 years of experience proves to have same passion of learning via computer gadgets and material. While, teachers with 11-15 years and more than 15 years of experience showed less interest.

Hence the study showed a significant difference on teachers' opinion regarding use of ICT based on their level of education. The outcome shows that teachers with masters level of education prefer to use PowerPoint to instruct their students as against the traditional method of writing on the chalk or white board. Similarly, teachers with bachelor degree prefer to adopt the use of PowerPoint tool to teach their students, while teachers with secondary school cert do not always adopt PowerPoint tool for instructional purpose. This may be as a result of poor handling of such tool or lack of competency in knowing how to utilize such ICT tool for classroom activities.

Thus, increasing the application of ICT in teaching is a much required aspect in the world today. The globe has been digitized to such an extent that ICT has become a very important and unavoidable aspect in our lives. The role of ICT in education is a very important one as it will instill in the students the necessary skills and abilities which will enable them to flourish in any field of endeavor which they plan to take up in the future. The most efficient way to attain this is to enroll all the teachers in ICT training programs which will support them in their skills and confidence in the uses of technology in the classroom. The Libyan educational and vocational board must also ensure that the training programs and courses provided to teachers must be made compulsory and must also be customized to meet up with the strategies which the government has in place in its national policies.

In Libya the vast majority of teachers and school heads believe in the importance of ICT uses in teaching and learning and are well aware of its impact and positive ramifications on socio-economic and political development. The heads of schools in the country must be widely supervised in ensuring that their schools policies and pedagogical practices are in line with the policies of the government. Written documents should be issued to every school in the country regarding the policies and significance of ICT in education. At least 95% of all registered schools and training centers must be issued these documents to ensure supervision and synergy in the educational sector across the nation.

The Ministries of Education and that of Vocational Training must also work towards promoting these policies in Libya alone. They should also be fostered and encouraged too. Many other countries of the Arab World have their own ICT policies. In countries such as Tunisia and Egypt this is very advanced. Libya must

work towards encouraging and strengthening such policies in schools and in its people so as to make certain that every school in the country is using ICT and technology in its pedagogy. The beneficiaries of such a system will be the teachers and the students who will use the resources at their disposal in advancing their learning and capacity building. This will allow the nation to facilitate its integration and harmonization. It will also enlighten the Libyan people on the concepts and importance of globalization and world peace.

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APPENDIX

Dear Respondent,

My name is Nader Almgadmi, a master student of ICT in Education at Eastern Mediterranean University, Famagusta, North Cyprus. In the delimitation of my thesis, the aim of this study is to collect data and analyze the results about ICT in Education in Libyan secondary schools. We kindly request you to complete this questionnaire below. We guarantee that the data generated will be kept confidential and only the overall results will be shared with the management.

Demographic data

Gender: Male Female

Age: 20- 25 22- 26 24-28 26- 29 30 and above

Education level: Secondary School Primary School University degree
Master degree

	Questionnaire	Strongly disagree	Disagree	Uncertain	Agree	Strongly agree
	Teachers' opinion of using ICT to teach					
1	teaching and learning practices via ICT					
2	ICT attainment targets					
3	Internet related teaching via ICT					
4	Using power points to teach in class					
5	ICT related objectives of the school					
6	I enjoy learning with computers					
7	I face problems using ICT in class					
8	ICT makes teaching easy in schools					
9	I use power points to teach in class					
10	ICT is very useful in teaching processes					
11	I use spreadsheet to teach students					
12	I use Excel and power point to teach					

The name of the organization for the data collection: Eastern Mediterranean University, Famagusta, North Cyprus.



State of Libya
Government of national accord
Ministry of education

Ref: ///
Date : 27/2/2017

Mr. education Monitor in ABUSALIM

Upon the request of Mr. **NADER YOUSEF ALMGADMI** as a post- graduates student who applied for permission to do some questionnaires and interviews to obtain statistics and data and accurate information from the managers and teachers of educational institutions located within the educational area in the ABU-SALIM municipality. We kindly ask you're cooperation for the above mentioned, which is very important in order to keep abreast of the scientific development in Libya, especially the schools to be studied.

1	School name	Director of school	Mobile No.
2	LIBYA ALHURRA	ALI ATIA	0925033050
3	SHODA'A BIROT	MUMMER ALI ALREHIBY	0917339204
4	AL SALAM	SALM OMRAN AGELA	0925003861
5	AL ESLAH	ABUJELAH ALSWEIE	0910178283
6	AL MHADBA ALMARKAZEIA	MOAHMED MASOUD SALEM	0925360896
7	AL ISRA'A	EMHEMED AL FEEL	0925271963
8	OMAR BIN AL KHATAB	SALEH EMPYA	092581914
9	AL MASHROO'A AL ZERA'AY	HATEM MUSA GHREBA	092564456

Best regards

Signed & stamped by
Ministry of education agent

