

**BAŞKENT UNIVERSITY
INSTITUTE OF EDUCATIONAL SCIENCES
DEPARTMENT OF FOREIGN LANGUAGES
MASTER PROGRAM OF ENGLISH LANGUAGE TEACHING WITH
THESIS**

**LIBYAN ENGLISH TEACHERS' AWARENESS ABOUT
TECHNOLOGICAL PEDAGOGICAL CONTENT KNOWLEDGE**

**PREPARED BY
NOURA NABEEL FARAJ BADR**

MASTER THESIS

ANKARA - 2022

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**THESIS ADVISOR
Dr. Öğr. Üyesi GÜLİN DAĞDEVİREN KIRMIZI**

ANKARA-2022

BAŞKENT ÜNİVERSİTESİ
EĞİTİM BİLİMLERİ ENSTİTÜSÜ

Yabancı Diller Eğitimi Anabilim Dalı İngiliz Dili Öğretimi Tezli Yüksek Lisans Programı
Çerçevesinde NOURA NABEEL FARAJ BADR tarafından hazırlanan bu çalışma, aşağıdaki
jüri tarafından Yüksek Lisans Tezi olarak kabul edilmiştir.

Tez Savunma Tarihi: 09 / 11 / 2022

Tez Adı: Libyan English Teachers' Awareness about Technological Pedagogical Content
knowledge

Tez Jüri Üyeleri (Üvanı, Adı - Soyadı, Kurumu)

İmza

Tez Danışmanı: Dr. Öğr. Üyesi Gülin Dağdeviren Kırmızı, Başkent Üniversitesi

Doç. Dr. Senem Üstün Kaya, Başkent Üniversitesi

Dr. Öğr. Üyesi Gohar Seyedi, Lokman Hekim Üniversitesi

ONAY

Başkent Üniversitesi
Eğitim Bilimleri Enstitüsü Müdürü
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BAŞKENT ÜNİVERSİTESİ
EĞİTİM BİLİMLERİ ENSTİTÜSÜ
YÜKSEK LİSANS TEZ ÇALIŞMASI ORJİNALLİK RAPORU

Tarih: 09 / 11 / 2022

Öğrencinin Adı, Soyadı: NOURA NABEEL FARAJ BADR
Öğrencinin Numarası: 21910562
Anabilim Dalı: Yabancı Diller Eğitimi
Programı: İngiliz Dili Öğretimi Tezli Yüksek Lisans Programı
Danışmanın Unvanı/Adı, Soyadı: Dr. Öğr. Üyesi Gülin Dağdeviren Kırmızı
Tez Başlığı: Libyan English Teachers' Awareness about Technological Pedagogical Content knowledge.

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Dr. Öğr. Üyesi GÜLİN DAĞDEVİREN KIRMIZI

DEDICATION



To my father's soul....

ACKNOWLEDGEMENTS

Without guidance and persistent help this thesis would not have been possible. First of all, my deepest heartfelt appreciation goes to my advisor Assist. Prof. Dr. Gülin DAĞDEVİREN KIRMIZI for her continuous encouragement, rigorous scrutiny, invaluable advice and long-term support.

I would also like to express my special thanks to my committee members, Assoc. Prof. Dr. Senem ÜSTÜN KAYA and Assist. Prof. Dr. Gohar SEYEDI for agreeing to be on my committee and for their constructive feedback and comments on my thesis

I would like to thank all the participants who helped me by answering the survey questions and providing me with valuable information.

My deepest gratitude goes to my family for their constant support and standing by me during my thesis and all the time. I would like to thank my mother for her patience and encouragement. I would like to thank my sisters, brother, and my grandmother for their endless support

My special thanks go to my dear husband Waleed for his endless help and support during my thesis. I am very lucky to have him by my side. And I would also like to express my gratitude for his financial, endless support and unconditional love.

I dedicate this thesis to my dear father Dr.Nabeel, who passed away years ago, as this was always his wish and dream. I hope he will be proud of me when he sees my accomplishments.

Lastly, I also dedicate this thesis to my daughters Arin and Aryam, and my son Arkan they are the most beautiful gift and the joy of my life.

NOURA BADR
Ankara 2022

ÖZET

Noura Nabeel Faraj Badr

Libyalı İngilizce Öğretmenlerinin Teknolojik Pedagojik Alan Bilgisi Farkındalıkları

**Başkent Üniversitesi
Eğitim Bilimleri Enstitüsü
Yabancı Diller Eğitim Anabilim Dalı
İngiliz Dili Öğretimi Tezli Yüksek Lisans Programı
2022**

Bu çalışma, Libyalı İngilizce öğretmenlerinin Teknolojik Pedagojik Alan bilgisi (TPACK) hakkındaki farkındalıklarını araştırmayı amaçlamıştır. Çalışma ayrıca Libyalı İngilizce öğretmenlerinin TPACK'ini cinsiyet, yaş, medeni durum ve eğitim niteliği gibi bazı değişkenlere göre incelemektedir. Araştırmada betimsel analitik yöntem kullanılmıştır ve 427 katılımcıdan TPACK anketi kullanılarak nicel veri toplanmıştır. Veriler nicel analiz edildi. Nicel bulgular, Libyalı İngilizce öğretmenlerinin orta düzeyde Teknolojik Pedagojik Alan bilgisine (TPACK) sahip olduğunu göstermiştir. Katılımcıların TPACK düzeylerinin üst sıradaki yaş grupları lehine değerlendirilmesinde istatistiksel olarak anlamlı farklılıklar bulunmuştur. Evli öğretmenler de tüm alt ölçeklerde diğer gruptan daha yüksek puan almıştır. Son olarak bulgular, Teknolojik bilgi (TK) ve Pedagojik bilgi (PK) dışında, katılımcıların ortalama puanları arasında TPACK alt ölçeklerinde anlamlılık düzeyinde istatistiksel olarak anlamlı bir farklılık olmadığını bildirmiştir.

Anahtar Kelimeler: Teknolojik Bilgi, Pedagojik Bilgi, Alan bilgisi, İngilizce öğretmenleri, farkındalık.

ABSTRACT

Noura Nabeel Faraj Badr

LIBYAN ENGLISH TEACHERS' AWARENESS ABOUT TECHNOLOGICAL PEDAGOGICAL CONTENT KNOWLEDGE

Başkent University

Institute of Educational Sciences

Department of Foreign Languages

Master Program of English Language Teaching with Thesis

2022

This study aimed to investigate the awareness of Libyan English teachers about Technological Pedagogical Content knowledge (TPACK). The study also examines the TPACK of Libyan English teachers according to some variables such as gender, age, marital status and educational qualification. The Descriptive analytical method was used in the study and quantitative data were collected from 427 participants using the TPACK questionnaire. Data were analyzed quantitatively. Quantitative findings showed that Libyan English teachers have intermediate Technological Pedagogical Content knowledge (TPACK). Statistically significant differences were found in the evaluation of the TPACK levels of the participants in favor of the upper-ranked age groups. Married teachers also scored higher than singles on all subscales. Finally, the findings reported that there was no statistically significant difference between the mean scores of the participants in the TPACK subscales, except for Technological knowledge (TB) and Pedagogical knowledge (PK).

Key words: Technological knowledge, Pedagogical knowledge, Content knowledge, EFL teachers, awareness.

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ABBREVIATIONS

TPACK	Technological, Pedagogical, and Content knowledge
ICT	Information and Communications Technology
EFL	English as a Foreign Language
TK	Technological knowledge
PK	Pedagogical knowledge
CK	Content Kknowledge
PCK	Pedagogical Content knowledge
TPK	Technological Pedagogical knowledge
UNESCO	The United Nations Educational, Scientific and Cultural Organization
UNDP	United Nations Development Program
ELT	English Language Teaching
CAI	Computer-Assisted Instruction
LHEIs	Libyan Higher Education Institutions
TAM	Technology Acceptance Model
CLT	Communicative Language Teaching
ESL	English as a Second Language
TCK	Technology Content knowledge

CHAPTER I

INTRODUCTION

1.1 Overview

Information and communication technologies are now a vital prerequisite and an essential aspect of education globally (Majeed & Ayub 2018); Thompson & Mishra (2007). This form of digital Information and Communications Technology (ICT) literacy is becoming one of the skills teachers need in the classroom of the 21st century. (Moganashwari & Parilah, 2013) stated that ICT improves education and learning methods worldwide. Furthermore, the educational system uses the ICT platform and tools in the learning modes, especially in virtual learning. ICT use in teaching makes learning outcomes competitive with the market (Lowther, Inan, Daniel Strahl, & Ross, 2008; van Weert & Tatnall, 2005). Still (Magen, Nagar, & Peled, 2013) affirmed that our life has become innovative due to the ICT revolution in various disciplines. In the field of teaching/ learning, the integration of ICT pushes the learning process into a motivational, friendly and centralized learner (Santos & Castro, 2021).

Research over the past two decades has shown that ICT in learning English positively affects learners (Nawaila, Kanbul, & Alhamroni, 2020). ICT, therefore, encourages EFL students to use English not only communicatively but also purposefully and shamelessly in real-life situations. It also boosts the motivation and collaboration between students and teachers and gives learners the primary role in the learning process (Mateo, 2012). Furthermore, information and communication technology materials can store the process or make it accessible (on the screen) and transmit practically unlimited and highly different amounts of data to anyone. These new technologies are increasingly found in text, graphics, moving images, sound i.e. (Gershon & Gonzales, 2021).

The results of the research (Hoang & Le, 2021) showed that English teachers find ICT very useful in the classroom. However, some challenges were perceived, including needing more experience integrating ICT into the teaching process, weak internet signal, and the paucity of teaching resources and affordable limited time. Nevertheless, up-to-date research findings recon the policymakers with some improvements that ensure ICT integration in EFL classrooms (Awan, 2021).

The earlier researcher (Muhammad & Schneider, 2022) argues that using ICT at any stage can help motivate, engage, and regain students' attention. According to earlier research (Adarkwah, 2021; Alam, 2021), teachers and students can incorporate ICT into English teaching by achieving their goals by facilitating tasks with easily accessible and readily available information. Therefore, after arriving at a vague conclusion, the researchers wanted to determine how English teachers use ICT in their classes. However, ICT is an indispensable tool in many educational institutions. Therefore, ICT integration expands the techniques and procedures in English teaching. Hence, it digitalizes the old methods to use new digital teaching resources. (Tomczyk, Jáuregui, de La Higuera Amato, Muñoz, Arteaga, Oyelere, & Porta 2021). Therefore, ICT attracts the attention of various researchers and methodologists in the field of foreign language teaching. Hence, the learning and teaching of the English language need to be adapted and updated to the globalized world (Singh, 2018).

Educational technology is another field that attracts the attention of many teachers to integrate ICT into their teaching practice. Therefore, teachers aim to achieve Technological, Pedagogical, and Content knowledge (TPACK). Such knowledge solves many of the various problems that EFL teachers encounter while applying Educational Technology (EdTech) in their classroom teaching (Surayya, Asrobi, & Farizi, 2021; Tütüniş, Ünal, & Babanoğlu, 2022). By distinguishing between these three types of knowledge, the TPACK structure describes how content (what is taught) and pedagogy (how a teacher conveys this content) should be the basis for the effective integration of educational technologies (Santos & Castro, 2021). The researchers (Hathaway & Norton, 2018; Manduna, Goede, & Drevin, 2021) argued that learning is a complex, ill-structured area. Brinkley-Etzkorn (2018) stated that a teacher should possess three aspects that work together to make integrating technology a complex activity. It encompasses comprehending the content to be taught, the learning process and the use of technology. Furthermore, the complexity also comes as a result, requiring applying the three aspects to various and dynamic learning environments. Thus, TPACK, as a theoretical model, guides EFL teachers to examine how ICT is integrated and incorporated into the teaching process.

Studies by (Jonker, März, & Voogt, 2019; Santos & Castro, 2021) show that pre-vocational university lecturers have acquired enough knowledge and skills to apply their TPACK knowledge in collaborative schools. As public schools in Bulacan and the surrounding

provinces lack EdTech, teachers found ways to compensate for such technology paucity, which enables them to use EdTech in their classrooms. This study applies the TPACK-EFL coined by (Bostancıoğlu & Handley, 2018). In their work, they reported on a self-evaluation that examined the development and validation of the results of a Technological Pedagogical Content knowledge analysis (TPACK) for preschool teachers studying EFL. The study, called TPACK-EFL, designed an assessment tool to investigate Pedagogical methods and Technologies (Lowther et al., 2008).

1.2 Research Problems

The rise of COVID-19 has dramatically impacted people's lives and all sectors, including the educational sector. As a result, there is no excuse for English as a foreign language teacher in Libyan schools not quickly integrate ICT into their lessons (Algwil, 2019; Khilafat & Reddy, 2022).

Since all teaching and learning activities that previously took place in meetings must be into technology-supported converted online learning, according to (Azlan, Wong, Tan, Huri, Ung, Pallath, & Ng 2020; Ebner, Schön, Braun, Grigoriadis, Haas, & Taraghi, 2020), the peak of school closures was recorded in April 2020, when hit around 1.6 billion students in 194 countries, which make up more than 90% of total enrolled learners. Until effective vaccines or treatments are available, governments will need to ponder the key challenges students, parents, teachers and school management face to adapt to this phase of massive online learning and intervention to realize better its potential of online learning. Furthermore, The COVID-19 pandemic has impacted all levels of education and healthcare. (Azlan et al., 2020; Rayan, Tsagkaris, & Zafar, 2021; Rayan, Zafar, & Tsagkaris, 2021). As a result, educational institutions worldwide (192 countries) are temporarily closed or relocated, affecting around 1.7 billion students worldwide (Akomea, Pantah, & Asenso, 2022). In addition, many universities worldwide have postponed or cancelled all activities on campus to reduce the congestion and, thus, the transmission of viruses. However, these measures have significant economic, medical, and social consequences for undergraduate and graduate students.

According to (Almaiah, Al-Khasawneh, & Althunibat, 2020), the country's circumstances are the most critical factors in increasing the quality of its education. Although education in Libya is accessible at all levels, its quality has significant difficulties. To back up

this claim, (Almanafi & Alghatani, 2020) claims that Libyan English language instruction is still lacking in quality and development, even though the Libyan community recognizes the importance of the English language for communication and the country's future from several perspectives. A study (Salem, 2019) analyzes ICT integration by English as a foreign language teacher in Libya. The study showed that lack of access to ICT tools prevents teachers from using them, so they do not develop relevant ICT knowledge and skills and try to resist e-learning via using high technology tools and techniques even used in many healthcare sectors (Rayan, Tsagkaris, & Zafar, 2022; Salem, 2019).

Furthermore, since ICT is not included in classroom practice, students are taught without ICT knowledge and are against e-learning. In other circumstances, teachers may have adequate access to ICT tools. However, the lack of ICT-related curricula may prevent them from getting the most out of ICT for pedagogical purposes (Suleimen, 2019). The containment measures and the poor basic infrastructure severely threaten the faster spread of the Covid-19 virus.

As a result, it is critical to comprehend the current situation and the Libyan population's behavior, attitudes, and knowledge, particularly in the educational sector, in using ICT, which will help counter the spread of COVID-19 (Ranjbari, Esfandabadi, Zanetti, Scagnelli, Siebers, Aghbashlo, & Tabatabaei, 2021). Although there has been much emphasis on investing in technology in classrooms in Libya recently, more is needed to teachers' ICT use and their awareness about using ICT to teach English. In addition, a deep understanding of how teachers perceive and monitor the use of ICT can help how best to use them for educational purposes (Hew, Jia, Gonda, & Bai, 2020).

1.3 Research Objectives

The study's main objective is to evaluate the application of Libyan ELT teacher Technology, Pedagogy and Content knowledge (TPACK) in the classroom and determine which of the six elements of TPACK influenced their application. Therefore, this study aims to determine the level of ICT integration in English teaching in Libyan schools by analyzing teachers' awareness using the Technical Pedagogical Assessment (TPACK). The study also examines the TPACK of Libyan English teachers according to some variables such as gender, age, marital status and educational level.

1.4 Research Questions

The goal of this study is to introduce Libyan teachers to the use of ICT in Teaching English as a Foreign Language, as well as how Libyan ELT instructors combine Technology, Pedagogy, and Content knowledge (TPACK) in the classroom.

RQ 1: What are Libyan EFL teachers' awareness about TPACK with regards to the following sub-dimensions?

- a) What are Libyan EFL teachers' awareness about Technological knowledge (TK)?
- b) What are Libyan EFL teachers' awareness about Content knowledge (CK)?
- c) What are Libyan EFL teachers' awareness about Pedagogical knowledge (PK)?
- d) What are Libyan EFL teachers' awareness about Pedagogical Content knowledge (PCK)?
- e) What are Libyan EFL teachers' awareness about Technological Content knowledge (0 TCK)?
- f) What are Libyan EFL teachers' awareness about Technological Pedagogical knowledge (TPK)?
- g) What are the Libyan EFL teachers' awareness about Technological Pedagogical Content knowledge (TPACK)?

RQ 2: Are there differences in Technological Pedagogical Content knowledge of Libyan EFL teachers based on gender, age, marital status and educational level?

- a) Are there differences in technological Pedagogical Content knowledge of EFL teachers in terms of gender?
- b) Are there differences in Technological Pedagogical Content knowledge of EFL teachers in terms of age?
- c) Are there differences in Technological Pedagogical Content knowledge of EFL teachers in terms of marital status?
- d) Are there differences in Technological Pedagogical Content knowledge of EFL teachers in terms of education level?

1.5 Significance of Research

In Libya the literacy rate is high as it has constantly tried to provide a good education for all members of the society regardless of their gender (Barakat & Fakh, 2021). English is taught as an obligatory core subject in Libya from grades 5–12. The country relies on it for internal and international commerce, and there is little dispute about its relevance in job markets,

trade, commerce, and government, with employees required to gain English abilities. The importance of this research survey rests on the fact that ICT has indeed become a determining factor in the 21st century. The value of ICT can thus be found worldwide in all areas of modern society, including education. Libyan educational institutions have also agreed to incorporate ICT into the classroom (Hbaci, Ku, & Abdunabi, 2021; Sulasmi & Dalle, 2022).

Several researchers have proven the benefits of technology for language acquisition (Kessler, 2018; Larsen-Freeman, 2018). These studies include diverse learning topics:

Engagement, paradigm shifts in teaching and learning, assessment shifts, and collaborative learning enhancement. The earlier researcher studied the ICT integration by EFL Teachers in Libya (Amara, 2020). However, no similar study has addressed how schools in Libya can integrate ICT and TPACK into their pedagogical practices; therefore, this study will fill that gap by identifying how ICT can help improve language teaching and learning in Libya.

CHAPTER II

REVIEW OF LITERATURE

2.1 Theoretical Framework

2.1.1 Information and Communications Technology

ICT Information and communications technology (ICT) can be considered as a component of information technology (IT) that emphasizes telecommunications and computer integration.

Encompasses a wide range of technologies. It highlights the importance of unified communications, including computers and software, allowing users to manipulate data (Cardona, Kretschmer, & Strobel, 2013; Tütüniş et al., 2022). Information and Communication Technology (ICT) is a broad field with many applications (Moganashwari & Parilah, 2013). It covers various topics related to communication technology and how it affects other areas of human activity. It is the most rapidly increasing academic discipline and a sustainable revenue means (Tütüniş et al., 2022). The interconnection of phone and computer networking over a single wiring framework allows for easy data storage, modification, administration, and recovery (Hall, Lotti, & Mairesse, 2013). It includes database systems, computer applications and software development, web design, i.e. (Tütüniş et al., 2022).

In today's contemporary and fast-changing global environment, numerous researchers have studied ICT (Chairoel, Widyarto, & Pujani, 2015). *Information technology* collects analyses, arranges, and transmits textual, numeric, and audio data. However, according to (Moganashwari & Parilah, 2013), it is also a broad phrase that refers to the gathering, organizing, storing, and retrieving of data, which can be textual or numerical, vocal, photographic, audiovisual, or a mix of all the above, known as multimedia, using a collection of computer and communications systems.

ICT is broadly defined as "forms of technology used for creating, displaying, storing, manipulating, and exchanging information" (Mateo, 2012). The context of earlier researchers (e.g., Majeed & Ayub, 2018; Tütüniş et al., 2022) confirmed that as a result of applying ICT in teaching, educational standards had been boosted in many aspects, including:

1. Organizing the teaching using platforms that support conventional teaching and testing, i.e., Blackboard and Moodle, among many others.
2. Educational software, which allows sharing of teaching/learning materials through the internet, video and audio resources.
3. Communication by sending and receiving messages, chatting and voices through emails or websites.

Because of the broadness and generalization of ICT suggested in the previous research, another specific definition has been coined by (Helfaya, 2019; Shahid, Aleem, Islam, Iqbal, & Yousaf, 2019). They studied ICT and connected it with specific computer-assisted language learning (CALL) such as tablets, laptops, and smartphones connected to the internet to use social networking, i.e., email, websites, and sites such as YouTube for English teaching and learning.

According to Marshall (1984), ICT requires the integration of computing and telecommunications to manage information. It is the application of technologies to data processing, which includes creation, storage, processing, access, and transmission. It is defined by Emuakpor (2002) as "all types of technology used to process, store, and transmit information electronically with computers. Communication systems and networks serve as examples of physical equipment used.

ICT is regarded as a powerful instrument for academic transformation and development. Various past research has claimed that adapting ICT in learning effectively enhances the quality of education and actualize learning to face real-life situation. Thus, van Weert and Tatnall (2005) viewed learning as a sustainable activity that enables learners to acquire knowledge and modify their intentions differently from conventional techniques. Individuals will have to anticipate new learning resources and be eager to try them out as the year's pass. For these students, ICT capabilities should be a must.

ICT is used in nearly every facet of life and is a potentially powerful instrument for educational reform and development (Adarkwah, 2021). Different ICTs, when appropriately utilized, may help broaden educational access, boost the significance of learning in the evolving digital economy and enhance the learning quality through the implication of theories and concepts into dynamic and actual teaching processes related to real life (Baraković, Baraković Husić, van Hoof, Krejcar, Maresova, Akhtar & Melero 2020). The earlier researcher explored that due to computers' growing relevance, students cannot afford to be isolated from this

potentially transformative medium (Bostancıoğlu & Handley, 2018). In education, ICT has become critical to increasing efficiency professionally and in informal contexts at all levels. Even at the elementary school level, computer education is required. For students to be successful in the future, significant modern understanding and a constructive attitude toward technology are required (Lim, Zhao, Tondeur, Chai, & Tsai, 2013).

According to (Lowther et al., 2008), effective ICT teaching requires three essential features: autonomy, capacity, and creativity. Autonomy, as a term, stands for learners' controlling their learning via ICT. Moreover, autonomy enables learners to proceed independently and take responsibility for their learning process. Furthermore, when needed, teachers may encourage students to do some tasks in groups collaboratively. Besides, students' knowledge is expanded due to collaboration with their peers and getting various information via ICT. Another feature that develops learners' autonomy is the chance they get to learn from trial and errors.

Abdalla (2018) remarked that ICT enhances learners' autonomy by allowing them to choose resources. In traditional teaching, the content is served, but in classrooms which integrate ICT, students' interests are considered over the content. Similarly, students' confidence in learning increases; they can apply and transfer their information more effectively due to the ample space and applications that ICT provides.

Currently, academic institutions globally are using ICT in the learning/teaching process to support students with the competencies and skills needed to address the issues of the learning environment. According to (Adeleke & Adu, 2017), "in this period of fast change, the only way to teach students to be participants in the growth process is to integrate ICT into education." According to (Kennedy-Moore & Watson, 2001), ICT has modified how individuals operate and reshaped teaching practices. Schools may only be successful or fit in the future's ICT environment if they teach children updated skills and technology. This is an adequate justification for ICT's global recognition. Kofi Annan, the former United Nations Secretary-General, stated in 2002 that ICT would boost educational systems to fulfil the Universal Primary Education goal by 2005, indicating the future demands and essential role ICT could play in academic progress. In addition, Calloway (2019) affirmed the importance of school as a learning setting where EFL students are incorporated into some computer-based learning activities. Another place is home, where learners regularly participate in more minor computer activities.

Libya is fast becoming a country, along with developed Arab countries, and is literate in ICT. There has been drastic improvement due to the introduction of quality and constant education provided to all members of society, regardless of their gender (Xanthidis, Alali, & Koutzampasopoulou, 2016). Therefore, some developments for the educational system are needed, basically, the ICT infrastructure development. It, therefore, participates in renewing and modifying the whole learning process. Moreover, the teaching curriculum needs to be digitalized to develop the content of teaching material where ICT is adopted.

The national ICT education policy in Libya ensures easy access to ICT tools. It also builds a suitable infrastructure. Similarly, it encourages research to bring comprehensive teaching resources, methods, and tools which help build a strong and competitive society on the world stage. Human resource development is a central ICT of the Libyan education policy objectives. The ICT policy invests in human resources to achieve such a national ICT objective. Some international organizations, including The United Nations Educational, Scientific and Cultural Organization (UNESCO) and the United Nations Development Program (UNDP), cooperate with the Libyan government agencies in the appropriate implementation of ICT strategy (Rhema & Miliszewska, 2010). According to Pritchard (Prichard, Spiranovic, Watters, & Lueg, 2013), "the Internet and its potential in the e-mail have created many opportunities for fast communication over long distances that can be used for educational purposes. "With the continuous development of information and communication technology (ICT), the use of computers and the Internet in English teaching (ELT) is becoming important. Computer-Assisted Instruction (CAI) is common worldwide, especially in developed countries. They use new technologies to their advantage, such as manipulating the network to communicate with teachers and receive responses via e-mail" (Bultmann, 2011).

Based on the internet consumption statistics, there are no internet access restrictions in countries where the use of ICT has helped to improve the standards of their educational system (Pham, 2021). Although Libya is recovering from war and recession, only some parts of the country have internet access. However, schools and colleges with ICT have internet access to use this tool as a teaching strategy (See Appendix 1). A systematic literature review was published by (Alshref, Abas, & Bakar, 2021), focusing on theories and models for implementing e-learning technologies and the unresolved questions and challenges for Libyan Higher Education Institutions (LHEIs). The results showed that the leading model used to evaluate the

execution of e-learning in the LHEIs is the Technology Acceptance Model (TAM). The TAM is a theoretical framework demonstrating how users accept and use technology in teaching. The emphasis on the potential user's perception is fundamental to this paradigm. That is, even if the inventor of a specific technology product believes the product is beneficial and user-friendly, the product will only be accepted by potential users once the user shares similar sentiments. Due to the numerous criticisms that TAM received on various aspects, it still serves as a consistent and helpful theory because it possesses numerous factors that help the educational system that embarks on the application of technology.

2.1.1.1 English Language Teaching and Technology

Various foreign language teachers and professors acknowledge the motivation to raise EFL students' language learning and develop their learning outcomes. Therefore, ICT, according to some researchers (Azmi, 2017), raises students' motivation to participate in language classroom activities. Interestingly, motivation is not something easy that we can fulfil in our EFL students; since motivation is the product of multiple linguistics and psychological factors (Azmi, 2017). Still, other researchers (e.g., Lee, 2004; Ware, 2005) believed that EFL students would show positive attitudes towards language learning whenever ICT tools are displayed in the classroom, as EFL students are very optimistic about communicating via ICT with native English speakers. Thus, ICT can be a motivating source for EFL learners to learn and use the language. Likely, ICT is considered an effective tool for EFL activities.

Some educationalists confirmed that utilizing technology in EFL classrooms positively impacts English learning. This effectiveness maximizes EFL students' engagement, motivation and involvement in the learning process (Azmi, 2017; Liao & Fu, 2013). Besides this, effective language learning emerges through podcasts, blogs, and videos in the classroom. Thus, the English class contents will motivate and positively impact the student's language learning and acquisition.

Furthermore, Røkenes and Krumsvik (2016) stated that using ICT in classrooms urges EFL students to have optimistic attitudes towards EFL learning. In their study, most EFL students reported that ICT pushes them to form motivated language learning habits due to the increasing of authentic learning resources in the classroom (i.e., videos, podcasts, blogs). They added that ICT sharpens teachers' and students' skills to search for authentic material and develop honest communication and engagement in the classroom.

In the same vein, Azmi (2017), Julien and Barker (2009) believed that both science and technology would be used as assessment tools to evaluate the impact of ICT tools (i.e., podcasts and videos) on the motivation of EFL students towards English learning. Accordingly, it is perceived that EFL teachers can use classroom time by integrating online videos and podcasts to authenticate the English curriculum and learning environment. Likely, the findings showed that podcasts supply accurate teaching materials, which help learners to hear the English language used naturally by social groups, thus becoming familiar with English culture.

The rapid growth of ICT in the last few decades has brought about many changes and results in all areas of life, especially in education. For example, the growth of ICT has enabled universities to reach a wide range of students and improve student access to higher education. (Drugova, Zhuravleva, Aiusheeva, & Grits, 2021) argued that the development of ICT and network technologies has led to new innovative dissemination and teaching methods that provide students with a meaningful learning experience in an academic setting.

ICT for education is more important than ever as its growing power and potential transform modern education's learning environment (Gakuu, 2006). New technologies facilitate new learning skills and teaching methods. The significant development of new technologies has significantly changed teaching and learning traditions; one concrete implementation is the inclusion of ICT in the learning process (Aisyah, Jaya, & Suganda, 2021). With ICT, teachers can create their material and better control the course content (Fu, 2013); e.g., the integration of ICT into the classroom indicates a significant shift in the educational paradigm. It is based on six categories: curriculum, professional infrastructure development, assessment, education, management and leadership.

Like in other underdeveloped nations, E-learning and ICT use in Libya are still in their infancy (Ramadan, Elatresh, Alzain, & Tokeser, 2019). Although Libyan universities still use the conventional teaching method based on direct communication between teachers and students in the classroom and beyond on campus.

2.1.2 Education Policy and Structure in Libya

Elabbar (2011) indicated that the Libyan authority establishes political statements regarding the objectives of the school; For instance, "the curriculum should cover all school activities to promote the moral, cultural, intellectual and physical development of students and prepare them for life and social opportunities, responsibilities and experiences." However,

(Elabbar, 2019) states that the school/university system is run by school principals who apply the guidelines they deem most appropriate; that moment created differences between schools, universities, and even faculties.

Sharp (2009) pointed out that most Arab institutions, including schools and universities, consider the importance of ICT in the learning process. Authorities are also aware of the poor ICT infrastructures in their schools and universities. Libya, among many Arab countries, is on the path of developing its ICT infrastructures. Due to the availability of ICT, basic infrastructure like internet access and computers was established in several Libyan institutions (Benghazi University, the Academy for Postgraduate Education and Economic Research and the University of Tripoli). Such institutions use ICT in the teaching process.

Libyan teachers play this role in a complex environment while teaching students whose educational process has long been unstable. Both instructors and students at the same time encountered a difficult situation. They are limited; how much they can choose what to do depend on how things are done in Libya. These limitations can be due to problems such as the current economic strength, frightening forms of education, bureaucratic schools and university systems, irregular curricula, a conservative community, two generations (old and new generation) of teachers, and uncertain education policy (Beach, 2012).

The education system in Libya consists of several phases; It starts with the optional kindergarten for children between the ages of four and five and lasts for two years. The private sector provides kindergartens in Libya. Then there is the basic training/education, which comprises nine years of study: six years in elementary school with the first grade six (six to twelve) and three years in preparation with seven to nine (twelve to fifteen) (Tamtam, Gallagher, Olabi, & Naher, 2011; Wilang & Nupong, 2022).

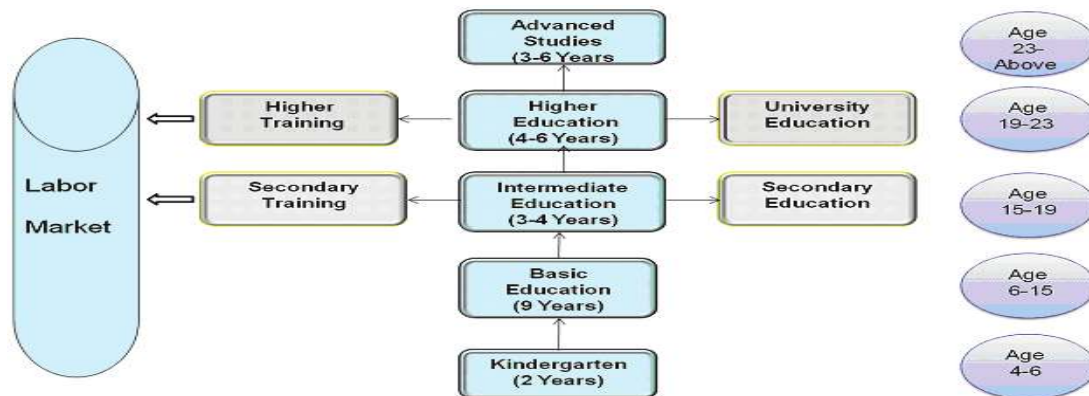


Figure 2.1: Structure of the Education System in Libya Source (Tamtam et al., 2011)

The education system in Libya consists of three main phases that most students must go through: elementary, intermediate and advanced (Abdelati, 2019), after which a kindergarten can be chosen lessons, followed by more in-depth (see Figure 2.1). Students of all three main phases can receive free education in the public sector, which is currently the focus of research, or choose to attend private educational institutions founded in 1990 for tuition fees.

The kindergarten is designed for two years and is aimed at children aged four to five (Hossain & Zeitlyn, 2010). This step is optional. There are no educational programs or specific curricula in preschool institutions. The basic training is nine years old. It's necessary and free. Children learn from 6 years. It comprises six years of elementary school and three years of high school. Secondary education is divided into four years at universities of applied sciences (basic sciences, engineering, life sciences, social sciences, economics and languages) or three years at vocational training centers. Higher education is free of charge; Only applicants from an open university or a private university must pay the tuition fees. The postgraduate course includes postgraduate studies and higher academic levels such as postgraduate studies, master's, and doctoral degrees in various fields (Hossain & Zeitlyn, 2010).

2.1.2.1 Integrating ICT in Libyan English language teaching

In Libya, Arabic is the language of communication; English is taught as a foreign language in schools. However, Libyan education currently uses the weakest rather than the strongest forms of communication as traditional methods based on memorization and repetition continue to apply (Aloreibi & Carey, 2017). To confirm this, (Abdulhamid, 2011) also pointed out that Libyan classrooms are traditionally set up so that the teacher introduces and explains things to passive listeners. Libya is a country with 98% of its population speaking Arabic; it reached the highest literacy rate among the Arab countries. It constantly strives to provide a quality education for all its population, regardless of sex (Omar, 2014).

Like in many other Arab countries, English- as a foreign language- is taught compulsory at primary and high schools from grades five to twelve (Rahal, 2021). Though few Libyan people talk in English in their personal lives, the Libyans use English for both local and international business. Widely gaining importance, English has become the leading language in business, industry, and job markets. Many employees are trying to be developing their English proficiency to come up with new business. Thus, gaining or achieving proficiency in English is

seen as an essential skill and required in economic and many educational entrepreneurs. Thus, schools and universities should enhance their graduates to compete in the market (Capulong & Silor, 2016; Kahar, Abdul Samad, Mohd Omar, Bunari, & Mohd Yusof, 2016).

Ibrahim (2015) stated that the traditional approach (i.e., the grammar-translation method) is still leading at all educational levels, especially in Libyan ELT. However, he added that considerable discrepancy emerged between the expectations of the policy level and the practitioners' actual practice. Therefore, the teaching focuses on memorizing isolated vocabulary, with great emphasis on grammar inductively in addition to translating words and sentences (Gim, 2020).

Until recently, English textbooks were structurally built; they included grammar lessons with no communicative or interactive tasks. Furthermore, Arabic was used as instruction, and limited space was given to English. As a result, students were taught the rules of the language, and no opportunities were given to learn how language works. Similarly, the examination and assessment focus on students' competency in the grammatical points they studied (Cantez & Cihat, 2021).

Das, Shaheen, Shrestha, Rahman, and Khan, (2014) confirmed that the responsibility of Libyan EFL teachers is to arm their students with the knowledge necessary to succeed in public examinations. Likely, Dent and Koenka (2016) asserted that examination is the core of the English teaching process. Therefore, they evaluate all students' performance in classroom tests in the form of midterms, finals and quizzes. Acclaim, Communicative language teaching (CLT) recently found its way into the Libyan EFL classroom (Ibrahim, 2015). CLT stems from the principles and fundamentals of communicative competence. It refers to choosing from the many rules of grammar according to the context and statutes of the interlocutors (Hussein, 2018). Most Libyan EFL learners find it possible to achieve their language mastery or communicative competence within the classroom walls because neither interaction in honest communication nor exposure to authentic language is affordable (Hajri & Lujain, 2018).

Therefore, EFL students need to be encouraged to purposefully use English outside the classroom. Such imitative should be utilized by the Libyan authority to develop its students to come up with the globalization requirement in which proficiency in English and literacy in computer skills should be developed in the Libyan students. So, the students would be able to get any job and pursue their higher education (Cruz & Orange, 2016).

In such circumstances, language teaching -English- is reforming its dimensions in Libyan classrooms by integrating technology and CALL application and programs. Therefore, the role of both EFL teachers and students is also reconstructed to cope with the tech. So, it is put as a measurement criterion for integrating technology in the classroom by how appropriately ICT is mixed into the language curriculum in Libya (Albasayna, 2016).

To keep up with modern progress, it is necessary to slightly improve the country's education system, including developing information and communication technology (ICT) infrastructure, which will later transform and modernize the entire educational process. The incorporation of ICT into the educational system entails the creation of an ICT-oriented curriculum as well as the upgrading of content. Obstacles must first be recognized and addressed in order to reach this goal. Libya is Africa's fourth largest country, with 6.6 million people. The country enjoys excellent economic prosperity, with 44 billion barrels of documented oil reserves and more gas than any other African country. This oil income and Libya's small population are responsible for one of the highest GDPs per capita. So populated in Africa has enabled the government to ensure high levels of prosperity, particularly in housing, health care, and education.

Libya has the highest literacy rate in the Arab world. The UN Human Development Index these measures living standards, social protection, health care and other development factors. Libya ranks first among all African countries. The Libyan government prepares its overall plan to update the ICT infrastructure, which ensures ICT integration in the educational system. Furthermore, the Libyan authority wants to expand its plan to organize projects and initiatives as a leading country in the African continent in general and countries like Chad, Rwanda and Niger in particular. However, several plights prevent the reform process and achieving such goals, including the need for more competent ICT teachers and better infrastructure.

Altaleb (2018) examined the role of social media as an English language learning autonomy tool among English as Foreign Language learners (EFLs) in Libya. There is evidence that Libyan students' participation and use of social media and digital technology is widespread, albeit less complicated than in other countries, partly due to local conditions. Libyan university students value social media's importance in improving their English skills. According to English teachers, integrating the Internet and social media into the classroom has significantly impacted

English learning; however, they need to use such tools during their training. This can be explained by infrastructural, institutional, and cultural factors, including teachers' limited experience using modern ICT teaching methods. Therefore, an essential part of developing a plan to integrate technology into Libyan higher education has been to assess teachers' current technology skills to provide an initial framework for skills and areas of development.

2.1.2.2 The Impact of the ELT on Education in Libya

In Libya, ethnic and linguistic diversity is lacking in other countries, where 98% of the population speaks Arabic. English is a foreign language in Libya (rather than second) and is a compulsory subject offered in grades 5 to 12. Though few people use it privately, the country depends on local and international affairs. Hence, English importance cannot be ignored in the labor market, economy, industry, and government. As is expected, more employees are learning English skills (Andrews, 2009).

As teaching has recently become demanding, extra attention has been put towards developing EFL teaching to face the continuous challenging and changes in the field. Several initiatives suggest implementing in-service training programs to develop the performance of teachers (Amara, 2020; El Abbar, 2016; Kazemi & Ashrafi, 2014; Zughoul, 2003).

Kazemi and Ashrafi (2014) stated that EFL teachers' professions and qualifications could be enhanced via the implication of in-service training programs. They added that for EFL teachers to respond to nowadays classroom requirements, they should be trained to sharpen their skills in organizing and equipping classrooms, appropriately managing the process of learning and applying the ICT tools appropriately. All these classroom requirements can be acquired via the process of teacher training. Furthermore, Amara (2020) reported that global development in English teaching methodologies had impacted Libyan EFL teachers' training. Such global development is challenging to be implemented for Libyan EFL teachers. Moreover, the Libyans EFL teacher-trainers also need help in nationalizing the new teaching methods and utilizing their goals. Similarly, Zughoul (2003) asserted the importance of implementing teacher-training programs which enable the national EFL teachers to apply global development in teaching methods and approaches. Thus, EFL teachers participate in the national plan of reform. El Abbar (2016) confirmed that Libyan EFL teachers are in need lifelong development to cope with the new international changes. Therefore, it is required for educational institutions to continuously initiate programs and workshops for developing teachers.

Foreign Language Teaching, English and French - ceased in 1986 (Fitori, 2019). The teaching of English in the Libyan education system resumed in 1993-1994 but initially due to gaps in the teaching and learning of the English language at the time (Alhodery, 2005).

In a televised interview in (July 2007), Abu Gnaya, Director of the national syllabus at the Ministry of Education (2007), said that an online teacher internship is planned for the same year as expected, that teachers improve their online skills and online pedagogy, thereby training teachers to be agents and bargainers of knowledge. Libyan society is very traditional, and there are cultural problems related to the influence of the family on their children and the lack of parental support in adopting modern teaching ideas. Female teachers dominate schools, but their access to computer courses is limited, "their families do not allow them to go to internet cafes to learn how to use ICT for teaching English" (Alkaff, 2013).

In Libya, English is a compulsory subject beginning in the fifth grade of primary school, and there is a strong government desire to promote the language. However, English teaching has a few difficulties. Though Libya officially transitioned towards the more relevant CLT, some teachers continue to use Grammar-Translation (Rashed, 2018). The teacher stays in front of the schoolchildren and teaches them from textbooks using the Grammar-Translation technique. The teacher explains the grammar and the meaning of EFL articles in Arabic (the official language), and students are required to convert English sentences to Arabic or vice versa. Students' competency has degraded due to utilizing this approach of instruction (Rahuma, 2016).

The adoption of technologies is also problematic. According to (Rahuma, 2016), resources such as multimedia presentations are not available in classrooms. Instructors also needed more abilities to use these devices. Furthermore, instructors need to be educated in complex technology, making it difficult to utilize it. Teachers should deal with the lack of assistance from school administrators and time restrictions. The students have struggled because of the need for more technology integration in language education. Students may lose interest in learning the language after being frustrated with the same sort of educational strategies, such as reading, translating, and recalling. The goal of English learning is to pass tests. This makes it challenging for them to study at institutions overseas or pursue careers in sectors like medicine and petroleum engineering, which need a greater English language ability.

According to (Ennis-Cole, 2015), the inability of pupils to utilize English outside the classroom is aggravating. The students appear to lack a habit of reading, which is aggravated by

the lack of English-language newspapers, weeklies, monthlies, and journals. Arabic is widely employed. It is a grueling job to teach English at Libyan schools. The students' lack of constant exposure to English complicates the teaching process. Students appear to be oblivious to correct word choices in English. Despite the hurdles, the good and crucial component is the overall motivation for learning and improving the English language. The importance of studying English is strongly acknowledged throughout the country for social and economic growth and advances in science and technology.

2.1.2.3. Teaching English in Libya

The researcher (Emhamed & Krishnan, 2011) explored the significance of technology in second or foreign language acquisition and how it benefits both instructors and students by increasing their understanding of the target language. "Technology in language instruction may improve the range or diversity of learning possibilities and the quality of the learning experience by providing input of more diverse types available to each student" (Emhamed & Krishnan, 2011).

Abdulaziz (2014) confirmed that Libyans are bilingual with (minority) Berber and Arabic languages. Zuwara and Efren (mountainous town) witness people who speak Berber. The people teach their language to their children. However, Arabic is the official language of all Libyans. It is the main language of the Libyan educational system; it has various dialects which differ from one part of the country to another. Hence, Libyan children are confronted with standard Arabic, which is different from their standard dialect, when entering school.

Chick (2007) asserted that the teaching of English in Libya dates back to 1942, during the British colonization of Libya. Later, the British assembly tried during World War II to substitute English with Italian, which the Libyan people used as a second language. However, the British authority has not been able to distribute the use of the English language among the Libyan people as the British obtained a different teaching policy for the Libyans than the Italians had used during their colonization. Libya was colonized by the British, and the Libyans still used Italian, though. (Thaheem, Abidin, Mirza, & Pathan, 2021) suggested that internet access should be available in all schools and that there should be adequate computers for teachers and students. Libyan society is very traditional, and there are cultural problems related to the influence of the family on their children and the lack of parental support in adopting modern teaching ideas. Schools are dominated by female teachers but have limited access to computer

courses; Their families do not allow them to go to internet cafes to learn how to use ICT in English classes (Thaheem et al., 2021).

Historically, the Libyan education system has repeatedly undergone several fundamental changes in curricula at different levels of education in general and in the English curriculum (Elabbar, 2011). These change processes initiated by the Ministry of Education in Libyan were a reaction to problem-solving in English teaching due to dissatisfaction with old teaching methods and improved quality of English teaching (Orafi, 2008). These changes were also made necessary by the growing need for literate English users to master all language skills in the Libyan educational community.

The Grammar-Translation Technique was implemented in Libyan schools in the 1980s to teach English (Emhamed & Krishnan, 2011). After English was reintroduced in the early 1990s, a communicative approach appeared as a new teaching approach, and it was manifested through on Communicative Language Teaching (CLT). This transition was motivated by social expectations for qualified instructors who can operate well in an evolving environment and a need to stay up with the continual advancements that influence human existence. Students in a CLT-oriented classroom are given several possibilities to communicate in the target language (Emhamed & Krishnan, 2011). The teacher is a facilitator who prepares students for classroom instruction through active and participatory learning activities, such as conversations to engage students in context-specific dialogue (Emhamed & Krishnan, 2011).

According to (Ebtesam & Foster, 2019), there are no established English-language curricula at the university level. The responsibility for developing general English-language materials for teaching at colleges other than English departments, like the college of engineering, medicine, and sciences. At some universities, the Department of English is responsible for developing a curriculum for its English teachers, who can then choose a curriculum.

The Libyan Ministry of Education has proposed that instructors incorporate technology into their English instruction. (Emhamed & Krishnan, 2011) surveyed 40 English Language Libyan instructors in Sehba to comprehend teachers' attitudes regarding technology use. They concluded that Libyan instructors had a positive opinion toward incorporating technology into English instruction. CDs were mostly utilized since they were easily obtainable and widely applied in the curriculum. The research included eight male and 32 female instructors aged 23

to 40 from seven government high schools and three private secondary schools in Sebha. The instructors' careers ranged from two to twenty-three years.

The rate of technological change is also unsatisfactory. According to (Emhamed & Krishnan, 2011), resources such as multimedia presentations are not available in classes. Teachers also lacked the necessary abilities to use these devices. Furthermore, instructors are not trained to use complex technology, making it difficult to apply. Teachers must cope with a lack of assistance from the school authorities and time restrictions (Emhamed & Krishnan, 2011).

2.1.3 Technological Integration

The use of information and communication technologies (ICT) in English relatively teaching (ELT) is a new phenomenon that has been the focus of educational research for more than two decades. Integrating information and communication technology into the 21st century is an essential part of the teaching and learning process. According to UNESCO policy (2002), ICT, together with reading and numeracy skills, is now considered the core of national education worldwide. It is becoming an important educational need in modern 21st-century society. Information and communication technology (ICT) has developed into one of the most important building blocks of modern society in a very short time.

As educational technology develops quickly, both pre-service and in-service teachers are required to develop themselves and utilize technology in their teaching. However, with the continuous professional development that many schools and institutions hold for the aim of developing teachers and acquiring ICT skills, many challenges are still apparent. They need extra planning and developmental strategies. Snoeyink and Ertmer (2001) pointed out two types of challenges: external and internal. They were also later supported by (Al-Senaidi & Poirot 2009). The external refers to the technical problems, lack of teaching resources and time, whereas the internal barriers include lack of teachers' confidence, limited knowledge in using ICT, and sometimes the conservative attitudes of the teachers.

Many countries are aware of ICT as the basis for education and reading, writing and arithmetic. Technology is already a part of everyday life for students, and its use in class has had a positive impact on language acquisition. These positive effects are partly related to the possibilities for successfully integrating ICT into learning and partly to their impact on students' emotional factors such as motivation, commitment and attitudes. Advances in technology, such

as Web 2.0, have enabled students and teachers to search for information and create an online environment that meets the specific needs of students and teachers.

2.1.3.1 The Methodological Importance of ICT for Language Learning

ICT is recognized as a learning tool. This section describes some aspects of ICT use that have been positive and encouraging for both the student and the teacher. ICT is supportive of contemporary language teaching and acquisition principles. It also urges learners' motivation, individualization, and interaction, which are often seen as central elements of modern educational theories, are necessarily part of the ICT process. As (Agarwal & Upadhyay, 2006) notes, some students need external resources to increase their motivation. However, the real motivation is "the teachers' primary goal for their students. ICT is becoming very attractive for teaching and learning foreign languages as teachers use it. ICT dramatically impacts the quality and quantity of the educational and pedagogical process. ICT can improve teaching and learn with its dynamic, interactive and engaging content; and offer real opportunities for individual learning (Afrin, 2014). The modern classroom environment has changed from the traditional environment due to technology.

Yunus, Nordin, Salehi, Sun, and Embi (2013) that ICT is integrated into education as an educational tool in various areas and guidance. ICT is widely used as part of national curriculum requirements and as a management, diagnostics, and statistics tool. ICT participates in developing language teaching in schools and making it more relevant, exciting and motivating. Therefore, developing information technology-based English teaching in classrooms that allow students to learn and experience simultaneously should be considered. English plays an essential role in all fields of knowledge, such as medicine, engineering, education, arts and law, music and more. Language learning changes with the world. However, the simultaneous confrontation with globalization, the English spread and the development of technology have changed the way we learn English as the "lingua franca" in ways. Science, information and technology play an essential role in human life. Technological development has also opened a new page in the field of education. Traditional teaching methods do not have a significant impact on students. Technology has become a tool that helps students innovate and a source of motivation for students to learn (Adams, 2005). ICT can help students:

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addressed with the continuous professional development that many schools and institutions hold to develop teachers and acquire ICT skills. Therefore, they need extra planning and developmental strategies. Snoeyink and Ertmer (2001) pointed out two types of challenges: external and internal. They were also later supported by (Al-Senaidi & Poirot 2009). The external refers to the technical problems, lack of teaching resources and time. In contrast, the internal barriers include a lack of teachers' confidence, limited ICT knowledge, and sometimes the conservative attitudes of the teachers.

Many countries know ICT as the basis for education, reading, writing, and arithmetic. Technology is already a part of everyday life for students, and its use in class has positively impacted language acquisition. These positive effects are partly related to the possibilities for successfully integrating ICT into learning and partly to their impact on students' emotional factors such as motivation, commitment and attitudes. Technology advancements, such as Web 2.0, have enabled students and teachers to search for information and create an online environment that meets the specific needs of students and teachers.

ICT is a modern technological tool that can improve a student's ability in English language learning. The following are the ways in which ICT motives students:

- Access information and answers on a growing number of texts.
- Present and handle information in various forms.
- Expand their work audience.
- Create a widening range of texts for different purposes.
- Build Real Audiences - Support by choosing a genre based on audience and purpose.
- Define the basic characteristics and properties of the text.
- Development of language comprehension and critical reading skills.

An important aspect that emerged from studying the use of ICT for learning and teaching foreign languages is that it is very different from most other subjects in the curriculum: it is based on skills and knowledge. It has more to do with a subject like music than with history or geography, for example. It affects both the types of hardware and software used in FLT/FLL and the pedagogy and methodology in FLT. There is increasing talk of the need for teachers and students to acquire the “new knowledge” required to use the new media properly. Distance learning allows students not to interrupt the learning process at home, study topics independently and communicate externally with the teacher, and provides many opportunities

for students, including developing student self-reliance, participating in learning research, and effective communication with peers. Experts and teachers can express their views and ideas on social learning venues.

It is claimed that some technical tools are the results of EFL classrooms integrating communication and educational technology. These tools enable EFL students to improve their critical thinking and problem solving as well as promote advanced skills in their learning. Furthermore, it is also found that ICT skills boost students' independency, facilities their learning and enhance in-service teachers training. However, some disadvantages may accompany the integration of ICT in the classrooms. Therefore, EFL teachers should be aware while utilizing ICT in their classroom and take into their consideration adding ICT as supplementary to the curriculum.

2.1.3.2 Challenges and Obstacles in Integrating ICT into Language Teaching

Naturally, if the goals and ways of implementing ICT are predetermined properly, teachers can retain the time of effort. However, applying ICT in English lessons, especially in interdisciplinary teaching methodology, has limits. The cultural content of the course material can be complex and confusing. In addition, the correct use of ICT in teaching English and all sensory techniques requires appropriate teaching and pedagogical planning. (Azmi, 2017; Blake, 2015) Argues that "Teachers who have yet to experience technology often believe that student success is to convert a lesson into a web or CALL format.

Planning for any classroom task sufficiently is a must, no matter how the teacher is technically proficient. Wherever any negligence in the preparation, results will be satisfactory even if the task is attractive. To summarize, ICT can be banned whenever poor planning in EFL is pursued.

Furthermore, students can think in English in various ways. Therefore, every English teaching method focuses on different language elements and tries to solve some specific language problems. As the teaching methods were coined in different learning contexts, each focused on the educational/social context of the society they emerged in and was based on various theoretical principles.

Therefore, to ensure the practical application of English teaching methods, EFL teachers should respond to some queries regarding the identity of the students, their language background, communication ability, and the way they use the language in the future. Therefore,

teachers may combine techniques from different methods to produce a teaching method suitable to the student's learning circumstances.

One of the most critical tasks of universities is to train professionals who can adapt to changes in the business world. In the late 20th and early 21st centuries, teachers developed methods of developing foreign language skills necessary for their continued academic work. Using ICT in the training process can significantly increase the efficiency of the training process and the emergence of new approaches and organizational forms of training work. In developing educational programs and didactic material, particular emphasis must be placed on implementing ICT methods and discussions in educational activities. However, teachers face barriers that challenge them from applying ICT and developing materials in the EFL classroom. The aim of the study by Yunus et al, (2013) is to investigate the perception of teachers in higher education in English, which discourages the application of ICT in the EFL classroom. Results showed a lack of technical aids in schools and limited Internet access. Such technical problems challenge EFL teachers from utilizing ICT in the classroom.

English teaching has changed tremendously, especially in the last decade. Students are responsible for studying, mastering the materials and, of course, the lectures, which collect relevant information from established texts. Many career opportunities once considered insignificant are becoming important today, such as communication, interpersonal skills, technical skills, interpersonal skills, ICT reading skills, and more. For this, changing trends, especially in teaching and learning English, need to change for the better. Seasons change, fashion changes, and people's attitudes change, but it is disappointing that the English curriculum has essentially not changed over the past century (Chokwe, 2015).

2.1.4 Technological-Pedagogical Content knowledge

TPACK is a technology integration framework that outlines three forms of knowledge that instructors must combine to integrate EdTech successfully. These knowledge types include Technological, Pedagogical and institutional. And subject matter expertise. TPACK is a strategy for incorporating technology into the educational process. Teachers can use the TPACK approach to apply and integrate technology into a specific curricular subject. Teacher education consists of three components. They master the use of technology, learn appropriate teaching methods, and gain expertise in the topic.

TPACK is organized to use technology in the educational process (Punya Mishra & Koehler, 2008). It was derived and expanded based on (Hsu, 2016) model of "Pedagogical Content knowledge" and supplemented with "technical knowledge" that teachers should acquire as the necessary knowledge. Through the TPACK system, teachers can apply and integrate technology into specific curriculum content. Teachers' training includes three elements accordingly: mastering the use of technology, acquiring suitable teaching methods and being well-known in the subjects. These skills should be the focus of EFL teacher training.

Hsu (2016) identified the competence required in teaching a subject matter as the PCK. Therefore, teachers must impart common knowledge via technology not limited to PCK; it instead demands the mastering of "Technological Pedagogical Content knowledge (TPCK)" (Punya Mishra & Koehler, 2008). Based on Schulman's idea of PCK, Punya Mishra and Koehler (2008) added the term technology to the PCK. They got TPCK which interwoven technology, pedagogy and content.

Thus, TPCK is a theoretical framework that emphasises the "complete intersection of Technology and Content" (Koehler, Mishra, Kereluik, Shin, & Graham, 2014). (Slough & Chamblee, 2017) use the analogy of the lens, one is technology, and the second is content, by which teaching, and learning can be viewed so that the two elements, technology and content, fused. Although ICT is being used in schools and children using ICT is increasing, teachers are using ICT for teaching is still a matter that concerns many educators though (Chai, Koh, & Tsai, 2013; Voogt & McKenney, 2017). Integrating ICT into EFL classrooms remains problematic for many teachers (Niess, Ronau, Shafer, Driskell, Harper, Johnston, & Kersaint, 2009). Teachers feel they need to prepare for ICT in certain subjects and have a solid theoretical basis (Chai et al., 2013; McGlothlin, 2014). A theoretical model TPACK has been coined to alleviate the challenges that EFL face. It aims to guide teachers' use of ICT.

(Punya Mishra & Koehler, 2008), Technological Pedagogical Content knowledge (TPACK) is based on three core knowledge: Pedagogical (PK), Content (CK) and Technological (TK).

Four hybrid elements formed the models' interface. They are Pedagogical Content knowledge (PCK), Technological Content knowledge (TCK), Technological Pedagogical knowledge (TPK), and Technological Pedagogical Content knowledge (TPCK) See (Punya Mishra & Koehler, 2008).

Furthermore, the TPACK model emphasizes that 21st-century skills and knowledge teachers should develop (Hsu, 2016). It is noticeable that developing adequate ICT knowledge also leads to teachers' self-efficacy or ability in computer to use ICT (Aesaert, Van Nijlen, Vanderlinde, & van Braak, 2014; Rohatgi, Scherer, & Hatlevik, 2016). Vanderlinde and van Braak (2011) added that developing awareness of computer skills urges teachers to adopt and apply ICT in education.

Niess et al. (2009) stated that the TPACK model demonstrates the knowledge and competencies that teachers should develop to integrate ICT successfully into teaching. The model indicates the necessity for teachers to develop knowledge in pedagogy, content and technology intersections. Likely, the teachers should be able familiar with how these three elements affect each other in a specific teaching context.

2.1.4.1 The Importance of TPCK in Teaching Skills

Highly skilled teachers are a national asset in realizing the Ministry of Education's ambitions to strengthen the national education system for high-quality education. Once mastered by the teacher, the technology with pedagogical content determines the quality of teaching and directly influences the learning outcomes. (Sarjoni, Abd Rahman, Sabil, & Md, 2019) Concluded that teachers who have mastered the content of content education technology could learn reading skills more effectively than teachers without content education technology as proposed by the government. The aim of the study (Fathi & Yousefifard, 2019) was to determine the attitudes of Iranian EFL students towards the TPACK of their teachers. The results suggest that Iranian EFL teachers may need further training in the latter elements of TPACK to acquire the skills necessary to integrate technology into their language teaching more effectively.

After COVID-19, innovative technologies have appeared, and the increasing development of integrating such technologies in education. Furthermore, such development makes the Technological Pedagogical Content knowledge model more popular.

Adipat's (2021) study showed that Technology-enhanced Content and Language-Integrated Learning (T-CLIL) improved the TPACK for prepared teachers, as evidenced by a constant increase in the average of all seven TPACK elements over four different time intervals. Integrating technology into the learning process is crucial in the current digital age. Therefore, these components and are also supported by the ability to integrate both components into the

technology. Twentieth-century learning is made possible using technology as it can develop the skills and competencies that the current generation of student's needs.

The impact of technology must be remembered, and pedagogy must complement traditional teaching methods with new electronic devices and software. It creates an interesting learning atmosphere and an active learning environment. The integration of technology in English as a foreign language (EFL) or English as a second language (ESL) through the TPACK model is a new topic for researchers (Koehler et al., 2007). Therefore, this literature review examines the application of TPACK in the EFL/ESL class. TPACK is thus a form of knowledge those competent teachers always bring. Sometimes this may need to be clarified, especially if you use standard (transparent) technology. However, newer technologies often the current situation, requiring teachers to reconfigure their understanding of technology disruption and all three components. By examining the knowledge that underlies effective teaching and learning, we are examining how we can improve the quality of teachers. The quality of the teacher himself is an essential factor in improving student performance. The main motive for researching teacher knowledge is to improve student performance. On the other hand, to improve the quality of teachers, it is essential to understand a teacher's professionalism.

TPACK is one of the essential skills for teachers who understand technology in a time of the industrial 4.0 revolution. Technology can be applied in classroom teaching by looking at teachers' TPACK stages. High-level TPACK teachers facilitate their steps and movements by exploring classroom technology. ICT provides several powerful tools to transform a teacher-centered knowledge environment into a student-centered and interactive one. ICT in education opens learning opportunities by allowing students to acquire, expand, transform and share ideas and information in different communication styles and formats. So, everything possible must be done to increase it. One way to improve ICT use in education is to identify critical factors. (Yeager, Dahl, & Dweck, 2018) Analyzed the perception of 744 undergraduate students at the TPACK level, measured in response to a study by (Celik, Sahin, & Akturk, 2014). The results show that graduates of teachers with more Technological knowledge have more knowledge of Pedagogy and Content.

2.1.4.2 Content knowledge (CK)

CK demonstrates the teacher's competencies in the subject matter. Therefore, knowledge of the theories, concept, organizational models and fact and evidence of the teacher's

specialization are the elements of CK. It includes, in addition to theoretical knowledge, knowledge of the best practices in the field for transferring ideas and concepts to the students. So, teachers' CK differs according to the fields of teaching and students' levels. For example, advanced-level students require more detailed information than basic-level students who need general information about the field. Thus, imparting to the groups mentioned above requires different teachers' CK (Rosenkränzer, Hörsch, Schuler, & Riess, 2017).

Rosenkränzer et al. (2017) established Content knowledge and produced a massive influx of research studies on teachers' knowledge and the usefulness of this information for effective teaching. According to Shulman's theoretical framework, instructors must be skilled in two categories of knowledge: (a) content and (b) understanding of curriculum development.

CK stands for the instructors' teaching competence on the subject to be taught. This knowledge includes knowledge of theories, concepts, evidence, structures, ideas, proof, and established practices and approaches to developing this knowledge (Koehler et al., 2014). Content knowledge (CK) is the knowledge of the teacher about a subject to be taught or to be taught. For example, high school science or history content differs from the content covered in a university art evaluation course or a university astrophysics seminar. Knowledge of the content is essential for teachers. As (De Rossi & Trevisan, 2018) noted, this knowledge includes knowledge of concepts, theories, ideas, organizational systems, knowledge of proof and evidence, and established practices and methods for developing this knowledge. Knowledge of the subject being taught or taught, including basic concepts, theories, and organization or dissemination of ideas. Expertise, such as scientific information and mathematical knowledge.

CK refers to the teachers' knowledge, skills and skills in the subject matter. Content knowledge that deals with the teaching process are very significant. It includes the most appropriate means of representing and transmitting content and how students acquire specific issues and themes in a subject. If new teachers must be effective, they must grapple with concerns of Pedagogical Content (or knowledge) and general Pedagogy (or generic teaching principles) simultaneously.

To educate all students according to contemporary standards, instructors must have a thorough and flexible understanding of the topics to assist students in developing meaningful mental tools, linking one idea to another, and clarifying misunderstandings. In addition, teachers must ascertain how ideas relate across disciplines and to everyday situations. This level of

comprehension serves as a basis for PCK. It also permits teachers to present concepts to others (Abd-El-Khalick, 2006).

Pedagogical Content knowledge is seen as a continuum, with teachers gaining more from the proper training and practice. Educators acquire it before they start to teach, during pre-service training, and throughout their time at school (McGraw & Davis, 2017). From the standpoint of education development, the main goal is that increases in teacher pedagogical topic understanding will improve student learning. A more competent teacher who knows how to deliver the topic to a specific audience should improve students over a less prepared or skilled teacher (Schneider, Krajcik, & Blumenfeld, 2005). However, one critical aspect is that it is challenging to offer adequate further training to educators once they have begun teaching. The position's daily duties provide little opportunity for improving Content knowledge or acquiring new pedagogically beneficial techniques. So, how may the teaching quality be improved?

Using instructional tools that enhance Content knowledge is a complementary method to boost the teaching of the English language in and out of the classroom. This strategy stresses creating and utilizing high-quality educational materials (Davis & Krajcik, 2005). More professional growth and training might be beneficial, so one strategy only considers one other. If instructional resources include tested ideas and best practices from competent and effective educators, the Content knowledge of teachers who use these resources may improve (Chai, Koh, & Tsai, 2010).

"Educative curricular resources (p.255)" are instructional items that can assist teachers in improving their Content knowledge. They can assist educators in improving their lessons by expanding their Content and Pedagogical expertise through the education process using resources that represent best practices in all facets of Content knowledge (Huisman, Singer, & Catapano, 2010).

2.1.4.3 Pedagogical knowledge (PK)

Pedagogical knowledge demonstrates the practical competencies of teachers in the teaching methods, techniques, and processes required for language teaching. Hence, PK, as a comprehensive part of knowledge. It includes the values, purpose, and objectives of education; PK, when linked to a specific discipline, includes the knowledge in classroom management, the learning style of the students, planning lessons and evaluation (Shulman, 1987). Besides, Pedagogical knowledge, which is applied to various teaching disciplines, refers to the

knowledge needs on how something is taught. Sometimes the word general is attached to the term PK to become general Pedagogical knowledge (GPK). Thus, a distinction is made to differentiate between the knowledge required on how to teach generally and the knowledge needed for teaching a particular subject matter; it is usually referred to (the latter) as Pedagogical Content knowledge (PCK) (Hashweh, 2005).

Pedagogical knowledge (PK) encompasses teaching and learning knowledge such as classroom practice, pedagogical methods, strategies, student roles, class leaders and student communities. Pedagogical knowledge (PK) is another element of the PCK. Knowledge refers to the ability of teachers to provide an effective pace of teaching and learning for all students. Schulman says that academic knowledge is knowledge, theory, and belief about the teaching and learning process that determines a teacher's approach to teaching a subject in the classroom (Hashweh, 2005). The learning process includes all activities - material development, class management, study habits, problem-solving, methodology, strategy, and assessment (Lester, Hudson, Tropeano, Tropeano, Creswell C, Collier, Farmer & Eley, 2012). The success of this activity leads to an improvement in student learning outcomes.

General Pedagogical knowledge has been identified as an essential component of high-quality education. According to a recent assessment of studies on general Pedagogical knowledge, a profound understanding of general pedagogy facilitates effective teaching. It involves improved teaching effectiveness and the effective management of classroom environments (Ulverts, 2019). However, research has yielded minimal ideas into the knowledge teachers require to effectively utilize technology in their job. As a result, instructors' capacity to use technology to supplement their general Pedagogical knowledge must be investigated.

The Pedagogical 'knowledge base' of a teacher includes all the cognitive understanding required to design appropriate educational settings. According to research, this information may be evaluated. However, determining the substance of this body of knowledge is a difficult task. The contrast between 'knowing how', i.e., procedural knowledge and 'knowing that, i.e., the declarative knowledge from cognitive psychology, is the theoretical base for most investigations. This method is significant because it explains how information is connected to behavior or, more specifically, the quality of teachers' performance.

Teacher knowledge was classified into seven types, including the principles of GPK and PCK (Käpylä, Heikkinen, & Asunta, 2009) (the knowledge that integrates a specific subject's

Content knowledge and Pedagogical knowledge for teaching that subject). Since its inception, Pedagogical knowledge has been extensively explored as an essential component of instructors' knowledge. However, although numerous studies show that it is critical for training outstanding instructors, broad Pedagogical knowledge has not been the subject of many research investigations. Pedagogical knowledge deals with teachers' competency in applying teaching techniques to enhance student learning.

2.1.4.4 Technological knowledge (TK)

Technological knowledge demonstrates the competence of teachers in using various technological tools and resources. TK encompasses understanding educational technology and applying it to a specific topic, identifying when technology impedes or assists learning and constantly adapting what new technology offers.

Technological knowledge (TK) includes both digital and analogue technology. This means knowledge of various teaching and learning technologies. Technological knowledge is constantly changing (Mishra & Koehler, 2008). It's a very dynamic character, and changes are happening daily, so teachers need to be active in this situation and ready to update their Technological knowledge. By acquiring Technological knowledge, a person can use information technology to perform many different tasks and create different ways of performing a particular task (Punya Mishra & Koehler, 2008).

According to the large-scale evaluation of the Teaching and Learning International Survey (TALIS), most instructors lack the confidence to utilize ICT in teaching. As a result, there is inequity in accessing and using technologies in the classroom. Aside from concerns of equity, the effect of technology use is unknown. The use of technology in the classroom has been shown to improve students' participation, inspiration, performance, and teachers' pedagogical approaches (Willermark, 2021). However, numerous studies show that technology can negatively affect learning by generating additional distractions, thus affecting learning (Panigrahi, Srivastava, & Sharma, 2018). Educational technology has been viewed as an 'intellectual and social amplifier,' capable of enhancing "good" school systems while preventing problems in low-achieving schools (Levin & Schrum, 2012). As a result, there is significant evidence that using technology alone does not improve teaching and learning results. Only a better teaching approach can ensure improvements. As a result, it is critical to use technology for educational objectives informed and deliberately.

Thus, research should focus on utilizing technology, and the teaching and learning activities technology can improve. Many researchers have emphasized the need for support and active leadership to ensure that technology is used to improve education (Baran & Uygun, 2016). Identifying instructors' current knowledge, use, and learning requirements, in general, is a crucial aspect of support activities. However, global surveys such as TALIS have yielded a great deal, much to discover about teachers' technology-related knowledge to promote successful teaching in the twenty-first century.

To be technologically qualified, teachers must have more than basic technological abilities since it is about utilizing technological skills in an educational environment as an instructional tool. For example, digital competence is "the art of teaching, computer-driven technological tools that enhance learning, teaching, evaluation, and the entire syllabus."

According to (Krumsvik, 2011), educators' digital competence comprises expertise in applying technology in a professional setting and strong pedagogic-didactic judgment and knowledge of its consequences for teaching methods and techniques. Technologies are viewed to assist educational knowledge and techniques from differing perspectives. However, the most used technology is not intended to be utilized in academic settings. Many special software programs are largely designed for corporate goals rather than educational purposes. On the other hand, Web-based services are largely intended for entertainment, communication, and networking (Koehler et al., 2014). This implies that instructors must create technology-inclined techniques, procedures, and tools for teaching and learning (Kivunja, 2013). This may explain why many teachers struggle to integrate technology into their classroom teaching.

2.1.4.5 Pedagogical Content knowledge (PCK)

Pedagogical Content knowledge refers to the core aspects of learning and teaching. PCK contains knowledge in developing curriculum, evaluating students, and narrating the results. Furthermore, PCK evaluates the correlation between the knowledge of teaching methods and the application of such methods in (assessment and curriculum). It also promotes learning. Like, CK, PCK obtains differently according to the student's level and the teaching discipline. To sum up, PCK aims to develop the teaching practice; It strongly connects the content to be taught with the best method to transfer that content (Park & Oliver, 2008).

(Shing, Saat, & Loke, 2018) Proposed the idea of "Pedagogical Content knowledge" (PCK) as a potential solution to the so-called "missing paradigm" in education research and

study. Learning was addressed in two ways: concentrating strictly on content or methodology. However, according to (Deng, 2018), none of the captured techniques is all instructors' existing knowledge components. As a result, he defined PCK as "that distinctive combination of knowledge and practice that is exclusively the domain of educators, their distinctive form of professional knowledge." The two fundamental components of PCK identified by (Van Driel, Verloop, & De Vos, 1998) were the most helpful means of portraying the concepts in one's subject area and knowing what makes understanding these contents simple or complex for learners.

Pedagogical Content knowledge (PCK) is the interface and interaction between Pedagogical and Content-related knowledge. The PCK used in this study is like the concept of knowledge transfer proposed by (Shing et al., 2018) for a specific content area. PCK contains teaching, learning, curriculum, assessment, and reporting knowledge (Park & Oliver, 2008). It also discusses students' understanding of existing knowledge, alternative teaching strategies, common misconceptions about content, and links and connections between different content-based ideas can be made. It is also related to the flexibility gained by researching alternative solutions to the same idea or problem and more that are considered essential to effective learning (De Rossi & Trevisan, 2018).

Since (Shing et al., 2018) presentation of PCK, the idea has been utilized by various scholars, resulting in both academic and practical rapid progress. Numerous researchers have expanded on the (Shing et al., 2018) first PCK framework. The earlier researcher (Park & Oliver, 2008) investigated PCK in teaching and learning and contributed two new elements to Shing's initial PCK components: knowledge of pedagogy and teaching. The researcher (Park & Oliver, 2008) approach is another explanation that significantly impacts science education. This approach added three main elements: orientation to science education, understanding of science curriculum, and basic understanding of scientific literacy assessments. The researcher (De Rossi & Trevisan, 2018) paradigm, which focuses on the notion of "Content knowledge for teaching mathematics" (CKTM), had a significant contribution to the field of math. This model incorporates PCK and CK, which are separated into three parts. The PCK framework consists of three components: (1) knowledge of students and content, which is similar to knowledge of students' (mis)conceptions coined by Shulman's (2) knowledge of teaching and content, which

is comparable to the knowledge of educational representations by Shing, and (3) knowledge of the curriculum.

Furthermore, examination tools to assess teacher cognitive abilities are created and utilized in several research studies, providing empirical support for Shulman's assertion that PCK improves teaching quality and student performance. For example, the researcher (Park & Oliver, 2008) discovered a substantial influence of instructors' CK and PCK on teaching effectiveness (as measured by standardized test evaluations, teacher self-reports, and task analyses) and student performance in math. PCK even outperformed CK in the cognitive potential for student development and instructional quality. The researcher (Park & Oliver, 2008; Rayan, Zafar, & Tsagkari, 2021) corroborated these findings in another investigation, demonstrating that instructors' PCK positively impacts student motivation. Therefore, focusing on teachers' PCK seems a beneficial way to improve the quality of education.

Pedagogical Content knowledge is a competency type that is specific to teachers. PCK is the applicability of teachers' Pedagogical knowledge to the subject matter that they want to teach. Furthermore, PCK is looked at the concretization of what the teachers know about the teaching methods with their competency in the subject matters. Shing et al. (2018) stated that Pedagogical Content knowledge imparts the content to the suitable techniques required for teaching.

2.1.4.6 Technology Content knowledge (TCK)

Technological Content knowledge demonstrates the teachers' knowledge of the influence between technology and content in teaching others. Thus, TCK shows the teachers underthinking in selecting from the many tools' technology offers to plan a particular lesson in a discipline. The selection should be amongst the best EdTech tools suited for the subject matters, learning setting and the like (Busono, Mardiana, & Dwidayati 2021; Chai, Koh, & Tsai, 2011).

Technology Content knowledge (TCK) is the knowledge about different technologies and their application in teaching, depending on the type of content and the way students understand concepts (Adipat, 2021; Busono et al., 2021). Technology Content knowledge (TCK) is one of the structures in TPACK. These concepts of knowledge appear in the description of the three main components of teacher training and work preparation in the context of content, pedagogy, and technology (Baran & Uygun, 2016). The purpose of TCK is to

understand how content and technology interact. Teachers at work and before work must create a multimedia environment and understand professions with a specific technology (Voogt & McKenney, 2017).

Technology now being developed can be employed as intellectual aid in education (Alshref et al., 2021). For example, using web-based technologies, students may continue to gather knowledge positively by making content online such as academic papers or YouTube notes. Similarly, when teachers incorporate technology into the learning process, it promotes the teachers' cognitive process. The cognitive process continues during and after using technology for teaching activities. The cognition process begins before learning happens when teachers demonstrate the content using technology, a type of Technological Content knowledge. TCK is the ability to express information utilizing technological tools (Listiawan, As'ari, & Muksar, 2018).

TCK is a topic that needs to be clarified (Listiawan et al., 2018). Only a few researchers have examined this aspect of TPACK (Thompson & Mishra, 2007). As a result, TCK has received little attention in research. On the other hand, TCK is critical for implementing the TPACK framework (Adipat, 2021). TCK allows instructors to use knowledge from various fields (Listiawan et al., 2018).

Examining the effects of technologies on a certain discipline's techniques and approaches is crucial for building suitable interactive resources for instructional objectives. The selection of technology allows for and limits the variety of content that may be taught. Similarly, content judgments might restrict the sorts of technology employed (Tütüniş et al., 2022). Technology might limit the sorts of viable representations, but it also allows for the creation of newer and more diverse representations. Furthermore, technological tools can allow greater freedom in traversing between various representations (Baran & Uygün, 2016).

TCK is thus a knowledge of how Technology and Content impact and restrict each other (Hofer & Harris, 2012). Teachers must be acquainted with other subject matters and know how the subject matter (or the types of representations that may be generated) can be transformed using different applications. Teachers must comprehend the most appropriate technologies for discussing subject-matter learning in specific disciplines and how the subject influences technology (Alshref et al., 2021; Hofer & Harris, 2012).

2.1.4.7 Technological Pedagogical knowledge (TPK)

According to Schmidt, Baran, Thompson, Mishra, Koehler and Shin (2009), Technological Pedagogical knowledge refers to the understanding of teachers how a particular technological tool affords new pedagogies and constraints which change the teaching and learning processes. Furthermore, Baier and Kunter (2020) and Harris et al. (2009) affirmed that the concern of TPK lies in understanding the ways technological tools are integrated within the pedagogy not only appropriately with the specific driplines but also to improve students' understanding of the lesson where technology is applied.

Technological Pedagogical knowledge is how learning and teaching are changed due to using specific technologies (Santos & Castro, 2021). Teachers must know various technologies and use them as pedagogical strategies in the classroom environment. Technology Content knowledge is the competency in teaching techniques along with technological tools and competency in how learning can change using certain technologies (Baier & Kunter, 2020). Technological Pedagogical knowledge means knowing how different technological tools can be applied in teaching and understanding how that technology can be shifted to how teachers teach (Fathi & Yousefifard, 2019).

TPK is a knowledge of how specific technologies may alter student learning once applied in specific ways. This entails understanding various technology instruments' educational potentials and restrictions concerning discipline and developmental instructional designs and approaches (Baier & Kunter, 2020). TPK requires a greater awareness of the limits and capabilities of technologies and the academic settings in which they operate. For example, consider how whiteboards may be utilized in the classroom. A whiteboard is expected to be used in schools since it is usually static, viewable to many people, and effortlessly changeable (Baier & Kunter, 2020). As a result, the whiteboard is often situated in the front of the classroom and is managed by the instructor. This location enforces a unique physical order and control by dictating the positioning of desks and shaping the pattern of classroom interaction, as students frequently use it whenever the instructor summons them (Tondeur, Scherer, Baran, Siddiq, Valtonen, & Sointu, 2019; Valtonen, Sointu, Kukkonen, Mäkitalo, Hoang, Häkkinen, & Tondeur, 2019).

However, it would be wrong to state that whiteboards could only be utilized in one manner. Relating this to using a whiteboard in a creative gathering in an advertising company

context shows a unique application of this technology. Many parties in such a situation control the whiteboard. It may be utilized by anyone and serves as a focus for conversation and the communication of meaning (Tondeur et al., 2019).

Knowledge of TPK requires an understanding of the technology's capabilities. Their use in different contexts of TPK is especially significant since most widely used software products are not intended for academics (Baier & Kunter, 2020). Programs like Microsoft Office Suite (Word, PowerPoint, Excel, Entourage, and MSN Messenger) are created for corporate environments. Websites and blogs are examples of web-based technologies for recreation, interaction, and networking (Azmi, 2017; Majeed & Ayub, 2018). Teachers must avoid technical fixities, learn to explore beyond the most popular innovations and advancements, and reconfigure them for specific instructional objectives. Thus, TPK necessitates a forward-thinking, innovative, and open-minded pursuit of technology used to increase learner comprehension (Yunus et al., 2013).

TPK recognizes the mutual interaction of technology and pedagogy. This enables instructors to comprehend what technology can achieve for specific educational goals and to identify the most effective method depending on its suitability for the specific teaching method (Oikarinen, Oikarinen, Havu-Nuutinen, & Pöntinen, 2022). Technology may also provide new techniques and locations for learning and make specific schoolwork easier to undertake (Burbules, Fan, & Repp, 2020). Group publishing, for example, may be done using Google Docs or Google Hangouts rather than just face-to-face meetings, allowing collaboration tasks to be performed over distances. Furthermore, the emergence of e-learning and web-based courses necessitates the development of new teaching approaches suitable for the current technologies (Havryliuk, Osaulchyk, Dovhan, & Bondar, 2020).

The earlier researcher (Hardman, 2019; Young, Young, Hamilton, & Pratt, 2019) explored and pointed out some adverse effects and claimed from the lack of awareness of TPACK. It isolates technology from the pedagogy and grants applying technology in the classroom with four problems. First, Fahrurozi, Budiyanto and Roemintoyo (2019) reported that rapid technological development makes it impossible for teachers to cope with all the new technological tools and apps. The second problem stems from the nature of software and apps. They are not designed for education but business (Fahrurozi et al., 2019). Third, it signifies that those students in the classroom are learning the use of the apps, not the content of the lessons.

The third problem, according to Fahrurozi et al. (2019), associated with keeping technology separate is the nature and setting of the classroom. To make a lesson suitable for a specific group of learners, the teachers may change the teaching method, but using instructional video could not do so; it presents the same ideas in the same way, every time. Finally, Morgan-Thomas, Dessart, and Veloutsou (2020) asserted that separating technology focus on what, not how to teach. According to the teacher, the lesson will be about what technology the teachers will use and what skills are required to use it, not what to present and demonstrate to the students (i.e., Content knowledge).

2.1.4.8 Pedagogical Content knowledge (PCK)

Technological knowledge assists teachers in building learning activities that enhance learners' knowledge, according to the design learning outcomes (Azmi, 2017; Fu, 2013). Hadi, Retnawati, Munadi, Apino and Wulandari (2018) confirmed that when learners develop and design their learning outcomes, they depend on their technical knowledge as far as is needed. For example, students explore the use of metals, plastic and timber when designing a school playground. Getting acquaintance about the features of the materials, they surely understand the reasons behind using such materials in different places and purposes (Mehmood, Anwer, & Tatlah, 2017).

Technology has become an incredibly significant aspect of students' life outside the classroom, and it may also help them comprehend complicated topics or inspire peer cooperation inside the class (Frey, Fisher, & Smith, 2019; S. Lee, Kuo, Xu, & Hu, 2022). Due to these advantages, the current educational policy recommends that instructors incorporate some technology into their classrooms, and many teachers encounter challenges. For example, cost, availability, and time are frequently significant hurdles to classroom adoption (Frey et al., 2019). However, another impediment is a need for more understanding about how technology might best be used to help students across a wide range of content (Mehmood et al., 2017).

Redmond and Lock (2019) believed that Technological Pedagogical Content knowledge refers to teachers' competence in each teaching topic. Therefore, they should integrate it into their teaching. TPACK was brought to educational research as a theoretical model that predetermines the teacher's understanding of the knowledge required for dynamic technology integration (Thompson & Mishra, 2007). Teachers intuitively understand the complex interplay of the three basic knowledge components (CK, PK, TK) by learning content using suitable

pedagogical methods and technologies. Researchers are Technical-looking to develop and express Pedagogical knowledge (TPACK) through experienced teachers. Although most of the existing studies have focused on the TPACK evidence and development in general, some have started to highlight teachers' knowledge of the TPACK subdomains (Punya Mishra, 2019; Tütüniş et al., 2022). The structure of TPACK is based on the complex interaction between three primary forms of knowledge: Content (CK), Pedagogy (PK) and Technology (TK). The structure of TPACK is based on Shulman's idea of Pedagogical Content knowledge (Niess et al., 2009). This approach is not limited to looking at these three knowledge bases and emphasizes the new knowledge between them (Santos & Castro, 2021).

The establishment of TPACK by educators is essential for efficient technology-enhanced education. The first is theoretically and practically combining learning content, education, and technologies. Technological Pedagogical Content awareness develops due to interconnections among content, pedagogy, and technological expertise (Busono et al., 2021). The inherent structure of the technological world has generated a schism in institutions: one part has technology-rich infrastructures and instructors with excellent TPCK, and another does not. The National Council of Teacher Education mandated ICT for institutions (Celik et al., 2014). However, it was unable to ensure good TPCK for educators. Therefore, the first implication of TPACK is a positive attitude toward technology between Teacher Educators and their employers (Thompson & Mishra, 2007).

For efficient teaching, teachers must combine all aspects of education and technology appropriately. To promote TPACK among instructors, it is necessary to refresh educators' understanding of various techniques, teaching methods, and subjects (Chai et al., 2010). A regular training class for curriculum, pedagogy and technology integration which are inherently dynamic, is required. As a result, the Institute of Teacher Education must guarantee that each has up-to-date expertise. It may be designed in two ways: by ongoing training or by granting flexibility to teachers to examine the methods and process of integrating technology into educational interactions (Drugova et al., 2021). The TPACK framework aims to develop improved methods for detecting and describing how technology-related professional knowledge is applied (McGlothlin, 2014). Teachers' academic talents are developed through training. Teachers should be professionally sound to render outstanding services. Many teacher training

institutes have incorporated TPCK into their syllabus. However, most instructors need to be made aware of using ICT with pedagogy and content; This must be modified (Niess et al., 2009).

TPACK provides numerous options for increasing successful teaching in various contexts. It opens up many possibilities for developing technology-integrated educational content (Young et al., 2019). Unlike personal knowledge of the subject, pedagogy, and technology, TPACK necessitates comprehension of integration for a successful teaching and learning process (Surayya et al., 2021). With the advancement of technology, there is a greater demand for a teaching strategy in education. Since the same technology is utilized in various fields, for example, Microsoft PowerPoint is employed based on the user's demands. However, the use of Microsoft PowerPoint will vary from upper elementary to senior secondary classes (Alshref et al., 2021; Azmi, 2017).

The earlier researcher (De Rossi & Trevisan, 2018; Wang, 2019) explored that TPACK should guide curriculum development and teacher education and the application of TPACK in classrooms are now very fruitful the gain mipmapping skills.

2.1.5 Application of Technological Pedagogical Content knowledge in the Libyan Education System

Technological progress is changing education. Against this background, integrating technology into learning is seen as a flexible and innovative instrument of pedagogical learning in the 21st century (Alshref et al., 2021; Andrews, 2009). The earlier researcher (Mokhtar, El-Ssawy, Al-Anasari, Sammen, Gyasi-Agyei, & Abuarab, 2022) also reported that the use of technology in the educational setting had increased rapidly, and (Gómez Guevara, 2021) reported that technical aids had led to positive learning growth. The students come from different families throughout the year, each with different bits of intelligence and abilities. Furthermore, Higher Education System (HE) in many developed countries has gone through much educational research in the technical field, and this work does not begin until Libya (Alhodery, 2005; Vanderlinde & van Braak, 2011). In recent research (Azmi, 2017; Robles, 2012), the researcher has shown that the knowledge base has many gaps, such as using technology in teaching and learning and academic staff training.

The introduction of ICT in the classroom is critical to improving the quality of education, promoting effective knowledge management and improving knowledge transfer in higher education (Alhodery, 2005; Barakat & Fakihi, 2021). Some Libyan universities have already

started using e-learning in the classroom, but many problems still need to improve implementation. The earlier researchers (Emhamed & Krishnan, 2011; Rhema & Miliszewska, 2010) showed that the problems that hinder teachers and students in applying ICT and e-learning are the weak infrastructure and poor and shallow knowledge in ICT and e-learning and financial support. The teaching practice of Libyan teachers of English as a foreign language at the university level can be assessed based on their cultural background, attitude towards learning and teaching, and the training acquired: theoretical language skills and practical teaching skills. This is the result of the organization of teaching at Libyan universities. These problems are exacerbated by the teaching method and top-down institutional monitoring; These managers (in this context of belief and culture) consider the pressures on teachers to prevent them from doing their duties without pre-service training and professional aid.

Utilizing ICT in the classroom will shift the focus of teacher orientation in the classroom into student-centeredness, where students play a genuine role in the learning process (Abdulhamid, 2011; Azmi, 2017). In the student center approach, the role of the teacher usually changes to be an assistant or guide, whereas the students will obtain the main parts of the lesson.

Andrews (2009) claimed that learners value the utilization of ICT in the classroom. Besides, teachers appreciate the availability of technology to them; they perceive it as a means of enhancing the educational system and making it more original and authentic to the learners (Majeed & Ayub, 2018). The advancement of technology benefits teachers' tasks in the classroom. Since it makes planning and preparing the teaching materials easier. According to many researchers (Andrews, 2009; Azmi, 2017; Rojas, Álvarez, Morales, & Moreno, 2014), the use of technology in the classroom enhances the student's learning and improves their achievement for multiple targeting goals of life.

Basic ICT skills among college students today are as important as other subjects (Picatoste, Pérez-Ortiz, & Ruesga-Benito, 2018). These days, the application of Information and Communication Technology in the teaching/learning has become very popular. Hardman (2019) stated that ICT-based activities raise the learners' awareness to be creative and influential thinkers while interacting with their lessons. Furthermore, these activate discussion and engage the student with them more in the teaching process. Likely, exposure to multi-ICT-based tasks in both school and real-life situations helps learners to acquire technical knowledge. Similarly, Hardman (2019) confirmed that knowledge of technology is indispensable and one of the bases

required for ICT amalgamation. It is also shown that the more teachers acquire technological skills, the more likely they are to integrate EdTech into the classroom.

2.1.6 Summary

This section sheds light on the context of the study. Therefore, the literature review above provides a basis for understanding the present study's various interrelated aspects. Based on the above literature, this study has two objectives. First, contribute to the academic literature by evaluating the application of Libyan EFL teachers to Technology, Pedagogy and Content knowledge in the EFL classroom. It also specifies which of the six categories of TPACK impacted their use. Second, this study seeks to fill the gaps in the Libyan ELT study, which needs more quantitative research on TPACK and studies on issues of teacher identity. Finally, related work and similar studies were examined in this section.

2.2 Related studies

2.2.1. Related studies in the world

Xiaobin, Wei, Huiwen and Lijun (2014) stated that "for the past few years, TPACK has become a hot issue in the research fields of teacher education, of Information Technology (IT) and curricula as well integration as teacher knowledge" (p.47). Based on the theory of TPACK, Xiaobin et al. (2014) used both questionnaires and interviews to investigate the practical application of foreign language teaching in the National Training Project, which is a model project for teachers of English as a foreign language in primary and middle schools; it was held in the School of Foreign Studies of South China Normal University. The researchers provided strategies and suggestions for training in Teaching Foreign Languages. The results showed that the practical application of English language teachers to TPACK is still below the required level because the teachers are far from the standard for TPACK.

Furthermore, Tseng (2014) stated that "Technological Pedagogical Content knowledge (TPACK) has received much attention recently, serving as a lens to examine how teachers integrate technology into teaching". (p.379). Tseng (2014) also argued that although the TPACK scale for teachers' examination has been developed, TPACK may not yet fully reflect the real teacher practices in the classroom. To address this problem, the researcher suggested taking students' perspectives to achieve a balanced assessment of TPACK and using students' generated perceptions to help teachers enhance technology-related teaching practices. Thus, the researcher used the student based TPACK questionnaire to evaluate EFL students' perceptions towards

their teachers. The study gathered the perceptions of 257 middle school Taiwanese students. Results showed that students believed their teachers demonstrated more Content knowledge than the integrated TPACK.

Paneru (2018) conducted a qualitative study in five different primary schools in the Czech Republic, aiming to investigate how EFL teachers develop teaching competencies and integrate the TPACK model in the classroom. Findings indicated two different approaches to practices: formal and functional practices, where the former included conservative mechanical practice of technology application in language teaching. On the other hand, the functional practice participated in social construction. Furthermore, teachers expressed that combining mechanical TPACK with technology in the classroom minimized the transfer of mechanical knowledge from English texts. Also, teachers who relied on alternative learning interactions reported positive transformation outcomes associated with using technologies embedded in classroom instruction as a collaborative tool for learning models. Teachers' perceptions, practices, and reflections regarding integrating technologies in the EFL environment are perceived as new literacy skills. They also increase the learner's creative potential.

The purpose of Alnajjar and Al Jamal's (2019) study was to verify EFL teachers' perceptions on the impact of TPACK in teaching listening and speaking skills. Sixty-nine teachers from UNRWA schools in Jordan participated as a sample of the study. The results indicated teachers' lack of TPACK and inability to combine Technological knowledge with academic content. Furthermore, the study reported the lack of teachers' knowledge of technological methods in teaching content as a coherent type of knowledge which contained three cognitive aspects: content, technology and teaching methods.

Likely, Prasojo, Habibi, Mukminin and Yaakob (2020) explored the perceptions of in-service Indonesian EFL teachers during applying TPACK. The study recruited 573 in-service EFL teachers participating in responding to a questionnaire on TPACK. The results showed that the teachers of English as a foreign language during their in-service lack Technological knowledge, but they realize they have sufficient Pedagogical knowledge. Likely, the findings indicated significant differences linked to gender in favor of females in all areas of TPACK. Furthermore, the findings indicated statistically significant differences between the sample age attributed to those who were less than 35 years old.

2.2.2. Related studies in Turkey

Ekrem and Recep (2014) conducted a study in Turkey to investigate the relationship between Technological Pedagogical Content knowledge competency and academic achievement of pre-service English teachers at a public university. The study included 137 pre-service English teachers to respond to the TPACK competency questionnaire developed by (Archambault & Crippen, 2009). The researchers found statistically significant differences attributed to gender in the dimension of Technological knowledge in favor of males. In contrast, the differences came in favor of females in the dimension of Pedagogical Knowledge. Furthermore, the study reported no relationship between TPACK and the participants' academic achievement.

Öz (2015) evaluated the pre-service English language teachers' Technological Pedagogical Content knowledge. Seventy-six students who enrolled in the English Language Teaching program at one of the major public universities in Turkey were assigned as the sample. Moreover, the students were asked to fill out closed and open-ended questionnaire items. The study revealed that teachers had a high level of knowledge. Furthermore, the results showed statistically significant differences attributable to gender in the dimensions of Technological knowledge (TK) and Pedagogical Knowledge (PK) and favor of females with a higher TPACK level.

Similarly, Ersanli (2016) investigated whether a five-week workshop and training sessions influence Technological Pedagogical Content knowledge to pre-service English language teachers. Data were collected from 59 Turkish pre-service English teachers who enrolled in an English Language Teaching Methodology Course At a public university in Turkey. The study obtained the TPACK scale (Solak & Çakir, 2014) and the teachers' lesson plans for pre- and post-service English teachers. The results indicated some improvement in pre-service English teachers' TPACK scores (both male and female). Likely, it also found an increase in many potential applications or websites that could be used in the classroom with more effective and purposeful goals. Besides, pre-service English teachers performed better in preparing and designing Language teaching materials with specific objectives.

İşler and Yıldırım (2018) measured the Turkish pre-service EFL teachers' level of Technological Pedagogical Content knowledge, and the factors that impact the teachers' perceptions of TPACK, their beliefs on integrating technology in EFL classrooms. The study

targeted 94 pre-service Turkish EFL teachers to answer two questionnaires designed to collect information about the integration of technology, teaching methods and Content knowledge in the methods of both the learning and teaching process. Furthermore, 6 pre-service Turkish teachers were also interviewed. Results revealed that Turkish EFL teachers have high levels of efficiencies of TPACK. Summarily, the results on qualitative data supported the high level of perceived efficiencies of TPACK.

Bas and Senturk (2018) study revealed the perceptions of in-service Turkish teachers working in public schools about TPACK according to some demographic variables. Two hundred in-service teachers from various public primary and secondary schools answered a questionnaire. The results indicated that the perceptions of in-service teachers' of TPACK were influenced by gender in favor of males, professional experience in favor of experienced (1-5 years), and educational level in favor of graduate studies. The results also confirmed that in-service teachers' perceptions of TPACK were at a medium level.

Kozikoglu and Babacan (2019) investigated the relationship between the TPACK skills of EFL teachers and their attitudes towards technology. The researchers collected data from 721 Turkish EFL teachers teaching in 81 districts in Turkey using the TPACK questionnaire and the "Technological Attitude" questionnaire. The results showed that the EFL teachers' skills in TPACK and attitudes towards technology were high. Similarly, a significant positive relationship was found between teachers' TPACK skills and their attitudes towards technology.

Finally, Bostan and Sener (2021) considered it significant for teachers to master the ability to integrate technology into the teaching and learning with appropriate methods and techniques. The study aimed to investigate how students perceive TPACK among teachers. They gathered the data from 352 high school students in 2008 at 16 public and six private schools in the Central Region. They obtained the TPACK questionnaire developed by (Tseng, 2014). The results showed that secondary school students positively perceive their EFL teachers' TPACK positively.

CHAPTER III

METHODOLOGY

3.1 Methodology of the Study

The design of the study was descriptive and covers a particular phenomenon at a particular time (Creswell J, Plano Clark, Gutmann, & Hanson, 2003) was the assessment of the application of Libyan ELT teacher technology, Pedagogy and Content knowledge (TPACK) in the classroom and to determine which of the six elements of TPACK influenced their application. The study also examined TPACK factors and the teacher's ability to use TPACK.

3.2 Participants

The study participants were English teachers from higher institutes and English Language Schools in the Libyan district of Tripoli in the second semester of the 2021-2022 academic year. However, the questionnaire was shared online due to the COVID-19 pandemic that the world has been struggling with for more than a year and a half. Therefore, 427 English language teachers participated in the online survey. This sample is an example of "convenience sampling". Battaglia, et al. (2008) explain the term as follows: Convenience sampling is a type of nonprobability sampling in which people are sampled simply because they are "convenient" data sources for researchers.

The current study, which sought to investigate the Libyan EFL teachers' awareness about TPACK, aimed to discover whether there was a relationship between sub-dimensions of EFL teachers and four different variables. The study also examines the TPACK of Libyan English teachers according to some variables such as gender, age, marital status and educational level.

Table 3.1. Distribution by Gender

		n	%
Gender	Male	152	35.6
	Female	275	64.4
Total		427	100

Table 3.1 shows that females are many of the participants (64.4%), whereas the percentage of males is (35.6%).

Table 3.1. Distribution by Age

		n	%
Age	20 – 29	62	14.5
	30 – 39	87	20.4
	40 – 49	120	28.1
	50 +	158	37.0
Total		427	100

Table 3.1 shows that the percentage of participants from the age group (20 - 29) reached 14.5%, while the age group (30 - 39) reached (20.4%). Table 3.1 also shows that the percentage of the age group (40 - 49) reached (28.1%) of the participants, and finally, the age group (50+) was the highest category which constructs (37%) of the participants.

Table 3.1. Distribution by Age

		n	%
Marital status	Single	224	52.5
	Married	203	47.5
Total		427	100

Table 3.1 indicates that the percentages of married and unmarried participants are close in number. The married teachers reached (47.5%) of the participants, while the percentage of unmarried teachers constructed (52.5%) of the total participants.

Table 3.1. Distribution by Education

		n	%
Education	Graduate	28	6.6
	Bachelor's	279	65.3
	Postgraduate	120	28.1
Total		427	100

Table 3.2 shows that the participant who hold a scientific degree less than a bachelor's degree shape (6.6%) of the participants, whereas the percentage of those teachers who hold bachelor's degrees from many participants with (65.3%). Table 3.1 also shows that the participants with graduate degrees (28.1%) of the total teachers.

3.3 Data Collection Instrument

The study aimed to assess the Libyan EFL teachers' Technological Pedagogical Content knowledge (TPACK) and to determine whether the Technological Pedagogical Content knowledge of EFL teachers differs based on age, gender, Marital status, and Education Qualification. In this study, Information Literacy Scale by (Baser, Kopcha, & Ozden, 2016) was used to evaluate the Libyan EFL teachers' TPACK.

The scale included a set of questions for each of the: nine questions for Technological knowledge (TK), five questions for Content knowledge (CK), six questions for Pedagogical knowledge (PK), five questions for Pedagogical Content knowledge (PCK), three questions for Technological Content knowledge (TCK), seven questions for Technological Pedagogical knowledge (TPK), and four questions for Technological Pedagogical Content knowledge (TPACK). The total questions are 39 questions on the scale. The scale was administered in the Arabic language. Then it was translated into English, and the Arabic scale is included in appendix 4.

3.3.1 Data sources

The researcher wrote the theoretical framework of this study based on reviewing the existing literature and previous studies, which she obtained through databases, electronic libraries, digital repositories of universities, and refereed scientific journals. Moreover, the researcher also collected the primary data from the participants using an adapted version of the questionnaire, after getting permission from the original designer (see Appendix No.2)

3.3.2 Internal consistency validity

The researcher calculated Pearson's Correlation Coefficients between the Subscale and the total score.

Table 3.2. Correlation coefficients for TPACK Subscales

TPACK Subscales	Correlation Coefficient
Technological knowledge (TK)	0.658**
Content knowledge (CK)	0.752**
Pedagogical knowledge (PK)	0.789**
Pedagogical Content knowledge (PCK)	0.845**
Technological Content knowledge (TCK)	0.952**
Technological Pedagogical knowledge (TPK)	0.852**
Technological Pedagogical Content knowledge (TPACK)	0.846**

**The value of the correlation coefficient is significant at the level of significance (0.01)

According to the results in Table 3.2, there is a statistically significant correlation at the level of (0.01) between the Scale Subscale of the Scale and the total score. It confirms that the Scale has a high degree of internal consistency, reassuring the researcher before applying it.

3.3.3 Reliability of Scale

The researcher calculated the reliability of the Scale using Cronbach's alpha. Table 3 shows the results of reliability using Cronbach's alpha.

Table 3.3. Reliability of Scale Using Cronbach's alpha

TPACK Subscales	No. of items	Cronbach's alpha
Technological knowledge (TK)	9	0.756
Content knowledge (CK)	5	0.812
Pedagogical knowledge (PK)	6	0.863
Pedagogical Content knowledge (PCK)	5	0.709
Technological Content knowledge (TCK)	3	0.842
Technological Pedagogical knowledge (TPK)	7	0.887
Technological Pedagogical Content knowledge (TPACK)	4	0.901
total	39	0.951

According to the results given in Table 3.3, the reliability test of the total Medium of the scale scored (0.951), which is considered very high. At the same time, it was observed that the subscales had high reliability within acceptable limits. For example, the Cronbach Alpha reliability coefficient ranged between (0.709-0.901).

3.3.4 Quantification of Scale

The answers to the scale items were analyzed according to the five-point Likert scale, starting from (very High =5 to very Low=1). Table 3.4 shows the verbal and quantitative estimates of the response to the scale items:

Table 3.4. Quantification of scale

Rating	Very High	High	Medium	Low	Very Low
Coding	5	4	3	2	1

3.3.5 The final Scale

After the researcher ensured the Scale's validity and reliability, the Scale became its final form consisting of (7) subscales and (39) items.

Table 3.5. The final Scale

Technological Pedagogical Content Knowledge	No. of Items	Points
Technological knowledge (TK)	9	45
Content knowledge (CK)	5	25
Pedagogical knowledge (PK)	6	30
Pedagogical Content knowledge (PCK)	5	25
Technological Content knowledge (TCK)	3	15
Technological Pedagogical knowledge (TPK)	7	35
Technological Pedagogical Content knowledge (TPACK)	4	20
Total	39	195

3.4 Data collection procedure

Regarding the study's data collection procedure, after obtaining approval from the study's author via Twitter, the researcher transformed the questionnaire into an electronic one using Google Forms.

To validate the markers of validity, the researcher dispersed an exploratory sample of a small number of teachers from outside the actual study sample, then sent the electronic link also in July 2022 to a sample of EFL teachers in Tripoli-Libya, in the second semester of academic year 2021-2022. As for the timing, the data collection process took 20 days. After the data was sorted and encoded, the researcher analyzed the data statistically through the SPSS program to reach the results.

3.5 Data analysis

The data was calculated by using the Statistical Package for the Social Sciences (SPSS V.28). Pearson correlation coefficient, Cronbach's alpha, Means, standard deviations, and degree, The Independent Samples t -Test to compares, The one-way ANOVA techniques were used.

CHAPTER IV

RESULTS

To evaluate Libyan EFL teachers' Technological Pedagogical Content knowledge, the researcher applied the TPACK Scale. It consists of 7 sub-domains.

RQ 1: What are the Libyan EFL teachers' awareness about TPACK?

The scale is composed of seven Subscales titled: Technological knowledge (TK), Content knowledge (CK), Pedagogical knowledge (PK), Pedagogical Content knowledge (PCK), Technological Content knowledge (TCK), Technological Pedagogical knowledge (TPK), Technological Pedagogical Content knowledge (TPACK), as can be seen in the table above. The table below shows the mean, standard deviation and degree of the related subscale.

Table 4.1. Teachers' awareness about TPACK Subscale

TPACK Subscales	Mean	Standard Deviation	percentage	Degree
Technological knowledge (TK)	2.848	0.850	0.570	Medium
Content knowledge (CK)	2.861	0.845	0.572	Medium
Pedagogical knowledge (PK)	2.864	0.907	0.573	Medium
Pedagogical Content knowledge (PCK)	3.118	0.829	0.624	Medium
Technological Content knowledge (TCK)	3.208	0.861	0.642	Medium
Technological Pedagogical knowledge (TPK)	3.050	0.838	0.610	Medium
Technological Pedagogical Content knowledge (TPACK)	3.095	0.852	0.619	Medium

Table 4.1 shows that the Libyan EFL teachers who took part in this study mostly have a medium knowledge of Technological Pedagogical Content.

a) What are the Libyan EFL teachers' awareness about Technological knowledge (TK)?

The subscale Technological knowledge (TK) includes nine items, the purpose of which was to evaluate the Technological knowledge of EFL teachers. Table 4.2 below shows the mean, standard deviation, and degree of the subscale items (TK) items.

Table 4.2. Libyan EFL teachers' awareness about Technological knowledge

Technological knowledge (TK)	Mean	Standard Deviation	percentage	Degree
1) I can use basic technological terms (e.g., operating system, wireless connection, virtual memory, i.e.) appropriately.	2.635	1.328	0.527	Medium
2) I can adjust computer settings such as installing software and establishing an Internet connection.	2.831	1.302	0.566	Medium
3) I can use computer peripherals such as a printer, a headphone, and a scanner.	3.457	1.226	0.691	High
4) I can troubleshoot common computer problems (e.g., printer problems, Internet connection problems, i.e.) independently.	2.850	1.318	0.570	Medium
5) I can use digital classroom equipment such as projectors and smart boards.	3.169	1.419	0.634	Medium
6) I can use Office programs (i.e., Word, PowerPoint, i.e.) with a high level of proficiency.	2.489	1.122	0.498	Low
7) I can create multimedia (e.g., video, web pages, i.e.) using text, pictures, sound, video, and animation.	3.187	1.213	0.637	Medium
8) I can use collaboration tools (wiki, Edmodo, 3D virtual environments, i.e.) in accordance with my objectives.	2.649	1.314	0.530	Medium
9) I can learn software that helps me complete a variety of tasks more efficiently.	2.368	1.294	0.474	Low

According to the results given in Table 4.2, EFL teachers have Medium Technological knowledge (TK) as the average means scored ($M=2.848$, $Std = 0.850$). Item no (3), i.e., **I can use computer peripherals such as a printer, a headphone, and a scanner**) in with the highest

mean score of (3.457), while item no (9), **I can learn software that helps me complete a variety of tasks more efficiently**) received the lowest mean score of (2.368).

b) What are the Libyan EFL teachers' awareness about Content knowledge (CK)?

The subscale Content knowledge (CK) includes 5 items. It aimed to evaluate the Content knowledge of the Libyan EFL teachers. Table 3 below shows the mean, standard deviation, and degree of the items of the subscale (CK).

Table 4.3. Libyan EFL teachers' awareness about Content knowledge

Content knowledge (CK)	Mean	Standard Deviation	percentage	Degree
10) I can express my ideas and feelings by speaking in English.	2.386	1.238	0.477	Low
11) I can express my ideas and feelings by writing in English.	3.546	1.220	0.709	High
12) I can read texts written in English with the correct pronunciation.	2.874	1.265	0.575	Medium
13) I can understand texts written in English.	2.412	1.190	0.482	Low
14) I can understand the speech of a native English speaker easily.	3.087	1.394	0.617	Medium

According to the results given in Table 4.3, EFL teachers have medium Content knowledge. Means ranged between (2.386-3.546), and all of them are of Low to High degrees. Item no (11), i.e., **(I can express my ideas and feelings by writing in English)** with the highest mean score (3.546), while item no (10), i.e., **(I can express my ideas and feelings by speaking in English)** came with the lowest mean score (2.386).

c) What are the Libyan EFL teachers' awareness about Pedagogical knowledge (PK)?

The subscale of Pedagogical knowledge (PK) includes six items. PK aimed to evaluate the Pedagogical knowledge of Libyan EFL teachers. Table 4 below shows the mean, standard deviation, and degree of the items of the subscale (PK).

Table 4.4. Libyan EFL teachers' awareness about Pedagogical knowledge

Pedagogical knowledge (PK)	Mean	Standard Deviation	percentage	Degree
15) I can use teaching methods and techniques that are appropriate for a learning environment.	2.555	1.283	0.511	Low
16) I can design a learning experience that is appropriate for the level of students.	2.855	1.297	0.571	Medium
17) I can support students' learning in accordance with their physical, mental, emotional, social, and cultural differences.	3.063	1.240	0.613	Medium
18) I can collaborate with school stakeholders (students, parents, teachers, i.e.) to support students' learning.	2.848	1.297	0.570	Medium
19) I can reflect the experiences that I gain from professional development programs to my teaching process.	2.480	1.234	0.496	Low
20) I can support students' out-of-class work to facilitate their self-regulated learning.	3.382	1.176	0.676	Medium

According to the results given in Table 4.4, the Libyan EFL teachers have medium Pedagogical knowledge, as all means scores ranged between (2.480-3.382), and all of them are of Low to Medium degree. Item no (20), i.e., (**I can support students' out-of-class work to facilitate their self-regulated learning**) got the highest mean score of (3.382), while item no (19), i.e., (**I can reflect on the experiences that I gain from professional development programs to my teaching process**) came with the lowest degree, with a mean score of (2.480).

d) What are the Libyan EFL teachers' awareness about Pedagogical Content knowledge (PCK)?

The subscale of Pedagogical Content knowledge (PCK) includes five items. The purpose was to evaluate the Pedagogical Content knowledge of Libyan EFL teachers. Table 5 below shows the mean, standard deviation, and degree of the items of the subscale (PCK).

Table 4.5. Libyan EFL teachers' awareness about Pedagogical Content knowledge

Pedagogical Content knowledge (PCK)	Mean	Standard Deviation	percentage	Degree
21) I can manage a classroom learning environment.	2.988	1.350	0.598	Medium
22) I can evaluate students' learning processes.	3.047	1.236	0.609	Medium
23) I can use appropriate teaching methods and techniques to support students in developing their language skills.	2.977	1.202	0.595	Medium
24) I can prepare curricular activities that develop students' language skills.	3.354	1.327	0.671	Medium
25) I can adapt a lesson plan in accordance with students' language skill levels.	3.222	1.280	0.644	Medium

According to the results given in Table 4.5, Libyan EFL teachers have medium Pedagogical Content knowledge (PCK). The means scores ranged between (2.222-3.354), and all were of medium degree. Item no (24), i.e., **(I can prepare curricular activities that develop students' language skills)** achieved a high degree with a mean score of (3.354), whereas item no (25), i.e., **(I can adapt a lesson plan by students' language skill levels)** came with the lowest mean score (3.222) and achieved a medium degree.

e) What are the Libyan EFL teachers' awareness about Technological Content knowledge (TCK)?

The subscale of Technological Content knowledge (TCK) includes three items. TCK aimed to evaluate the Technological Content knowledge of Libyan EFL teachers. Table 6 below shows the mean, standard deviation, and degree of the subscale items (TCK).

Table 4.6. Libyan EFL teachers' awareness about Technological Content knowledge

Technological Content knowledge (TCK)	Mean	Standard Deviation	percentage	Degree
26) I can take advantage of multimedia (e.g., video, slideshow, i.e.) to express my ideas about various topics in English.	2.841	1.209	0.568	Medium
27) can benefit from using technology (e.g., web conferencing and discussion forums) to contribute at a distance to multilingual communities.	2.937	1.190	0.587	Medium
28) I can use collaboration tools to work collaboratively with foreign persons (e.g., Second Life, wiki, i.e.).	3.848	1.144	0.770	High

According to Table 4.6, Libyan EFL teachers have medium Technological Content knowledge (TCK). All means scores ranged between (2.841-3.848). In addition, all of them ranged from medium to high degrees. Item no (28), i.e., **(I can use collaboration tools to work collaboratively with foreign persons (e.g., Second Life, wiki, i.e.))**, scored high with a mean score of (3.848), whereas item no (26), i.e., **(I can take advantage of multimedia (e.g., video, slideshow, i.e.) to express my ideas about various topics in English)** came with the lowest mean score (2.841) with a medium degree.

f) What are the Libyan EFL teachers' awareness about Technological Pedagogical knowledge (TPK)?

The subscale of Technological Pedagogical knowledge (TPK) includes seven items. This subscale aimed to evaluate the Technological Pedagogical knowledge of Libyan EFL teachers. Table 7 below shows the mean, standard deviation, and degree of the items of the subscale (TPK).

Table 4.7. Libyan EFL teachers' awareness about Technological Pedagogical knowledge

Technological Pedagogical knowledge (TPK)	Mean	Standard Deviation	percentage	Degree
29) I can meet students' individualized needs by using information technologies.	3.176	1.246	0.635	Medium
30) I can lead students to use information technologies legally, ethically, safely, and with respect to copyrights.	2.719	1.260	0.544	Medium
31) I can support students as they use technology such as virtual discussion platforms to develop their higher order thinking abilities.	3.159	1.251	0.632	Medium
32) I can manage the classroom learning environment while using technology in the class.	2.883	0.927	0.577	Medium
33) I can decide when technology would benefit my teaching of specific English curricular standards.	3.379	1.173	0.676	Medium
34) I can design learning materials by using technology that supports students' language learning.	2.986	1.348	0.597	Medium
35) I can use multimedia such as videos and websites to support students' language learning.	3.047	1.236	0.609	Medium

According to the results in Table 4.7, the Libyan EFL teachers have medium Technological Pedagogical knowledge (TPK) because all the means scores ranged between (2.719-3.379), and all of them are of medium degree. Furthermore, item no (35), i.e., (I can decide when technology would benefit my teaching of specific English curricular standards) achieved the highest mean score of (3.379). In contrast, item no (30), i.e., (I can lead students to use information technologies legally, ethically, safely, and with respect to copyrights), received the lowest means score of (2.719).

g) What are the Libyan EFL teachers' awareness about Technological Pedagogical Content knowledge (TPACK)?

The subscale of Technological Pedagogical Content knowledge (TPACK) includes four items. The TPACK subscale's purpose was to evaluate Libyan EFL teachers' Technological Pedagogical Content knowledge. Table 8 below shows the mean, standard deviation, and degree of the items of the subscale (TPACK).

Table 4.8. Libyan EFL teachers' awareness about Technological Pedagogical Content knowledge

Technological Pedagogical Content Knowledge (TPACK)	Mean	Standard Deviation	percentage	Degree
36) I can use collaboration tools (e.g., wiki, 3D virtual environments, i.e.) to support students' language learning.	2.967	1.194	0.593	Medium
37) I can support students as they use technology to support their development of language skills in an independent manner.	3.354	1.325	0.671	Medium
38) I can use Web 2.0 tools (animation tools, digital story tools, i.e.) to develop students' language skills.	3.222	1.280	0.644	Medium
39) I can support my professional development by using technological tools and resources to continuously improve the language teaching process.	2.838	1.204	0.568	Medium

According to the results given in Table 4.8, the Libyan EFL teachers have medium Technological Pedagogical Content knowledge (TPACK), as all means ranged between (2.838-3.354). Likely, all the means scores are of medium degree. Moreover, item no (37), i.e., **(I can support students as they use technology to support their development of language skills independently)** got the highest mean score of (3.354). In contrast, item no (39), i.e., **(I can support my professional development by using technological tools and resources to continuously improve the language teaching process)** archived the lowest mean score of (2.838).

RQ 2: Are there differences in Technological Pedagogical Content knowledge of EFL teachers in terms of some variables?

This question will be subdivided into some questions to easily answer them.

a) Are there differences in Technological Pedagogical Content knowledge of EFL teachers in terms of gender?

In order to discover whether there are differences between the levels of Pedagogical Technological knowledge of the Libyan EFL teachers attributed to the variable of gender. The Independent Samples t -Test was used to calculate the level of difference. Table 9 below shows the mean, standard deviation, calculated t-value and significance level of the subscales for Technological Pedagogical Content knowledge.

Table 4.9. Libyan EFL teachers' Technological Pedagogical Content knowledge and gender

TPACK Subscales	Gender	n	Mean	SD	T	P
Technological knowledge (TK)	Male	152	3.018	0.893	3.095	0.002
	Female	275	2.755	0.811		
Content knowledge (CK)	Male	152	3.109	0.897	4.623	0.001
	Female	275	2.724	0.783		
Pedagogical knowledge (PK)	Male	152	3.041	0.905	3.020	0.003
	Female	275	2.766	0.894		
Pedagogical Content knowledge (PCK)	Male	152	3.313	0.846	3.675	0.001
	Female	275	3.009	0.801		
Technological Content knowledge (TCK)	Male	152	3.322	0.850	2.039	0.042
	Female	275	3.145	0.863		
Technological Pedagogical knowledge (TPK)	Male	152	3.239	0.838	3.519	0.001
	Female	275	2.945	0.821		
Technological Pedagogical Content knowledge (TPACK)	Male	152	3.283	0.906	3.424	0.001
	Female	275	2.992	0.803		

Results in Table 4.9 shows that the significance level values are less than (0.05), which means that there is a statistically significant difference at the significance level of (0.05) between the means scores of male and female teachers in all the subscales and favor of males because males scored higher than females in all the subscales. This means that male teachers have better knowledge of Pedagogical Technological Content than female teachers.

b) Are there differences in Technological Pedagogical Content knowledge of EFL teachers in terms of age?

In order to discover whether there are differences between the levels of Pedagogical Technological knowledge of EFL teachers attributed to the variable of age. One-way ANOVA to analyze the variance was obtained to show the differences. Table 10 below shows the mean, standard deviation, calculated f-value and significance level of the Subscales for Technological Pedagogical Content knowledge.

Table 4.10. Libyan EFL Teachers' Technological Pedagogical Content knowledge and age

TPACK Subscales	Age	n	Mean	SD	F	P
Technological knowledge (TK)	20 – 29	62	2.534	0.843	6.706	0.001
	30 – 39	87	2.713	0.851		
	40 – 49	120	2.849	0.751		
	50 +	158	3.047	0.877		
Content knowledge (CK)	20 – 29	62	2.577	1.001	5.433	0.001
	30 – 39	87	2.731	0.811		
	40 – 49	120	2.872	0.739		
	50 +	158	3.035	0.837		
Pedagogical knowledge (PK)	20 – 29	62	2.392	0.978	12.691	0.001
	30 – 39	87	2.753	0.880		
	40 – 49	120	2.802	0.858		
	50 +	158	3.157	0.833		
Pedagogical Content knowledge (PCK)	20 – 29	62	2.694	0.914	12.711	0.001
	30 – 39	87	2.972	0.797		
	40 – 49	120	3.092	0.733		
	50 +	158	3.384	0.796		
Technological Content knowledge (TCK)	20 – 29	62	2.328	0.888	59.709	0.001
	30 – 39	87	2.931	0.612		
	40 – 49	120	3.208	0.686		
	50 +	158	3.707	0.739		
Technological Pedagogical knowledge (TPK)	20 – 29	62	2.592	0.958	15.716	0.001
	30 – 39	87	2.923	0.707		
	40 – 49	120	2.974	0.754		
	50 +	158	3.357	0.808		

TPACK Subscales	Age	n	Mean	SD	F	P
Technological Pedagogical Content knowledge (TPACK)	20 – 29	62	2.750	0.976	9.904	0.001
	30 – 39	87	2.931	0.755		
	40 – 49	120	3.056	0.775		
	50 +	158	3.351	0.837		

The results presented in Table 4.10 show that the significance level values are less than (0.05), which means that there are statistically significant differences in the evaluation of the sample members of the level of Pedagogical Technological knowledge of the content and favor of the higher-ranked age groups as follows (50+, 40-49, 30-39, 20 -29) respectively.

c) Are there differences in Technological Pedagogical Content knowledge of EFL teachers in terms of marital status?

In order to discover whether there are differences between EFL teachers' Pedagogical Technological knowledge levels due to the Marital status variable. The researcher obtained the Independent Samples t -Test. Table 11 below shows the mean, standard deviation, calculated t-value and significance level of the Subscales for Technological Pedagogical Content knowledge.

Table 4.11. Libyan EFL teachers' Technological Pedagogical Content knowledge and marital status

TPACK Subscales	Marital status	n	Mean	SD	T	P
Technological knowledge (TK)	Single	224	2.674	0.809	4.572	0.001
	Married	203	3.042	0.853		
Content knowledge (CK)	Single	224	2.678	0.779	4.830	0.001
	Married	203	3.063	0.869		
Pedagogical knowledge (PK)	Single	224	2.659	0.833	5.050	0.001
	Married	203	3.090	0.933		
Pedagogical Content knowledge (PCK)	Single	224	2.981	0.791	3.617	0.001
	Married	203	3.268	0.847		
Technological Content knowledge (TCK)	Single	224	3.077	0.839	3.345	0.001
	Married	203	3.353	0.865		

TPACK Subscales	Marital status	n	Mean	SD	T	P
Technological Pedagogical knowledge (TPK)	Single	224	2.840	0.788	5.631	0.001
	Married	203	3.281	0.832		
Technological Pedagogical Content knowledge (TPACK)	Single	224	2.974	0.806	3.118	0.001
	Married	203	3.229	0.882		

The results shown in Table 4.11 indicate that the significance level values are less than (0.05). It indicates a statistically significant difference at the significance level (0.05) between the means of the sample members in all the sub-scales and favor of married couples in all sub-scales. Married teachers have better knowledge of Pedagogical Technological Content than unmarried teachers.

d) Are there differences in Technological Pedagogical Content knowledge of Libyan EFL teachers in terms of education qualification?

In order to discover whether there are differences between the levels of Pedagogical Technological knowledge of the Libyan EFL teachers due to the variable of *education qualification*. The researcher used a one-way analysis of variance. Table 12 below shows the mean, standard deviation, calculated f-value and significance level of the subscales for Technological Pedagogical Content knowledge.

Table 4.12. Libyan EFL teachers' Technological Pedagogical Content knowledge and qualification

TPACK Subscales	Qualification	n	Mean	SD	F	P
Technological knowledge (TK)	Graduate	28	3.242	0.910	5.240	0.006
	Bachelor's	279	2.766	0.809		
	Postgraduate	120	2.948	0.898		
Content knowledge (CK)	Graduate	28	2.957	0.856	2.431	0.089
	Bachelor's	279	2.796	0.831		
	Postgraduate	120	2.990	0.864		
Pedagogical knowledge (PK)	Graduate	28	3.256	0.941	4.605	0.011
	Bachelor's	279	2.781	0.876		
	Postgraduate	120	2.965	0.943		
Pedagogical Content knowledge (PCK)	Graduate	28	3.357	0.751	1.399	0.248
	Bachelor's	279	3.086	0.820		

TPACK Subscales	Qualification	n	Mean	SD	F	P
Technological Content knowledge (TCK)	Postgraduate	120	3.135	0.865	2.065	0.128
	Graduate	28	3.512	0.859		
	Bachelor's	279	3.170	0.839		
	Postgraduate	120	3.228	0.905		
Technological Pedagogical knowledge (TPK)	Graduate	28	3.281	0.836	1.441	0.238
	Bachelor's	279	3.012	0.820		
	Postgraduate	120	3.083	0.875		
Technological Pedagogical Content knowledge (TPACK)	Graduate	28	3.402	0.809	2.372	0.095
	Bachelor's	279	3.048	0.848		
	Postgraduate	120	3.133	0.859		

The results exhibited in Table 4.12 show that the significance level values are more significant than (0.05) in all sub-scales except (TK, PK), and this means that there is no statistically significant difference at the significance level (0.05) between the mean scores of the sample members in Technological Pedagogical Content knowledge (TPACK).

The Libyan EFL teachers who participated in this study mostly have a medium knowledge of Technological Pedagogical Content; the significance level values are less than (0.05), which means that there is a statistically significant difference between the means scores of male and female teachers in all the subscales and favor of males because males scored higher than females in all the subscales, The significance level values are less than (0.05), indicating that there are significant differences in the evaluation of the sample members' level of Pedagogical Technological knowledge of the content, and also in favor of the higher-ranked age groups, as follows (50+, 40-49, 30-39, 20-29).

The significance level is less than (0.05). It implies a statistically significant difference between the means of the sample members in all sub-scales and the favor of married couples at the significance level (0.05). The significance level values are more than (0.05) in all sub-scales except (TK, PK), indicating that there is no statistically significant difference between the mean scores of the sample members in Technological Pedagogical Content knowledge at the significance level (0.05). (TPACK).

CHAPTER V

DISCUSSION

RQ 1: What are the Libyan EFL teachers' awareness about TPACK?

The first research question aimed to measure Libyan EFL teachers' awareness about TPACK. The researcher answered this question by calculating the mean scores, standard deviation, relative weight, and degree of agreement of the study sample on the TPACK sub-scales. The results revealed that Libyan EFL teachers showed medium level awareness in all sub-scales of TPACK. All of them are at a medium degree. This finding is in line with some previous studies (e.g., Alnajjar & Al Jamal, 2019; Prasojo et al., 2020; Tseng, 2014; Xiaobin et al., 2014). Xiaobin et al. (2014) study revealed that EFL teachers are far from the standard required for TPACK. The finding is also consistent with Tseng's (2014) study, which showed that TPACK does not fully reflect the real teachers' practices in the classroom. Likely, the study by Alnajjar and Al Jamal (2019) revealed the lack of Knowledge of EFL teachers in Jordan about technological methods in teaching content as a coherent type of Knowledge combines three cognitive abilities, i.e., content, technology, and teaching methods. Still, this study finding is confirmed by Bas and Senturk (2018), which indicated that Turkish EFL in-service teachers have a medium level of TPACK awareness. And study of Prasojo et al. (2020). They found that Indonesian EFL teachers lack Technological knowledge, but they have realized that they have a sufficient level of Pedagogical knowledge.

On the contrary, this finding differs from the studies of (Kozikoglu & Babacan, 2019; Öz, 2015). Öz (2015) found that pre-service English language teachers at a Turkish university have a high level of knowledge in TPACK. It is also convergent with the study of Kozikoglu and Babacan (2019). It revealed a high level of TPACK skills among EFL teachers. Moreover, a study by İşler and Yıldırım (2018) indicated that Turkish EFL teachers have high level of awareness about TPACK competencies among teachers. In what follows is a detailed of the results of the sub-scales:

a) What are the Libyan EFL teachers' awareness about Technological knowledge (TK)?

Technological knowledge (TK) was scored the seventh and last rank. Therefore, this result indicates that Libyan EFL teachers have weak knowledge of modern educational technologies due to the lack of educational programs' inclusion of courses specific to modern

educational technologies, as well as their low competence in new technologies that have emerged recently amid the Covid-19 pandemic. They require training, practice and skill refinement, which the Libyan EFL teachers have not yet mastered sufficiently.

This insufficient knowledge in TK may be due to the lack of practice of Libyan EFL teachers using computers and associated tools such as scanners, printers and projectors, i.e., thus, the poor ability to deal with problems arising resulted from the lack of technology use, in addition to the lack of teachers' ability in creating videos, web pages and animations, and not using collaboration tools connectivity and virtual environments. This made EFL teachers in Libya show low level of awareness about Technology Knowledge.

b) What are the Libyan EFL teachers' awareness about Content knowledge (CK)?

Content knowledge (CK) was scored the sixth rank. This result shows that Libyan EFL do not have sufficient competence in Content knowledge of the English language. This low competency in CK may be attributed to the nature of the Arabic environment that English language teachers live in, and this consequently minimizes the EFL teachers practice of some behaviors that are responsible for enhancing Content knowledge, such as: expressing thoughts and feelings in English, whether in writing or speaking. Furthermore, it may be attributed to the nature of the material and the difficulty of teaching and learning English as a second language and not a mother tongue.

This result is in line with the studies of (Alnajjar & Al Jamal, 2019; Al-Rekebat, 2021). Alnajjar and Al Jamal (2019) found that EFL teachers have a good competency level in Content knowledge (CK). It is also consistent with the study of Al- Rekebat (2021), which revealed that Jordanian EFL teachers possess a medium level of Content knowledge (CK). On the contrary, this finding differs from the study of (Daaboub, 2022), which revealed that science teachers have a high level of Content knowledge (CK).

c) What are Libyan EFL teachers' awareness about pedagogical knowledge (PK)?

Pedagogical knowledge (PK) reached the fifth rank. This finding may be attributed to the fact that Libyan EFL teachers need more Pedagogical knowledge of teaching and classroom management skills, and they have medium level of awareness about their ability to support outclass activities to facilitate learning tasks. Therefore, their Pedagogical knowledge was scored in medium average ratings.

d) What are the Libyan EFL teachers' awareness about Pedagogical Content knowledge (PCK)?

Pedagogical Content knowledge (PCK) scored the fourth rank. This finding can be justified because the Libyan EFL teachers' enrollment in Colleges of Education provides them with theoretical frameworks for the educational process and trains them to employ technology in preparing, designing, implementing and evaluating EFL lessons. Furthermore, the interaction between Pedagogical knowledge and Technological knowledge is continuously employed by Libyan EFL teachers in the classroom by integrating education technology with teaching and employing technology at the appropriate time and place to teach English. Likely, this teaching stage does not require the design and production of e-learning elements but rather the interaction and employment of them. Therefore, TPK scored higher than the area of TK, which requires production, design and problem-solving.

e) What are the Libyan EFL teachers' awareness about Technological Content knowledge (TCK)?

Technological Content knowledge (TCK) ranked the first degree. This high rank may be related to Libyan EFL teachers' understanding of how to employ multimedia in teaching English. Besides, they can use tools of communication and cooperation with others. Still, they can use technology to share some of the issues associated with teaching and learning English with other multilingual communities and cultures.

This high rank may be acquired from the post-Covid-19 period because the traditional methods of teaching, learning, conferences and others were replaced by modern electronic methods in which everyone, including Libyan EFL teachers, was forced to use technology. This enforcement of virtual teaching pushes the Technological knowledge of content to occupy the first rank.

f) What are the Libyan EFL teachers' awareness about Technological Pedagogical knowledge (TPK)?

Pedagogical Content knowledge (PCK) ranked the second degree. This result can be justified by the fact that Libyan EFL teachers have good knowledge of teaching English and employ appropriate teaching methods and techniques to improve their students' English language levels. This result expresses the experience in Teaching English as a Foreign Language and the pedagogical qualification that teachers undergo both pre-service and in-service through

training courses and workshops that equip them with pedagogical methods appropriate to the English language content in the Libyan context.

g) What are the Libyan EFL teachers' awareness about Technological Pedagogical Content knowledge (TPACK)?

Technological Pedagogical Content knowledge (TPACK) scored the third degree. This result may be attributed to the fact that the integration of technology and education to teach the English language content shows the applied aspect of the interaction between education, technology and content. Therefore, it indicates the importance of this area to Libyan EFL teachers' classroom practice.

RQ 2: Are there differences in Technological Pedagogical Content knowledge of EFL teachers due to some variables?

The researcher examined the effect of gender, age, marital status, and educational qualification variables that are expected to impact teachers' awareness about Technological Pedagogical Content knowledge. The following are the answers to the sub-questions according to these variables.

a) Are there differences in Technological Pedagogical Content knowledge of EFL teachers in terms of gender?

It is believed that gender may affect the level of TPACK, so the first sub-question was formulated as follows: Are there differences in technical and Pedagogical Content knowledge of EFL teachers due to gender?

The results indicated that the significance level values are less than (0.05). It means that there is a statistically significant difference between the mean scores of Libyan EFL instructors on all subscales in favor of male teachers at the significance level (0.05). This means that Libyan EFL male teachers have better knowledge of Pedagogical Technological Content than Libyan EFL female teachers, which makes males have more positive perceptions than their female teachers on TPACK in Teaching English as a Foreign Language concerning the subscale of TPACK and other subscales.

The difference in attitudes between Libyan EFL males and females may be explained by the fact that males are more likely to utilize technology. Furthermore, the characteristics of males allow them to participate in many educational and technological activities more than females due to the role of females other than teaching, such as caring for children and

homework, i.e. This limits female teachers' knowledge of the latest developments in the educational process and achieves interaction between Technology knowledge, Content knowledge, and Pedagogy knowledge.

This finding is confirmed by the finding of Ekrem and Recep (2014) that males are superior to females in the skills of Technological knowledge. Nevertheless, they found the superiority of females over males in the skills of Pedagogical knowledge. This finding is congruent with a study by Bas and Senturk (2018), which revealed that gender influenced Turkish EFL in-service teachers' opinions of TPACK in favor of males.

On the contrary, this finding differs from the findings of (Öz, 2015; Prasajo et al., 2020). Prasajo et al. (2020) found in their study that Indonesian EFL female teachers have higher positive perceptions than males in all areas of TPACK. Likely, Öz (2015) found that female Pre-service EFL teachers have higher perceptions than males in Technological knowledge and Pedagogical knowledge.

b) Are there differences in Technological Pedagogical Content knowledge of EFL teachers in terms of age?

The second sub-question was formulated as follows: Are there differences in Technological Pedagogical Content knowledge of EFL teachers due to age?

The results indicated that the significance level values are less than (0.05). It indicates that there are statistically significant differences in the evaluation of the Libyan EFL teachers of the level of Pedagogical Technological knowledge of the content and favor of the higher-ranked age groups as follows (50+, 40-49, 30-39, 20 -29), respectively.

This finding reveals that the Libyan EFL teachers' awareness are strongly related to teachers' ages. Older EFL teachers have higher positive perceptions than younger teachers. The differences ranked from the highest to the lowest are as follows (50+, 40-49, 30-39, 20-29).

This result can be justified since older Libyan EFL teachers have extensive experience, whether in life or the teaching profession. The use of techniques in teaching English and their experiences increase Content knowledge, Pedagogical knowledge and Technological knowledge, which boosts their knowledge resulting from the interaction between the three types of knowledge. Another justification can be that older teachers have more experience in tackling problems in English language education. However, this result is convergent with Prasajo et al. (2020). They found that the differences in the age variable are in favor of the age group less than

35 years. Furthermore, the finding differs from the study by Bas and Senturk (2018), which showed that in-service teachers' perceptions of TPACK were influenced by their teaching experience in favor of younger teachers with less than five years of experience.

c) Are there differences in Technological Pedagogical Content knowledge of EFL teachers in terms of marital status?

The third sub-question is formulated as follows: Are there differences in Technological Pedagogical Content knowledge of EFL teachers due to Marital status?

The study's findings revealed that the significance level values are less than (0.05), which shows a significant difference at the significance level (0.05) between the mean scores of the Libyan EFL teachers in all sub-scales in favor of married couples.

This finding indicates that Libyan EFL teachers married teachers have higher knowledge of TPACK than their unmarried counterparts. This result may be attributed to the life circumstances of each category. Unmarried teachers have other interests, such as financial stability, providing wedding requirements, searching for social stability and building their own families. These may require searching for a part-time job besides education, such as translation or writing. On the other hand, married couples have functional and social stability, which helps them to boost their TPACK.

d) Are there differences in Technological Pedagogical Content knowledge of EFL teachers in terms of education level?

The fourth sub-question was formed as follows: Are there differences in Technological Pedagogical Content knowledge of EFL teachers in terms of education level?

The findings indicated that the significance level values are more significant than (0.05) in all sub-scales except in (TK and PK) skills. Therefore, this means that there is no statistically significant difference at the significance level (0.05) between the averages of the Libyan EFL teachers in Technological Pedagogical Content knowledge (TPACK).

This result shows no impact of the educational qualification variable on teachers' awareness about TPACK in all skills except for the (TK and PK). This can be justified since teachers of different academic qualifications have the same educational tasks in English language teaching and are exposed to the same training courses and workshops on teaching English. Therefore, they implement the exact educational instructions issued by the competent authorities in teaching English, regardless of their academic qualifications.

The differences in the skills of (TK and PK) in favor of the graduate qualification may be attributed to the fact that the skills of Libyan EFL teachers in Technological knowledge and Pedagogical knowledge are related to some extent to the personal skills and level of literacy like the broad reading competence of teachers. Moreover, another justification is that teachers with graduate qualifications desire to increase their teaching competencies because their university studies did not address all the courses related to Technological knowledge, Pedagogical knowledge and recent trends in EFL. Thus, it generates a desire for them to reach good levels of these two skills. Therefore, the finding differs from the study by Bas and Senturk (2018), which that the educational level influenced that in-service teachers' awareness about TPACK in favor of graduate studies.

CHAPTER VI

CONCLUSION

The study's main objective is to evaluate the application of Libyan ELT teacher Technology, Pedagogy and Content knowledge (TPACK) in the classroom and determine which of the six elements of TPACK influenced their application. Therefore, this study aims to determine the level of ICT integration in English teaching in Libyan schools by analyzing teachers' awareness using the Technical Pedagogical Assessment (TPACK).

Since ICT is not included in classroom practice, students are taught without ICT knowledge. Although there has been much emphasis on investing in technology in classrooms in Libya, more is needed to increase teachers' ICT use.

The current study also aims to identify teachers' TPACK perspectives of English as a Foreign Language in the Libyan Republic and to reveal the differences in teachers' awareness according to some variables, namely: gender, age, marital status, and educational qualification. For that, the Descriptive analytical approach was applied, where the TPACK questionnaire was applied to a sample of (427) male and female teachers from Libya to obtain quantitative data.

6.1. Summary of the Results

Based on the data collected through the information TPACK, the results are:

- The Libyan EFL teachers who participated in this study mostly have a medium knowledge of Technological Pedagogical Content.
- The significance level values are less than (0.05), suggesting a statistically significant difference in the mean scores of male and female teachers across all subscales, preferring males because males outperformed females across all subscales.
- The significance level values are less than (0.05), indicating that there are statistically significant variations in the appraisal of the sample members' level of Pedagogical Technological understanding of the subject, favoring the higher-ranked age groups (50+, 40-49, 30-39, 20 -29) respectively.
- The significance level values are less than (0.05). It indicates a statistically significant difference at the significance level (0.05) between the means of the sample members in all the sub-scales and the favor of married couples.

- The significance level values are more significant than (0.05) in all sub-scales except (TK, PK), and this means that there is no statistically significant difference at the significance level (0.05) between the mean scores of the sample members in Technological Pedagogical Content knowledge (TPACK).

In sum as mentioned above quantitative findings showed that Libyan English teachers have intermediate Technological Pedagogical Content knowledge (TPACK). Statistically significant differences were found in the evaluation of the TPACK levels of the participants in favor of the upper-ranked age groups. Married teachers also scored higher than singles on all subscales. Finally, the findings reported that there was no statistically significant difference between the mean scores of the participants in the TPACK subscales, except for Technological knowledge (TB) and Pedagogical knowledge (PK).

6.2. Recommendations for Further Studies

The present study has recruited 427 Libyan EFL teachers. Therefore, the results can be generalized. However, to achieve better results, researchers are recommended to conduct future studies by recruiting more participants in all governorates of the Libyan Republic.

In this study, the TPACK awareness of Libyan EFL teachers were evaluated, and the differences between teachers' awareness according to some demographic variables were identified. However, the awareness of Libyan EFL teachers on TPACK still need to be fully explored. Thus, EFL teachers' awareness about TPACK can be examined in future studies more comprehensively.

The results of the study indicated that there is a medium level of knowledge of Libyan EFL teachers, which means that there is a need to enhance the knowledge of Libyan EFL teachers about the Pedagogical Technological knowledge of the content. Enhancement may be accomplished through training courses for teachers, workshops, or generalizing educational publications to reinforce Libyan EFL teachers on TPACK.

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APPENDICES

APPENDIX 1: DEMOGRAPHIC INFORMATION SURVEY

1. Gender:

- ☐ Male
- ☐ Female

2. Age:

- ☐ Below 20
- ☐ 20-29
- ☐ 30-39
- ☐ 40-49
- ☐ 50 and above.

3. Marital status:

- ☐ Single
- ☐ Married

4. Educational Background:

- ☐ Graduate
- ☐ Bachelors
- ☐ Post Graduate

**APPENDIX 2: THE TECHNOLOGICAL PEDAGOGICAL CONTENT KNOWLEDGE
(TPACK) SCALE**

NO.	Technological knowledge (TK)	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	I can use basic technological terms correctly (e.g., operating system, WLAN, virtual memory, i.e.).					

2	I can adjust my computer settings, e.g., Install software and connect to the Internet.					
3	I can use external devices on my computer, e.g., Printers, headphones and scanners.					
4	4 I can solve common computer problems (e.g., printer problems, Internet connection problems, i.e.) by myself.					
5	I can use digital teaching devices such as projectors and smart cards.					
6	I can use Office programs (such as Word, PowerPoint, i.e.) for good payment.					
7	I can create multimedia (such as videos, web pages, i.e.) using text, images, audio, videos, and animations.					
8	Depending on my goals, I can use collaboration tools (Wiki, Edmodo, virtual 3D environments, i.e.).					
9	I can learn software that helps me do various tasks more efficiently					

NO.	Content knowledge (CK)	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	I can express my thoughts and feelings by speaking English.					
2	I can express my thoughts and feelings by writing in English.					
3	I can read texts written in English correctly.					
4	I understand English-language texts.					
5	I can easily understand English as a mother tongue					

NO.	Pedagogical knowledge (PK)	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
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1	I can use teaching methods and techniques that are appropriate to the learning environment.					
2	I can create a learning experience that is appropriate to the level of the student.					
3	I can teach students based on their physical, mental, emotional, social and cultural backgrounds.					
4	I can incorporate the experiences from further training programs into my educational process.					
5	I can support extracurricular activities to facilitate their independent learning					
6	I can work with the school's stakeholders (students, parents, teachers, i.e.) to help students learn.					

NO.	Pedagogical Content knowledge (PCK)	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	I can manage a learning environment in the classroom					
2	I can analyze the educational process of students.					
3	I can use appropriate teaching methods and techniques to improve students' language skills.					
4	I can prepare classroom activities that promote students' language skills.					
5	I can adapt the lesson plan to the language level of the students.					

NO.	Technological Content knowledge (TCK)	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	I can use multimedia (such as videos, slideshows, i.e.) to express my ideas on various topics in English					

2	I can use collaboration tools to work with foreigners (e.g., Second Life, Wiki, i.e.).					
3	I can use technology (such as web conferencing and discussion forums) to contribute to multilingual communities.					

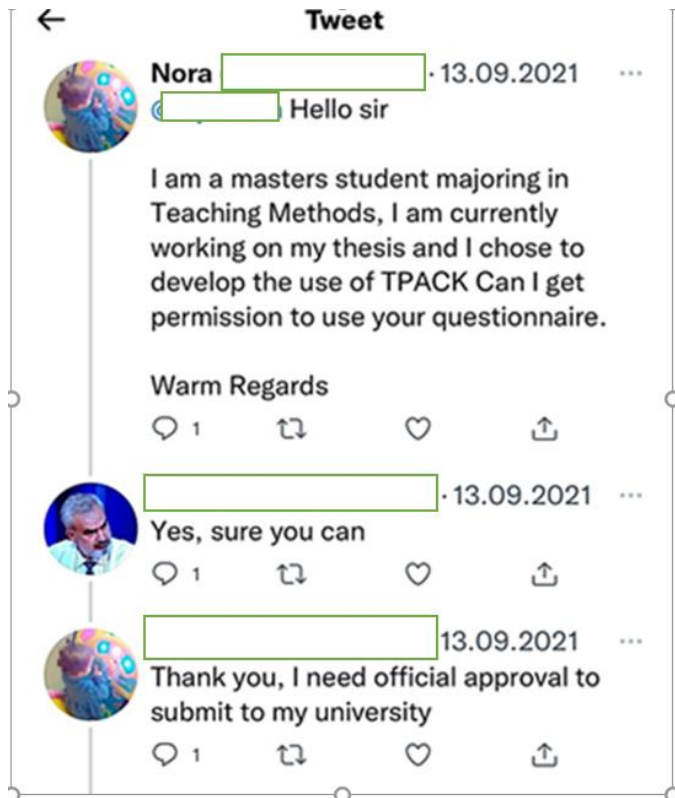
NO.	Technological Pedagogical knowledge (TPK)	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	I can use information technology to respond to the individual needs of students.					
2	I teach students how to use information technology legally, ethically, safely, and copyrighted.					
3	I can help students using technology such as virtual discussion boards to develop their thinking skills to a higher level.					
4	I can manage a learning environment in the classroom using technology in the classroom.					
5	I can decide when technology is useful for learning certain English language standards.					
6	I can create teaching materials using technologies that aid students' language learning.					
7	I can use multimedia such as videos and websites to aid my students' language learning.					

NO.	Technological Pedagogical Content knowledge (TPACK)	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	I can use collaboration tools (like wiki, 3D virtual environments, i.e.) to help me learn a language.					

2	I can help technology students improve their language skills on their own.					
3	I can support my professional development with technological tools and resources so that I can continuously improve the language learning process					
4	I can use Web 2.0 tools (animation tools, digital story tools, i.e.) to improve students' language skills.					



APPENDIX 3: PERMISSION TO USE THE TECHNOLOGICAL PEDAGOGICAL CONTENT KNOWLEDGE (TPACK) SCALE



APPENDIX 4: ARABIC VERSION OF THE QUESTIONNAIRE

الاستبانة

أولاً: المتغيرات الديمغرافية

1. الجنس:

☐ ذكر

☐ انثى

2. العمر:

☐ اقل من 20

☐ 20-29

☐ 30-39

☐ 40-49

☐ 50 فأعلى

3. الحالة الاجتماعية:

☐ أعزب

☐ متزوج

4. المؤهل العلمي:

☐ شهادة الثانوية العامة

☐ بكالوريوس

☐ الدراسات العليا

ثانياً: فقرات الاستبانة

م	الفقرة	أوافق بشدة	أوافق	محايد	غير موافق	غير موافق بشدة
المعرفة التكنولوجية						
1	يمكنني استخدام المكونات البرمجية الأساسية بشكل صحيح (، ذاكرة افتراضية ، ... إلخ WLANنظام التشغيل ،) .					
2	يمكنني ضبط إعدادات جهاز الحاسوب الخاص بي، على سبيل المثال: أقوم بتنصيب البرنامج والاتصال بالإنترنت.					
3	يمكنني استخدام المكونات الخارجية لجهاز الحاسوب الخاص بي؛ على سبيل المثال الطابعة والسماعات والماسح الضوئي.					
4	يمكنني حل مشكلات الحاسوب الشائعة (مثل مشكلات الطابعة ومشكلات الاتصال بالإنترنت، ... إلخ) بنفسي.					
5	يمكنني استخدام أجهزة التدريس الرقمية مثل أجهزة العرض والبطاقات الذكية.					
6	يمكنني استخدام برامج Office مثل: (Word و PowerPoint، إلخ) بشكل جيد.					
7	يمكنني إنشاء وسائط متعددة مثل: (مقاطع الفيديو وصفحات الويب، ... إلخ) باستخدام النصوص والصور والصوت ومقاطع الفيديو والرسوم المتحركة.					
8	بناءً على أهدافي، يمكنني استخدام أدوات التعاون (Wiki و Edmodo والبيئات الافتراضية ثلاثية الأبعاد، ... إلخ).					
9	يمكنني تعلم البرامج التي تساعدني على أداء المهام المختلفة بشكل أكثر كفاءة.					
معرفة المحتوى						
1	يمكنني التعبير عن أفكار ومشاريعي من خلال التحدث باللغة الإنجليزية.					
2	يمكنني التعبير عن أفكار ومشاريعي بالكتابة باللغة الإنجليزية.					
3	يمكنني قراءة النصوص المكتوبة باللغة الإنجليزية بشكل صحيح.					
4	أفهم نصوص اللغة الإنجليزية.					
5	يمكنني بسهولة فهم اللغة الإنجليزية كلغة أم.					
المعرفة البيداغوجية						
1	يمكنني استخدام طرق وأساليب التدريس المناسبة لبيئة التعلم.					
2	يمكنني إنشاء تجربة تعليمية مناسبة لمستوى الطالب.					
3	يمكنني تعليم الطلاب بناءً على خلفياتهم الجسدية والعقلية، والعاطفية، والاجتماعية، والثقافية.					
4	يمكنني دمج الخبرات من برامج التدريب الإضافية في عمليتي التعليمية.					
5	يمكنني دعم الأنشطة اللامنهجية لتسهيل تعلمهم المستقل.					
6	يمكنني العمل مع أصحاب المصلحة بالمدرسة (الطلاب وأولياء الأمور والمعلمين، إلخ) لمساعدة الطلاب على التعلم.					

م	الفقرة	أوافق بشدة	أوافق	محايد	غير موافق	غير موافق بشدة
المعرفة البيداغوجية للمحتوى						
1	يمكنني إدارة بيئة التعلم في الفصل.					
2	يمكنني تحليل العملية التعليمية للطلاب.					
3	يمكنني استخدام أساليب وتقنيات التدريس المناسبة لتحسين المهارات اللغوية للطلاب.					
4	يمكنني إعداد الأنشطة الصفية التي تعزز المهارات اللغوية للطلاب.					
5	يمكنني تكيف خطة الدرس مع المستوى اللغوي للطلاب					
المعرفة التكنولوجية للمحتوى						
1	يمكنني استخدام الوسائط المتعددة مثل: (مقاطع الفيديو وعروض الشرائح، ... إلخ) للتعبير عن أفكار حول مواضيع مختلفة باللغة الإنجليزية.					
2	يمكنني استخدام أدوات التعاون مثل: (Wiki و Second Life)، ... إلخ) للعمل مع الأجناب.					
3	يمكنني استخدام التكنولوجيا (مثل مؤتمرات الويب ومنتديات المناقشة) للمساهمة في المجتمعات متعددة اللغات.					
المعرفة البيداغوجية والتكنولوجية						
1	يمكنني استخدام تكنولوجيا المعلومات للاستجابة للاحتياجات الفردية للطلاب.					
2	أقوم بتعليم الطلاب كيفية استخدام تكنولوجيا المعلومات بشكل قانوني وأخلاقي وأمن ومحمي بحقوق النشر.					
3	يمكنني مساعدة الطلاب باستخدام التكنولوجيا مثل لوحات المناقشة الافتراضية لتطوير مهارات التفكير لديهم إلى مستوى أعلى.					
4	يمكنني إدارة بيئة التعلم في الفصل باستخدام التكنولوجيا.					
5	يمكنني أن أقرر متى تكون التكنولوجيا مفيدة لتعلم معايير معينة للغة الإنجليزية.					
6	يمكنني إنشاء مواد تعليمية باستخدام التقنيات التي تساعد الطلاب في تعلم اللغة.					
7	يمكنني استخدام الوسائط المتعددة مثل مقاطع الفيديو والمواقع الإلكترونية لمساعدة طلابي في تعلم اللغة.					
المعرفة البيداغوجية والتكنولوجية للمحتوى						
1	يمكنني استخدام أدوات التعاون مثل: (wiki والبيئات الافتراضية ثلاثية الأبعاد، ... إلخ) لمساعدتي في تعلم اللغة.					
2	من خلال التكنولوجيا، يمكنني مساعدة طلابي على تحسين مهاراتهم اللغوية بأنفسهم.					
3	يمكنني دعم تطوري المهني بالأدوات والموارد التكنولوجية حتى أتمكن من تحسين عملية تعلم اللغة باستمرار.					
4	يمكنني استخدام أدوات Web 2.0 (أدوات الرسوم المتحركة وأدوات القصة الرقمية، ... إلخ) لتحسين مهارات الطلاب اللغوية.					