The Technological, Pedagogical and Content Knowledge of Saudi English as a Foreign Language University Instructors and their Perceptions of Online Teaching during COVID-19

Dissertation Manuscript

Submitted to Northcentral University

School of Education

in Partial Fulfillment of the

Requirements for the Degree of

DOCTOR OF EDUCATION

by

FATIMA MAHMOUD BASAFFAR

La Jolla, California

April 2021
Approval Page

The Technological, Pedagogical and Content Knowledge of Saudi English as a Foreign Language University Instructors and their Perceptions of Online Teaching during COVID-19

By

FATIMA MAHMOUD BASAFFAR

Approved by the Doctoral Committee:

Dissertation Chair: Monifa Beverly  
PhD  
Degree Held  
Date  

Committee Member: Darylann Whitemarsh  
Ph.D.  
Degree Held  
Date  

Committee Member: Brandy Kamm  
PhD  
Degree Held  
Date
Abstract

The present mixed-method triangulation design study examined instructor perceptions of the effectiveness of the implementation of English as a foreign language online teaching in a higher education institution in the Kingdom of Saudi Arabia during COVID-19. As a result of the spread of the global COVID-19 pandemic, many university instructors with face-to-face teaching as their primary instructional teaching methods were forced to implement a sudden shift in their way of teaching. Instructors’ perceptions about their online teaching experience during COVID-19 were examined using a modified electronic Technological Pedagogical and Content Knowledge survey. In addition, the challenges instructors faced during their online teaching during the period of the COVID-19 pandemic and their recommendations for a more successful English as a Foreign Language online teaching experience were examined. Fifty-two female instructors participated in this study by completing the online survey. Findings indicate an overall positive view towards the effectiveness of online learning. The online experience gave learners the chance to become more active and independent learners, according to participants in this study. Online learning was also found to boost learners’ motivation for learning. Moreover, the Pearson product-moment correlation coefficient analysis indicates a statistically significant positive relationship between instructors’ content, pedagogical, and technological knowledge and their views on the success of their EFL online teaching. Recommendations for a more effective online experience were provided, focusing on providing training for teachers, a need for technical support, activating Blackboard’s extra features, and the flexibility with assessments and class setting. Finally, recommendations for further research were provided, including conducting experimental design studies, including more participants from different universities and different levels, and investigating the nature of the recommended courses and assessment strategies.
Acknowledgements

My sincere gratitude goes to my husband, Nasser. Without his encouragement, love and support this work would have never been achieved. I would also like to thank my parents and my kids for their patience and understanding at times when I was busy and could not spend enough time with them. I would also like to thank my participants at the University of Jeddah for their valuable contribution, without their time and interest this study would have never been possible. A big thank you goes to my chair, Dr. Monifa Beverly, for her constructive feedback and endless support. I would also like to thank my subject matter expert Dr. Whitemarsh and my academic reader Dr. Kamm for their valuable comments. Finally, I am very grateful to each and every member at Northcentral University for making such an enriching online learning experience possible.
# Table of Contents

Chapter 1: Introduction ................................................................................................................... 1  
Statement of the Problem ................................................................................................................. 3  
Purpose of the Study .......................................................................................................................... 4  
Theoretical Framework ..................................................................................................................... 5  
Nature of the Study ........................................................................................................................... 6  
Research Questions .......................................................................................................................... 8  
Hypotheses ...................................................................................................................................... 9  
Significance of the Study .................................................................................................................. 9  
Definitions of Key Terms ................................................................................................................. 10  
Summary ......................................................................................................................................... 11

Chapter 2: Literature Review ............................................................................................................ 12  
Theoretical Framework ................................................................................................................... 13  
The TPACK Survey ......................................................................................................................... 24  
Learning Theories .......................................................................................................................... 26  
Face-to-face Learning ....................................................................................................................... 30  
Online Learning ............................................................................................................................... 30  
Blended learning .............................................................................................................................. 34  
Online Teaching in Saudi Arabia .................................................................................................... 37  
The Impact of COVID-19 in Saudi Arabia ...................................................................................... 38  
Summary ......................................................................................................................................... 39

Chapter 3: Research Method ............................................................................................................ 41  
Research Methodology and Design ............................................................................................... 43  
Population and Sample .................................................................................................................... 45  
Instrumentation ............................................................................................................................... 45  
Operational Definitions of Variables ............................................................................................. 47  
Study Procedures ............................................................................................................................. 50  
Data Collection and Analysis .......................................................................................................... 51  
Assumptions ..................................................................................................................................... 51  
Limitations ........................................................................................................................................ 52  
Delimitations ..................................................................................................................................... 53  
Ethical Assurances ........................................................................................................................... 53  
Summary ......................................................................................................................................... 53

Chapter 4: Findings ............................................................................................................................. 55  
Validity and Reliability/Trustworthiness .......................................................................................... 56  
Results .............................................................................................................................................. 61  
Evaluation of the Findings ............................................................................................................... 75
List of Tables

Table 1. Reliability of Scores (Schmidt et al, 2009) ......................................................... 47
Table 2. Reliability of Scores Schmidt et al (2009) .......................................................... 56
Table 3. Demographic Information: Highest Degree Obtained by Participants.................... 62
Table 4. Demographic Information: Years of Teaching Experience...................................... 63
Table 5. Demographic Information: Previous Experience in Online Teaching....................... 63
Table 6. Demographic Information: Training of Teaching Online......................................... 64
Table 7. Demographic Information: Training on Using Blackboard...................................... 64
Table 8. Demographic Information: Number of Days of Teaching During COVID-19......... 65
Table 9. Effectiveness of TPACK in Teaching in General...................................................... 66
Table 10. Effectiveness of TPACK in Teaching During COVID-19....................................... 66
Table 11. Emergent Themes for Effectiveness of TPACK in Teaching................................. 67
Table 12. Descriptive Statistics of General and During COVID-19 TPACK ......................... 72
Table 13. Correlation of EFL Instructors’ General TPACK and During COVID-19 TPACK.... 72
Table 14. Emergent Themes for Recommendations for a Successful Blended Learning Model.. 73
List of Figures

Figure 1. Technological Pedagogical Content Knowledge (Mishra & Koehler, 2006) ............................................................................................................................................ 15

Figure 2. Normality Test for General TPACK ........................................................................ 59

Figure 3. Normality Test for During COVID-19 TPACK ............................................ 59

Figure 4. Linearity Assumptions Test ................................................................................. 60

Figure 5. Homoscedasticity Test .......................................................................................... 61
Chapter 1: Introduction

The spread of the global COVID-19 pandemic has forced many university instructors with face-to-face teaching as their primary instructional teaching methods to implement a sudden shift in their way of teaching (Hasan & Bao, 2020; Toquero, 2020). Among those instructors are university instructors in many Saudi Arabian universities. The Ministry of Education in Saudi Arabia suspended all schools, universities, and educational institutions as a result of the spread of COVID-19. All educational institutions in Saudi Arabia had to implement distance learning through online platforms (Alabdulkarim, Alsultan, & Bashir, 2020). According to the Ministry of Education in Saudi Arabia, 1.6 million university students were online starting from March 8, 2020. The implementation of this sudden shift in universities required instructors to put their previous training on teaching online, if any, into practice. Ultimately, instructors’ technological knowledge, aligned with their content and pedagogical knowledge, was essential to guarantee the success of the online teaching experience (Koehler, Mishra, & Zellner, 2015).

Even though face-to-face teaching has been the dominant instructional teaching method in many universities in Saudi Arabia until March 2020, most of the learners in these universities are digital natives who are using the Internet, among other technologies, constantly (Imbriale, Schiner & Elmendorf, 2017). Digital natives tend to express themselves, communicate, and learn in different ways (Šorgo, Bartol, Dolničar & Boh Podgornik, 2017). Digital Natives appear to be more interested in activities that are oriented to visual media and that involve multitasking (Imbriale et al., 2017). However, despite learners’ interest, many instructors have continued the traditional way of face-to-face teaching with limited exposure to technology despite recommendations toward a more digitally-oriented teaching style (Alghamdi & Deraney, 2018). Thus, a combination of face-to-face and online teaching using technology and appropriate
pedagogical skills is considered important (Tondeur, Forkosh-Baruch, Prestridge, Albion & Edirisinghe, 2016). Face-to-face and online teaching can provide learners with better learning opportunities and a more motivating environment (Milthorpe, Clarke, Fletcher, Moore & Stark, 2018). The spread of the COVID-19 pandemic and the mandatory transition to online teaching provided a chance to examine more digitally-oriented implementations. According to the Minister of Education in Saudi Arabia, distance learning will continue even after the crisis (Al Sheikh, 2020).

In this study, the focus of the researcher was to investigate English as a Foreign Language (EFL) instructors’ perceptions in a higher education institution about the effectiveness of their online teaching experience during COVID-19. A total of 52 female EFL instructors in an English Language Institution in one of the largest universities in the Kingdom of Saudi Arabia participated in this study. In general, teaching English as a foreign language has been a challenge for both instructors as well as for their learners (Alghamdi & Deraney, 2018). In many cases, EFL learners find themselves exposed to the target language for a limited number of hours inside the classroom. In addition, learners have limited opportunities to practice what they have learned outside the classroom setting (Wu, Yen & Marek, 2011). This kind of limited exposure to the target language reduces learners’ opportunities to reach a high level of language proficiency (Alghamdi & Deraney, 2018). Therefore, a demand to increase learners’ exposure to the target language outside the classroom setting, whether real or virtual, was found essential to help them master the target language (Alghamdi & Deraney, 2018). The use of a blended learning model in EFL courses, where learners can combine their traditional face-to-face learning with structured online learning, has always been suggested as a solution to address the problem of the limited exposure to the target language in EFL learning settings (Milthorpe et al., 2018). For example,
learners may first be exposed to the basic aspects of the language in a face-to-face classroom setting. Learners may then find more opportunities to interact with their instructors, peers, or other speakers of the target language outside the classroom setting using their own devices at their own pace in an interactive environment. This kind of interaction can contribute to improving learning outcomes (Milthorpe et al., 2018). Moreover, learners' positive attitude towards the integration of technology in education has been found to boost learners’ motivation in addition to improving their learning outcomes (Solano, Cabrera, Ulehlova & Espinoza, 2017).

Since the spread of the COVID-19 pandemic has moved millions of learners from their face-to-face classes to an online setting unexpectedly, online learning in teaching EFL was implemented for two months in many institutions in Saudi Arabia. In this study, the researcher attempted to investigate EFL instructors’ views and believes on how effective the online setting was in teaching EFL at the university level. The correlation between instructors’ general knowledge in using technology and their perceived effectiveness in teaching online in a higher education institution during the two-month period was also investigated. Instructors’ recommendations for a successful blended learning model for EFL instruction were considered for future practice.

**Statement of the Problem**

The problem addressed in this study was the sudden transition from fully EFL face-to-face teaching to online teaching, which allowed little time for any organized planning, as a result of the spread of the COVID-19 pandemic (Hasan & Bao, 2020; Toquero, 2020b). The difference between face-to-face and online teaching caused confusion for some instructors (Demuyakor, 2020). Online instructors needed to be aware of different pedagogical techniques to be able to manage their online courses successfully (Major, 2015). Instructors needed to combine their
content and their technological knowledge along with their pedagogical knowledge to create an effective learning environment (Koehler et al., 2015).

The move from face-to-face EFL teaching to online teaching required putting different types of knowledge, combined together, into practice within the limited time allowed for the compulsory shift. In addition to the fact that face-to-face teaching differs from online teaching (Golden, 2015; Rockinson-Szapkiw & Wendt, 2015; Scheg, 2014), the nature of EFL courses also differs from other courses learners are introduced to in their first year at the University of Jeddah in Saudi Arabia. The EFL courses are intensive courses with long teaching hours. The appropriate interaction between the instructor and the learners and among learners themselves is crucial. This kind of communication and collaboration is important to the success of the learners (Rockinson-Szapkiw & Wendt, 2015). The challenges EFL instructors faced to move instantly to online teaching were addressed by this study. Instructors’ technological knowledge along with their content and pedagogical background were investigated to explore their views on the effectiveness of their EFL online teaching experience. In addition, instructors’ recommendations for future implementations for better practice were considered.

**Purpose of the Study**

The purpose of this mixed-method triangulation design study was to examine the effectiveness of the implementation of online learning in teaching EFL in a higher education institution in the Kingdom of Saudi Arabia during COVID-19. Instructors’ perceptions were examined using a modified electronic Technological Pedagogical and Content Knowledge (TPACK) survey (Schmidt, et al., 2009). In addition, the challenges instructors faced during their online teaching during the period of the COVID-19 pandemic and their recommendations for a more successful EFL online teaching experience were examined. The TPACK survey was
modified from Schmidt et al. (2009) in this study (see Appendix A). Permission from the authors of the survey was obtained.

A total of 52 instructors participated in this study. Participants were female instructors teaching EFL in one of the largest universities in the Kingdom of Saudi Arabia. The study only included female instructors since the researcher had better access to female instructors. Like other universities in the Kingdom of Saudi Arabia, the University of Jeddah has two separate branches, one for males and the other one for females. The survey was shared with those instructors electronically. The modified TPACK survey consisted of six demographic questions, 56 Likert-scale items, and five open-ended questions to allow instructors to provide their perceptions in more detail. The survey was created online using Qualtrics, a web-based survey tool. Responses were kept anonymous to encourage instructors to express their views openly. Demographic data and Likert-scale items were analyzed using the Statistical Package for Social Science (SPSS). Open-ended questions were analyzed thematically using NVivo.

Theoretical Framework

The theoretical framework for this study is based on social constructivism and the Technological Pedagogical and Content Knowledge (TPACK) theories. Social constructivism is relevant to the online learning setting since the learner-centered environment, interaction, and collaboration are highly recommended, especially in teaching EFL (Ronfeldt, Farmer, McQueen & Grissom, 2015; Woolfolk Hoy, Davis, Anderman, 2013). The TPACK framework was used to understand how instructors can implement content, pedagogical, and technological skills in their online teaching (Qasem & Viswanathappa, 2016).

Social constructivism was developed by the work of the developmental psychologist Vygotsky (Yoders, 2014). Social constructivism is based on the idea that learners construct their
own knowledge through engagement (Porath, 2016). The teacher’s role here is to facilitate the learning process and to construct knowledge through collaboration based on the learners’ prior knowledge (Murthy, Iyer & Warriem, 2015).

The TPACK framework addresses instructors’ knowledge in using technology (Koehler et al., 2015). The TPACK framework is based on Shulman’s (1986) theory of Pedagogical Content Knowledge (PCK). The TPACK framework is a conceptual model for the knowledge that supports effective technology integration into classroom teaching (Koehler et al., 2015). The TPACK is a representation of the complex interactions among the types of essential knowledge for successful teaching with technology. The theory is concerned with instructors’ awareness of using technology to support their instructional strategies (Koehler et al., 2015). The TPACK theory addresses three areas interacting together: (a) content knowledge, which is the teacher’s knowledge in the subject matter content area; (b) pedagogical knowledge, which is the instructional strategies teachers use in planning, managing, observing, evaluating, and assessing learners; and (c) technological knowledge, which is the use of appropriate digital technologies (Koehler et al., 2015). Therefore, social constructivism and the TPACK framework theories were found essential to examine how instructors encourage learners to build knowledge through online engagement and interaction (Sabzian, Gilakjani & Sodouri, 2013).

**Nature of the Study**

Instructors’ perceptions of the effectiveness of the online experience were investigated in this study using a mixed-method research design. The mixed-method triangulation design was chosen since it allows for multiple methods of data collection (Venkatesh, Brown & Bala, 2013). According to Per Venkatesh et al. (2013), the use of multiple methodologies gives a higher rate of reliability and validity. The triangulation design, which is one of the most common
approaches to mixing methods, was used in this study. The triangulation design is a one-phase
design where quantitative and qualitative data are collected concurrently (Creswell, Plano Clark,
Gutmann & Hanson, 2003). This method was selected in this study to help in obtaining different
and complementary data on the topic (Morse, 1991). Variants of the triangulation design are the
convergence model, the data transformation model, the validating quantitative data model, and
the multilevel model. The validating quantitative data model was used in this study to validate
and expand on the quantitative findings from the survey.

The survey consisted of two sections in addition to demographic questions. The first
section of the survey consisted of two sub-sections: (1) Instructors’ TPACK background
knowledge and (2) Instructors’ actual online experience during COVID-19 using the TPACK
framework. The second section of the survey consisted of open-ended questions. The second
section on the first part of the survey, the quantitative part (section two), was first analyzed using
the descriptive statistical analysis using the Statistical Package for Social Science (SPSS). This
analysis provided an overall understanding of the instructors’ perceptions about the effectiveness
of their online teaching experience during COVID-19. The second part of the survey, which is
the qualitative part, provided a more in-depth understanding of the instructors’ perceptions. The
qualitative part was analyzed using NVivo. This analysis provided answers to the first and third
research questions. Moreover, the data from section one and section two from the quantitative
part were analyzed using SPSS to find the correlational significance. The correlation between the
instructors’ TPACK general knowledge and their COVID-19 online teaching experience was
investigated. This analysis provided information supporting the research’s hypotheses and
provided answers to the second research question.
The process of collecting data was done online using Qualtrics. Access to Qualtrics was provided through NCU. Participants were female instructors working in the English Language Institute (Eli) at the University of Jeddah, one of the largest universities in the Kingdom of Saudi Arabia. The institute provides general EFL courses for the preparatory year students. The EFL courses are compulsory at the university and are presented at three levels. The survey was shared with all instructors in the Eli, around 160 instructors from different nationalities. Site permission for sending the survey was obtained from the head of the Scientific Research Unit and the head of the Development Unit in the Eli in the University (see Appendix B). Participants were asked to complete the survey, which took no longer than 15 minutes. Each participant received an e-mail describing the purpose of the study and the consent form, which indicated that participation is voluntary and that assures the confidentiality of the data collected. The relationship between instructors’ content, pedagogical, and technological knowledge and their practice was investigated. Recommendations by instructors for a more successful blended learning environment were presented.

Research Questions

The EFL instructors’ perceptions of the effectiveness of EFL online learning were examined using a modified TPACK survey. The researcher also investigated the relationship between instructors’ content, pedagogical, and technological knowledge and their views on the effectiveness of their online practice. The following research questions were answered:

RQ1. What are EFL instructors’ perceptions about the effectiveness of online learning in their EFL courses based on the modified TPACK survey?

RQ2. What relationship, if any, is there between instructors' TPACK scores and their perceived level of effectiveness in teaching EFL online during COVID-19?
RQ3. Based on instructors’ experiences teaching online during COVID-19, what are EFL instructors’ recommendations for a successful blended learning model?

**Hypotheses**

**H20.** There is no statistically significant relationship between instructors’ TPACK scores and their perceived level of effectiveness in teaching EFL online during COVID-19.

**H2a.** There is a statistically significant relationship between instructors’ TPACK scores and their perceived level of effectiveness in teaching EFL online during COVID-19.

**Significance of the Study**

In this study, the effectiveness of the implementation of teaching online EFL courses in the Eli in one of the largest universities in the Kingdom of Saudi Arabia was investigated. The researcher focused on how effective EFL online instruction during the COVID-19 pandemic period was from the perspective of the instructors. The aim was to understand the challenges that faced instructors during their online teaching experience, examine instructors’ technological, pedagogical, and content knowledge using TPACK, and determine their recommendations for a more successful learning experience. The study aimed at providing the required information since the future plan is not to return to the normal traditional face-to-face learning but to include a combination of both online along with face-to-face learning (Alshaikh, 2020).

The combination of face-to-face teaching along with online teaching was found to have a positive effect on learners’ attitude and motivation (Alducin-Ochoa & Vázquez-Martínez, 2016). Blended learning was found to combine different models of face-to-face and online learning to create a learning environment that can highly motivate learners and increase their autonomy (Heirdsfield, Walker, Tambyah & Beutel, 2011). A significant difference in learners’ achievement in a blended learning model was also found that can be attributed to the use of
technology (Yapici, 2016). Moreover, Siemens (2017), among other connectivists, believes that knowledge cannot only be restricted to a classroom setting. Learners need to connect with the outside world and collaborate to get knowledge. Integrating online learning can help learners use their technological knowledge for learning purposes and allow them to choose the most suitable way to learn and at their own pace (Kirstein & Flores, 2012). Results obtained from this study were expected to provide important implications on best practices for stakeholders and teachers in EFL courses. The researcher seeks to promote the idea of moving a step forward from traditional teaching, still taking place in many schools and institutions in the Kingdom of Saudi Arabia, to a more interactional technology-based teaching environment.

Definitions of Key Terms

**Blended learning.** Blended learning is “the process of acquiring knowledge and skills through the integration of in-class and extracurricular learning activities with e-learning, distance courses and mobile learning technologies under the condition where learning activities’ time, place, path, and pace are self-controlled by the student” (Gerasimova, Melamud, Tutaeva, Romanova & Zhenova, 2018, p. 209).

**English as a foreign language.** English as a foreign language is the use or study of the English language by non-native speakers in countries where the English language is not the primary language (Boran, 2018).

**Face-to-face teaching.** Face-to-face instruction is the teaching provided by instructors in a physical classroom (Burgess, 2015).

**Online learning.** Online learning is a web-based form of instruction accessed by students to complete instructional activities from their own place (Xin, Kempland & Blankson, 2015).
Pedagogy. Pedagogy refers to the strategies used for instructional purposes (Boschman, McKenney & Voogt, 2014).

Summary

The present study was an attempt to investigate the effectiveness of online EFL teaching during COVID-19 in one of the largest universities in the Kingdom of Saudi Arabia from the point of view of the instructors. Researchers have found that the implementation of technology in teaching can positively affect learners’ motivation, increase their interaction, and improve their learning outcomes (Milthorpe et al., 2018; Solano et al., 2017) However, others have found no significant differences resulting from the integration of technology in teaching, which can be attributed to the inadequate implantation (Demirer & Şahin, 2009; Küçük & Şahin, 2013; Ünsal, 2012). The researcher in this study explored instructors’ perceptions of online teaching during COVID-19. A total of 52 EFL instructors participated in this study. All instructors completed a modified TPACK online survey adapted from Schmidt et al. (2009). The theoretical framework for this study was social constructivism and the TPACK theory. Related literature is reviewed in the following chapter.
Chapter 2: Literature Review

The researcher’s main focus in this study was to investigate EFL instructors’ perceptions of the effectiveness of integrating EFL online teaching. To achieve this goal, the researcher investigated the perceptions of 52 instructors in an EFL higher education institution. A mixed-method study design was used. Data were collected using an online survey. The survey was adopted from (Schmidt et al., 2009) and was modified based on the needs of this study. The researcher focused on the TPACK theory to reach a better understanding of instructors’ knowledge and their perceptions. In this section, the researcher presents a comprehensive review of relevant literature. The review starts with a review of the Technological Pedagogical Content Knowledge (TPACK) Framework, which is the main framework for the study. The review then explores the most prominent learning theories, including behaviorism (Skinner, 1953), cognitivism (Luszczyńska & Schwarzer, 2005), social constructivism (Minick, 1987), and connectivism (Kop & Hill, 2008) to set the background. Special focus is on social constructivism being the second theoretical framework of the study. The researcher then reviews some of the available literature related to face-to-face learning compared to online and blended learning. Finally, online learning in Saudi Arabia and the impact of COVID-19 is highlighted.

The literature review for this study was conducted using several academic databases, including EBSCO, ProQuest, and Psych Dissertations. The search was done using the NCU Library and Google Scholar. The support of the NCU librarians was used in different stages. Some of the keywords used to conduct the search are ‘online teaching,’ ‘EFL online teaching,’ ‘blended learning,’ ‘educational technology,’ and ‘TPACK.’ The researcher focused mainly on peer-reviewed primary academic articles and dissertations published during the period of 2015 to
The literature includes sources published before 2015, those are sources that were found relevant and significant to the study in some way.

**Theoretical Framework**

The Technological Pedagogical Content Knowledge (TPACK) theory, adopted as the theoretical framework for this study, is an extension of Lee Shulman’s (1986) theory of Pedagogical Content Knowledge (Koehler, Mishra & Cain, 2013). Researchers found that in many cases, instructors were misaligned with the skills needed to teach online (Tirrell & Quick, 2012). A need for a conceptual framework that can adapt to the ongoing changes in technology was found to be crucial (Niess, 2013). Shulman’s theory was designed to help instructors to use their content knowledge in designing instructional lessons to meet the learning needs of their students. Otto and Everett (2013), and Mishra and Koehler (2006) created the Technological Pedagogical Content Knowledge TPACK as an extension to Shulman (1986) to analyze the three knowledge dimensions and to see how these dimensions coincide together to improve online teaching (Koehler, Shin & Mishra, 2012). With the integration of technology as an essential component in teaching the 21st-century generations. Koehler and Mishra (2006) were able to create the Technological Pedagogical Content Knowledge framework as the theoretical base. The TPACK model is considered by some researchers as the base for good teaching practice with technology. According to them, it can provide an effective guide to best practices in online education (Murphy, 2018).

The TPACK framework is related to the complex interaction between technology, pedagogy, and content knowledge that a teacher is required to be aware of to create a successful blended learning environment (Schmidt et al., 2009). Moreover, the TPACK framework can provide online teaching instructors a tool for development and improvement (Benson & Ward,
It also allows for a deeper understanding of online instructors’ performance (Anderson, Barham & Northcote, 2013a; Benson & Ward, 2013). The integration of content, pedagogy, and technology is expected to increase teaching performance (Koehler et al., 2012). The TPACK framework can also be used as a tool to analyze self-reported instructional practices and perceptions of integrated knowledge in technology, pedagogy, and content (Anderson et al., 2013).

In many cases, it has been a common practice to teach content, pedagogy, and technology as separate sets of skills (Bower, Dalgarno, Kennedy, Lee & Kenney, 2015). To effectively integrate technology, instructors need to develop a better understanding of the relationship between technological, pedagogical, and content knowledge (Koehler et al., 2012). Nordin and Tengku Ariffin (2016) defined TPACK as the process of understanding the connection and interaction of technological knowledge, content knowledge, and pedagogical knowledge in the learning process (Rosyid, 2016). It is the illustration of how an instructor can facilitate the learning process for his/her subject’s content with the implementation of the appropriate pedagogical and technological approaches (Mar’atus Sholihah, Yuliati & Wartono, 2016). TPACK allows instructors to present their subject content using the available technology with the correct pedagogy (Nordin & Tengku Ariffin, 2016). The TPACK framework was first created as a K-12 self-assessment for face-to-face traditional instructors (Bower et al., 2015). Later on, it was modified to cover online learning in higher education.

According to this theory, one knowledge dimension is known as the Content Knowledge (CK) or subject matter to be taught. The second knowledge dimension is known as the Pedagogical Knowledge (PK) or teaching methods to be used. The last knowledge dimension is known as the Technological Knowledge (TK) or the tools used during a lesson. With the
understanding of the three knowledge dimensions, overlapping knowledge or integrated knowledge emerged, as identified by the TPACK framework (Koehler et al., 2012). These areas include Technological Pedagogical Knowledge (TPK), Technological Content Knowledge (TCK), Pedagogical Content Knowledge (PCK), and Technological Pedagogical Content Knowledge (TPACK). The diagram, Figure 1, is a good illustration of the intersected parts.

Figure 1. Technological Pedagogical Content Knowledge (Mishra & Koehler, 2006)

TK is related to how to operate computers and relevant software (Koehler, Mishra, Kereluik, Shin & Graham, 2014a). TK can be defined as “the knowledge of the affordances of technologies to achieve personal and professional goals” using relevant and available technologies (Heitink, Voogt, Verplanken, van Braak & Fisser, 2016, p. 36). Another definition
implies that technological knowledge refers to the degree of skill possessed by an individual to operate different types of technologies. Urbina and Polly (2017) and Angeli and Valanides (2013) defined TK as knowing how to use a computer, use different programs and solve related problems. Koehler et al. (2015) defined TK as the knowledge needed to understand information technology, apply it productively, and continually adapt to changes in the field. PK refers to the basic teaching methods and the learning management processes. It is the knowledge instructors possess of instructional practices, strategies, and methods to facilitate the learning process in the classroom. CK refers to the actual subject matter.

TCK is how technology can make new representations for the subject matter content. It is the knowledge related to the relationship between technology and content (Angeli & Valanides, 2013). PCK is the knowledge related to the teaching process. PCK combines content and pedagogy to develop better teaching practices in the content. According to Shulman (1986), PCK is how a particular topic, problem, or issue is organized and represented to learners of different learning abilities and interests (Koehler et al., 2014). However, researchers differ as to how to understand the concept of PCK (Graham, C. R., 2011). One approach defines PCK as the integration or combination of its two secondary constructs, content knowledge and pedagogical knowledge, whereas the other approach defines PCK as a new and distinct form of knowledge that cannot be explained by its parts (Graham, 2011). TPK is how various technologies can be used in teaching a specific pedagogical content (Koehler et al., 2014). Finally, the overall TPACK is the knowledge needed by instructors to integrate technology in their teaching. TPACK is the knowledge that relates the technology, pedagogy, and content that is required by instructors to create proper teaching approaches (Koehler et al., 2014).
Some researchers view TPACK as a transformative concept, with little emphasis on individual knowledge components (Angeli & Valanides, 2013). According to those researchers, TPACK domains are seen holistically. For example, four teachers teaching Chinese as a foreign language were found to understand the affordances and constraints of web conferencing technology (i.e. using multimedia and internet resources to enhance linguistic input provided to distance learners), to increase interaction between people and content, and to contribute to linguistic production (Tseng, 2016). This result suggested a transformative form of TPACK. In contrast, the opposite integrative view sees TPACK as a detailed analysis of individual knowledge components. Liu and Kleinsasser (2015), for example, conducted pre and post surveys and individual interviews to explore how six Taiwanese high school teachers incorporated online project-based instructions into the EFL curriculum. The study suggested that the teachers made progress after a one-year training in TPK, TCK, and TPACK in particular.

TPACK was found to allow teachers to have a deep understanding of how each component can be utilized in their teaching (Koehler et al., 2015). By understanding how these knowledge areas work together, educators may develop the needed knowledge and awareness to perform skillfully (Yeh, Hsu, Wu, Hwang & Lin, 2014; Bower et al., 2015). According to this theory, instructors who have TPACK understand the nature of the complex interaction between the three basic components of knowledge (CK, PK, TK) (Boelens, Voet & De Wever, 2018), which eventually leads to a more successful teaching practice (Al-Juda, 2017). The aim of the TPACK framework is not to provide training for instructors but to help educate them to think about what they are doing in order to use their knowledge to provide the grounds for choices and actions (Mishra & Koehler, 2006b). Early TPACK research literature used to see technology integration as a new type of knowledge instructors needed to use (Schmidt et al., 2009).
However, more recent research focused more on the effective applications of the tool in self-assessment and professional development (Agyei & Voogt, 2015), allowing stakeholders to focus more on the connections among the dimensions rather than simply the addition of technology (Koehler & Mishra, 2006; Koehler & Mishra, 2009).

The TPACK framework has been accepted for the theoretical and practical aspects of effective technology integration (Yurdakul et al., 2012). More recently, the TPACK framework was internationally accepted as a conceptual model for instructors and trainers (Rienties, Brouwer & Lygo-Baker, 2013a). The importance of the TPACK framework as identified by (Bower et al., 2015) lies in its ability to provide instructors to breakdown the three knowledge areas in order to examine the dynamic activity in context. With the TPACK framework as a self-assessment tool, instructors find a systematic way to reflect on their knowledge and their performance (Rienties et al., 2013). Being able to detect areas of strength and weaknesses through the use of the TPACK survey, instructors can implement positive changes (Kennedy, 2015; Tømte, Enochsson, Buskqvist & Kårstein, 2015).

Researchers have conducted different studies to determine the usefulness of the TPACK model in online education. For example, McGrath, Karabas, and Willis (2011) interviewed teachers in relation to the usefulness of the TPACK model. Findings indicate that teachers believed that the TPACK model was a useful theoretical guide to teaching. In addition, Anderson, A., Barham, and Northcote (2013b) studied 15 professors from Avondale College of Higher Education in Australia. Participants were interviewed in a cross-discipline qualitative study of the TPACK model. Participants took part in semi-structured interviews and questions were related to constructs of the TPACK model. Findings provided important information about
the usefulness of the model. Anderson, Barham, and Northcote’s study implies that the TPACK framework can be implemented in a variety of subjects due to the broad structures in the model.

Other studies were also conducted about pre-service teachers’ TPACK (Horzum, Mehmet Baris, Kaymak & Gungoren, 2015). Gömleksiz and Fidan (2011) conducted a study, in Turkey, using Schmidt et al.’s (2009) TPACK survey translated into Turkish. They found high levels of perceived TPACK with varying levels of TPACK among teachers of different educational backgrounds. Tokmak, Yelken and Konokman (2013) also studied the TPACK self-efficacy perceptions of pre-service teachers in Turkey using a TPACK Self-Efficacy Scale. They found teachers’ self-perceptions to be high. Horzum, Mehmet and Barış (2013) investigated technological pedagogical content knowledge of 239 pre-service teachers studying instructional technology material development courses with the use of TPACK scales using pre and post-test design. Findings showed that teachers who have a deep learning approach have higher TK, TCK, TPK, and TPACK scores than teachers who have only a surface learning approach. Xiang and Ning (2014) conducted a study investigating Chinese pre-service mathematics teachers' TPACK. Results showed that participants rated themselves as being competent in content knowledge but least competent in TPACK. Agyei and Voogt (2015) explored the effect of the strategies implemented in a mathematics instructional technology course with 105 pre-service teachers. Results indicate that pre-service teachers' level of technology integration competencies is positively affected by their participation in these courses. Messina, De Rossi, Tabone, and Tonegato (2018) explored technology proficiency, TPACK, and beliefs about technology of pre-service teachers using a self-administered questionnaire completed by 79 trainees. Results indicate that the trainee teachers have low technology proficiency and difficulty in integrating technology, pedagogy, and disciplinary content. The researcher recommended a strong need to
develop technology integration among the trainees and the faculty members. Phillips (2016) conducted an eight-month case study on the use of digital technologies in an Australian secondary school. Data were collected through observations and semi-structured interviews. Findings showed that TPACK indicates knowledge used to support teaching practices. Similarly, Saudelli and Ciampa (2016) used TPACK to examine how the three main components can influence teachers’ practices. Data were collected from classroom observation field notes, teacher interviews, and teacher blogs. Results indicated that the TPACK framework is a useful tool in understanding teachers' self-efficacy beliefs and in providing suitable professional development activities.

Admiraal et al. (2017) evaluated two courses in a teacher education program that were designed to prepare pre-service teachers to use technology in their instructions. Data were collected using questionnaires, assignments, instructional materials, and interviews. Similar to results found in other studies (Kaufman, 2014; Messina et al., 2018; Tondeur et al., 2016) findings emphasized the importance of teaching practice using technology in authentic classroom settings. Can, Doğru, and Bayir (2017) also conducted a study on pre-service teachers’ TPACK, examining the affected of gender and grade level. Results indicate no significant effect of those two variables.

Gill and Dalgarno (2017) conducted a study on six pre-service teachers in an Australian university joining a teachers’ training program. Interviews were conducted in six phases over four years. Results provided a clear indication of TK, TCK, TPK, and TPACK development by the participants. In another study, Voogt and McKenney (2017) examined how five teachers’ institutes in the Netherlands develop technological pedagogical content knowledge. Twelve teachers were interviewed in focus groups and follow up 60-90-minute interviews were then
conducted. Findings indicated that teacher education institutes are not dedicating enough time to teaching technology.

There has been an increasing concern regarding teachers’ technological and pedagogical knowledge in the Kingdom of Saudi Arabia as well since the introduction of technology in the educational system (Al-Shehri, 2010). A number of studies were conducted within the TPACK framework. Alshehri (2013) investigated 7th to 12th grade mathematics teachers’ expertise in TPACK and its influences on their teaching effectiveness in Saudi Arabia. Participants were 347 secondary male mathematics teachers in Riyadh public schools. Data were collected using self-evaluation questionnaires. Principals from 109 schools rated their teachers by using a 14 item 'Teacher Effectiveness' survey. Descriptive statistics, bivariate correlations, ANOVA, Paired-Samples t-test, and MANOVA were used to evaluate the relationship between the teachers’ TPACK knowledge and teaching effectiveness. Results showed that teachers evaluated their TPACK at a high level. The teachers also rated their professional preparation to integrate technology. They reported that their university courses prepared them to integrate digital technologies. However, according to Alshehri, mathematics teachers still need to receive high-quality training programs supporting their TPACK development. The high TPACK self-efficacy will help instructors positively.

Bingimlas (2018) also conducted a quantitative research design study aimed at investigating Saudi teachers’ knowledge about TPACK. The sample of the study included 111 males and 132 females primary grade teachers, 55 were middle-grade teachers, and 72 were secondary grade teachers. The majority of the teachers reported that they had an average confidence level of knowledge relative to the TPACK framework. A statistically significant difference was found between technological content knowledge and teaching experience. In line
with Alshehri (2013), Bingimlas (2018) recommended that the instructors in his study need to change their traditional teaching style to a more effective learning style using technology. Moreover, Bingimlas suggested that the Ministry of Education should provide schools with educational technologies and instructors with effective technological training. Similarly, Al-Abdullatif (2019) investigated TK and TPACK confidence of 113 Saudi pre-service teacher students during their final year of the teacher education program. Data were collected using the TPACK Confidence Survey (TCS). Findings indicated that a high percentage of participants had a very low level of perceived competencies while using digital technologies for teaching and learning. Moreover, participants expressed a low level for most TPACK integration practices. The researcher recommended reforming the teacher training program within the TPACK framework.

In a similar study, Alzahrani’s (2014) study evaluated teachers’ and students’ perceptions through a survey method and investigated if the teachers’ self-assessment of their TPACK and their students’ perceptions about their TPACK were similar. The study revealed that teachers rated their TPACK at higher-than-average levels and their students’ perceptions were mostly aligned with the teachers’ ratings of themselves. Alhababi (2017) conducted a study to investigate the effect of integrating technology into technology-rich English language learning classroom in Saudi Arabia. The technological, pedagogical, and content knowledge (TPACK) framework was used to design activities of technology integration for teachers' and students' achievement and effectiveness. Data were collected using a mixed-method research design. All participants were male teachers who taught English language courses in public Saudi Arabian schools using a pre and post-surveys, observations, and in-depth recorded interviews. Results showed that the TPACK framework is an effective tool for both teachers and students to enhance
teaching and learning if it is well implemented and used. The researcher believes that teachers are going to be more ready and productive with technology if it is integrated as part of the educational system.

Albuloushi (2019) conducted a study in one of the universities in the kingdom of Saudi Arabia that offers degrees through distance education. The study investigated online teachers’ perceptions of their TPACK (only the TK, PK, and TPK domains) and their practical application of TPACK knowledge in planning their lessons. The purpose of the study was to investigate the technological competency of the teachers of Saudi Electronic University in using instructional technology to understand the connection between their assessment of their own TPACK and their actual integration of technology in online classes. Data was collected using a self-perception survey, semi-structured interviews, and the unit plan analysis. Data was collected from the 11 branches of the Saudi Electronic University. Findings showed that teachers demonstrated more confidence in their technological knowledge than in their pedagogical knowledge and technological pedagogical knowledge. The researcher suggested more training programs to enhance teachers’ PK and TPK skills. According to Albuloushi, “Online education is a relatively new phenomenon in Saudi Arabian universities and best online teaching practices are still gaining ground in teacher training” (Albuloushi, 2019, p. 1). The present study seeks to investigate teachers’ perceptions within the TPACK framework in the Kingdom of Saudi Arabia in a higher education institution. Except for Albuloushi (2019), the previously cited researches in the Kingdom of Saudi Arabia have investigated TPACK in traditional face-to-face settings. The present study used the TPACK model in online teaching imposed by the COVID-19 crisis.

Since the introduction of the TPACK framework, it was found to have a great impact on education in general and on educational technology in particular (Ritzhaupt, Huggins-Manley,
Ruggles & Wilson, 2016). The significance of the TPACK frame can be attributed to its practical applications in the field (Levy, 2020). The TPACK framework was created as a conceptual framework to help in integrating technology as well as to facilitate teachers’ knowledge to teach with technology (Angeli, Valanides & Christodoulou, 2016). A good TPACK knowledge can help teachers perform well (Harris, Mishra & Koehler, 2009) since it implies possessing the knowledge of how the use of technology can interact with the related pedagogy and course content. Koehler and Mishra (2009) believe that understanding TPACK constructs can help teachers in designing suitable lessons based on students’ learning objectives. According to Chai, Ching Shing, Ng, Li, Hong, and Koh (2013), a good TPACK knowledge can help teachers “draw from relevant aspects of [TPACK] and synthesize them for a particular group of students with a specific focus on some content knowledge” (p. 43). Ultimately, as Drummond and Sweeney (2017) concluded that the goal of the TPACK framework is to guide teachers to “best integrate technology, teaching practices and specific content in order to create the most effective learning experience for students” (p. 930).

The TPACK Survey

Since the publishing of the TPACK framework, different measurements and approaches were designed to examine teachers' TPACK (Tsai et al., 2016; Willermark, 2018). The most commonly used approach to examine teachers' TPACK was the self-reporting instrument surveys. Around 72% of the conducted studies used a self-reporting approach where participants were asked to report their perceptions (Willermark, 2018).

Many TPACK survey instruments were used to measure TPACK on a general level without placing emphasis on a particular content, pedagogy, or technology (Levy, 2020). Koehler and Mishra (2005) used the TPACK survey to measure teachers’ perceptions of their
pedagogy, content, and technology with students collaborating in using technology to design solutions to authentic problems. The study found that engaging in this cooperative student-centered method helped in TPACK development (Abbitt, 2011). The study was significant since it revealed that the TPACK survey can be used to assess teachers’ TPACK (Chai, Ching Sing, Koh, & Tsai, 2016).

The most commonly used TPACK survey is Schmidt et al.’s (2009) “The Survey of Preservice Teachers' Knowledge of Teaching and Technology”, which is adapted in this study. The survey was used to measure preservice teachers’ knowledge of teaching and technology. The main focus of the survey is to address the TPACK perceptions of preservice primary teachers with a focus on literacy, social studies, science, and mathematics content areas. The survey consists of 57 items with seven subscales of TPACK. The survey was developed and revised through ongoing research during the 2008–2009 and 2009–2010 academic years. Results indicated the reliability and validity of the tool to assess the TPACK development of preservice primary teachers. This survey was later translated into numerous languages and has served as a basis from which other researchers have constructed their own surveys (Levy, 2020). The survey is designed in a way that can be quickly completed, extended to different contexts, and covering all constructs of the TPACK (Levy, 2020).

Lux, Bangert, and Whittier (2011) also developed their own TPACK survey for pre-service teachers. According to them, their instrument was reliable and valid and was capable of measuring six out of the seven constructs. Another widely used TPACK survey was developed by (Gungor et al., 2011). In another study, Yurdakul et al. (2012) formulated a TPACK survey to measure four factors; design, exertion, ethics, and proficiency. Drummond and Sweeney (2017) used Yurdakul et al.’s (2012) instrument to study pre-service teachers’ self-reported TPACK.
Chai et al. (2013) modified the survey used in (Gungor et al., 2011). Although much of Chai et al.’s (2011) instrument was adapted from Schmidt et al.’s (2009), this survey included new items that can be helpful in enhancing relevance to genuine information technology integration. However, the main purpose of creating these surveys remains the same.

Other researchers have developed a number of surveys that focus on specific technology types. Lee, M. and Tsai (2010) developed a survey to measure teacher’s self-efficacy in regards to TPACK focusing on web-based learning. The survey, according to them, was reliable and valid. Their findings revealed a strong correlation between self-efficacy and teacher beliefs towards web technologies. In another study, Jang and Tsai (2012) examined the relationship between TPACK and the use of interactive whiteboards. Chai et al. (2013) developed a TPACK survey with revised pedagogical knowledge items that reflected the principles of meaningful Learning with Technology, which included active learning, constructive learning, authentic, real-world learning, intentional goal-oriented learning; and cooperative learning (Howland, Jonassen, & Marra, 2013). Other TPACK surveys were developed with a specific focus on content areas. Graham et al. (2009) and Bilici, Yamak, Kavak, and Guzey (2013) focused on science-related TPACK, Akman and Güven (2015) on social studies, and Baser, Kopcha, and Ozden (2016) on EFL. Although these surveys may appear to be different in some way, they all serve the same goal and have a very similar structure and several common items.

**Learning Theories**

Among the most prominent theories in the 20th and 21st centuries in relation to learning are the behaviorists, cognitivist, social constructivists, and the connectivists theories (Harasim, 2017a). Skinner’s (1953) theory of behaviorism states that learning occurs as a result of the environmental stimulus. Behaviorists believe that knowledge is acquired through direct teaching
and that learners need to respond to stimuli to learn (Ertmer & Newby, 2013). Stimuli are the input the learners receive. The output is the expected change in the learners’ behavior. In other words, information is presented to the learner, and the learner is then assessed to find out if the learning outcomes are achieved. According to behaviorists, students learn through repetition, practice, and immediate feedback (Kay & Kibble, 2016). The instructor is more of a lecturer and the experience learners obtain is what affects their behavior and learning (Pritchard, 2017). If the desired behavioral changes do not take place, the learner must repeat the process until the desired outcomes are achieved. Behavioral teaching techniques such as order, demand, sequence, and timing are expected to assist teachers in presenting online content (Raiola, 2014). Raiola (2014) stated that the learning environment, teaching strategies, cooperative learning, brainstorming, peer-education, and tutoring can all have a positive impact on online learning. Evgeniou and Loizou (2012) found that many online and blended learning instructional tutorials are based on the behaviorists’ theories, i.e., present information, drill and repeat it, and finally test what has been learned.

In contrast, the cognitivist theory is based on the inner workings of the mind as the most crucial part of the learning process (Ertmer & Newby, 1993). The mental process taking place in the human brain is in charge of learning. The theory emphasizes the higher-order thinking skills frequently needed to form concepts, process data, comprehend a language, and solve problems. In cognitivism, students are encouraged to be creative and active learners (Hassan, 2011). Toven-Lindsey, Rhoads, and Lozano (2015) believe that online learning that combines the cognitivist and constructivist learning theories can yield better learning outcomes. This combination will allow for a collaborative learning platform emphasizing cognitive and social skills.
Piaget’s theory of cognitive development helped in many ways to form the foundation for constructivism (Carey, Zaichik & Bascandziev, 2015). Constructivism came about from the works of authors such as Vygotsky and Dewey (Porath, 2016). The constructivist theory places more emphasis on the learner as an active participant in the learning process. Constructivists view learning as an active process in which learners construct their own knowledge and meaning internally. According to this model, the instructor participates in the activities with the student to actively experience the learning process. The instructor’s role is to facilitate learning and construct knowledge through collaboration based on the learners’ prior knowledge (Patwardhan & Murthy, 2015). Another type of constructivism is social constructivism. Social constructivism places more emphasis on the social interactions among learners as a way of learning. Social constructivists believe that while learning, learners should actively be engaged to create meaning. The development of mental constructs will then develop into networks of constructs characterized by being dynamic, flexible, and changeable (Lincoln & Guba, 2013). The constructivist learning theory encourages learners to engage in a mental process that involves reflecting, problem-solving, and constructing ideas (Wang, H., 2014). Special focus is on the approach being student-centered (Li & Guo, 2015). Vygotsky’s social constructivism theory has been widely used in the social aspects of online learning environments (Dzakiria, Kasim, Mohamed & Christopher, 2013; Russell-Bowie, 2013). The use of social constructivism when providing innovative platforms and principles for online teaching proved to be effective (Bryan & Bates, 2015). According to the constructivists, the four components of learning are active learning, learning through experience, scaffolding the learning process, and learning through collaboration (Harasim, 2017). This theory is of great significance in EFL learning in particular where interaction is the basic component to develop new language skills.
A relatively newly developed theory is the connectivist theory. According to connectivists, new knowledge occurs as the result of connections made between prior knowledge, technology-assisted learning, and the information presented in the classroom (Transue, 2013). Learners learn as the result of searching library databases, sharing information through social media, collaborative resources, and peer-reviewed journals. Connectivists believe that learning is a process that connects different nodes or information resources; which can be a nonhuman appliance; the capacity to keep continual learning is more important than what is possessed in mind, and sharing and connecting as the final target of learning activities. To connectivists, learning is not an individual effort, but it is the result of a complicated learning network constructed with other members in the social network (Wang, Z., Chen & Anderson, 2014). Connectivism can have a positive impact on online learning by imposing collaborative group work, interactive assignments, online participation and discussions, and critical thinking (Thota, 2015). It also promotes creating and developing networks for both teachers and learners (Saadatmand & Kumpulainen, 2014).

Moreover, adult learning theory, andragogy, is one of the basic frameworks for how to teach adults (Rodrigues, 2012). Two important points related to this theory include the focus on learners’ led learning and the adjustment of the role of the teacher to the facilitator (Rodrigues, 2012). In online learning, instructors need to be knowledgeable about the content and provide the appropriate discourse, experiments, inquiry, and activities (Burkle & Cleveland-Innes, 2013). After all, it is worth mentioning that instructors are encouraged to use more strategies for online teaching that applies to different learning styles (Amador & Mederer, 2013).

Online learning can better be understood in relation to all these theories. A combination of behaviorism, cognitivism, and social constructivism in addition to connectivism can offer the
best learning environment (Afifi & Alamri, 2014). The present study seeks to examine teachers’ perceptions of online teaching within the TPACK framework. A clear understanding of the learning theories can lead to a more successful online teaching experience.

**Face-to-face Learning**

Face-to-face learning has been the main instructional method of teaching. Traditional face-to-face or brick and mortar learning is the learning environment where instructors and students meet within a physical location (Allen & Seaman, 2015). One of the biggest advantages of face-to-face learning is its social presence learning environment (Kassner, 2013). The pedagogical skills of communication in the traditional classroom are based on interactive skills through sensory mechanisms (Rockinson-Szapkiw & Wendt, 2015).

Fortunately, many teachers in the face-to-face classroom are moving away from being the center of the class. Face-to-face instructors are starting to use different student-centric activities such as group work, and independent work or projects (Morgan, Craig, Schütte, & Wagner, 2014). There is a shift from the teacher being the decision-maker, knowledge possessor, and the center of the class to a more collaborative environment (Filsecker & Hickey, 2014). However, online learning is becoming more dominant and there is a shift from the traditional single face-to-face learning model to a more technology-related model (Davies, Powell & Nutley, 2015).

**Online Learning**

Online learning, sometimes known as virtual learning or distance education, is a relatively new way of teaching compared to traditional teaching. Thus, some old examples are present in the literature (Banas & Emory, 1998). The first successful online teaching took place in the mid-1990s in higher education, see for example the SUNY Learning Network, the Illinois Virtual Campus, the UMASS Online system (Moloney & Oakley, 2010). A noticeable increase in the
number of students who are interested in joining online learning, whether partially or fully, has also taken place all around the world (Borup, 2016).

Online learning is defined as learning carried out from a distance assisted by electronic devices such as tablets, smartphones, laptops, and computers which require an internet connection (Ibáñez et al., 2019). Online learning is also perceived as the utilization of the internet in accessing materials; having interaction with contents, teachers, and other students; and gaining assistance in the learning process to gain knowledge, make meaning, and progress (Ally & Stauffer, 2008). Online learning is found to provide a more flexible learning environment for both the learner and the instructor (Lunt & Curran, 2010). Online learning can also allow learners to be in charge of their own learning pace and time (Mao & Peck, 2013). In their focus group study, Montrieux, Vanderlinde, Schellens, and De Marez, (2015) found that the use of technology increased the learning potential among learners.

Recently, there have been significant changes in the way students learn due to the widespread of technology (Bozkurt et al., 2015). Many institutes have established several online courses and found a high rate of satisfaction among students towards these courses (Fonolahi, Khan & Jokhan, 2014; Kauffman, 2015). However, a need for additional time and effort from the side of instructors to teach online compared to face-to-face instructors was observed (Allen & Seaman, 2015). Although online teaching employs similar materials, methods, and approaches used in face-to-face teaching, researchers stress some fundamental differences between the two methods of teaching. Early research suggests that the same factors needed for any successful instructor are needed for a successful online instructor, including good communication and classroom organization skills (McKenzie, Mims & Bennett, 2003). However, recent studies showed different results. According to Watson, online teaching requires extra good
communication skills, time management skills, the ability to recognize different learning types, and the ability to adapt to students’ needs (Watson, 2008). Archambault stressed the need to prepare well-qualified teachers for online teaching (Archambault, 2011). New teaching methodologies related to virtual students and the ability to engage all class members are highly needed. Barrett (2010) and Anderson, Standerford, and Imdieke (2010) studied three online instructors intensively and suggested that online instruction requires distinctly different skills to create a community of learners in a classroom. The study suggested that activities that enhance this process include a strong instructor presence in discussions, small group activities, and other activities that can involve students in-class activities (Anderson et al., 2010).

In higher education, in particular, there are usually differences in class structure, the way materials are presented, and the nature of student/instructor and peer interaction (Boling, Hough, Krinsky, Saleem & Stevens, 2012). These differences impose a need for different teaching strategies (Desplaces, Blair & Salvaggio, 2015). Moreover, the absence of the actual presence of the instructor increases the learner’s responsibilities (Mattei & Ennis, 2014; Harris, Ingle & Rutledge, 2014). However, many online courses end up as teacher-centered instead of student-focused (Tømte, Enochsson, Buskqvist & Kårstein, 2015) due to the lack of training in using technological and pedagogical skills (Rienties, Brouwer & Lygo-Baker, 2013).

The difference between face-to-face and online teaching has been a source of debate in the literature for a long time. Some researchers believe that face-to-face pedagogy could produce effective learning results in an online learning environment (Oliver & Stallings, 2014). According to them, face-to-face pedagogical can be used in an online environment with the addition of some new instructional practices (Luscombe & Montgomery, 2016). In contrast, other researchers believe that teaching online is different from teaching in the classroom and that
the online teacher’s role is different from that of the face-to-face teacher (Ko & Rossen, 2017). Online teachers need to pay extra attention to the instructional time, virtual management techniques, and the ability to engage students through virtual communication (Easton, 2003). Teachers need to implement a more student-centered learning environment. They need to expand beyond their comfort level to devote more responsibilities to learners (Lee & Hannafin, 2016). Moreover, online teachers need to be more proficient with basic computer operations, such as creating and editing documents and managing files and folders (Keramati, Afshari-Mofrad & Kamrani, 2011). There is also a distinct difference between the face-to-face learning environment and the online learning environment in relation to communication and collaboration (Wendt & Rockinson-Szapkiw, 2015). Researchers have found that among the main elements for successful online teaching is the instructors’ ability to foster enthusiasm for learning, stimulate self-directed learning, model dynamic interactions, and provide prompt feedback using appropriate technology tools (Sun, 2014). Fortunately, with the different technology available now, it became possible for learners to easily collaborate, share content, post ideas, create blogs, and receive feedback (Hew & Cheung, 2013). Instructors’ perception of their ability to teach online is an essential factor in how they approach online teaching goals, tasks, and challenges (Martin, Budhrani & Wang, 2019).

A combination of both face-to-face learning and online learning has become more dominant with the increasing use of technology (Welsh et al., 2015). This type of learning, known as blended learning, is seen as a way to take advantage of both ways. Saghafi, Franz, and Crowther (2012) believe that the aim of blended learning is to overcome some of the limitations of both the face-to-face and online learning environments.
Blended learning

Several definitions were used to define blended learning (Ghazizadeh & Fatemipour, 2017; Güzer & Caner, 2014; Pace & Mellard, 2016). Among these definitions is that blended learning is the combination of the physical face-to-face instructional method and instructional learning activities, whether asynchronous or synchronous, using digital technologies online (Carbonell, Dailey-Hebert & Gijseelaers, 2013). Blended learning has also been defined as face-to-face and online learning where technology provides interaction between the instructor and the learners (Tseng & Walsh, 2016). Carbonell et al. (2013) and Tseng and Walsh (2016) defined blended learning as having two learning environments comprised of face-to-face and online learning.

Staker and Horn (2012) also defined some blended learning models narrowing them to four models. The four primary models according to them were the rotational, the flex, the self-blend, and the enriched-virtual model. Allen, Seaman, and Garrett (2007) defined a blended learning class with no less than 30% online content. Alammary, Sheard, and Carbone (2014) defined three blended learning approaches, low, medium, and high-impact blends. The low-blend approach involved adding extra online activities to existing face-to-face courses. The medium-blend approach involves replacing some of the activities of an existing face-to-face course with online components. Finally, the high-impact blend involves creating a blended course from scratch.

Studies have shown that most students learn better when technology is incorporated (Lau, Wang, Man, Yuen & King, 2014). There is a positive view towards blended learning classes among learners and instructors (Krasnova & Vanushin, 2016; Bukhari & Basaffar, 2019; Owston, York & Murtha, 2013). Waha and Davis (2014) examined blended learning at the
college-level and found it to be effective. Means, Toyama, Murphy, Bakia, and Jones (2009) also compared blended, online, and face-to-face learning reporting a significant improvement among learners in blended learning classes compared to face-to-face learning only. Skryabin, Zhang, Liu, and Zhang (2015) and Torres-Díaz, Duart, Gomez-Alvarado, Marín-Gutiérrez, and Segarra-Faggioni (2016) also found the implantation of technology in learning to have a positive effect on learners.

However, the review of the literature shows a mixed view of the effect of the implementation of technology. Most of the studies found that learners performed significantly better in blended learning classes compared to classes limited to face to face only. However, a few studies found no significant differences in learners’ outcomes. Interestingly, none of the studies reviewed found a decrease in learners’ learning outcomes (Lo & Hew, 2017). Moreover, learners showed a higher level of satisfaction in blended learning classes versus face-to-face or online classes (Auster, 2016; Grabinski, Kedzior & Krasodomska, 2015). In an exploratory study, Auster (2016) introduced an online component to his course. A survey was then used to find out how helpful the online part was. In general, learners responded positively towards the blend. In another study, Grabinski et al. (2015) investigated learners’ perceptions in three finance courses via a survey. The traditional method of teaching based on the face-to-face instructional method was compared to a blended learning classroom. Grabinski et al.’s findings showed a positive perception of blended learning in their study. However, they reported that the sample they used was small and recommended replicating the study on a different sample to validate the results. In another study, Wanner and Palmer (2015) examined learners as well as teachers’ perceptions at a university level. Learners expressed a positive attitude towards blended learning but not teachers. Teachers were faced with several problems, mainly as a result of the lack of
training with technology. Kihoza, Partick D., Zlotnikova, Bada, and Kalegele (2016) recommended providing teachers with the required guide and a motivation to learn ways to integrate technology into the traditional programs before implementing it. Another qualitative study conducted by Waha and Davis (2014) found that learners preferred blended classes to traditional settings. In the survey conducted for the purpose of this study, learners stressed the importance of personal interactions with peers and teachers, and social media which were present in blended learning classes. In addition, Owston, York, and Murtha (2013) conducted a quasi-experimental study. Results indicate higher grades in blended classrooms compared to traditional classrooms. In a similar study, So and Lee (2013) conducted a large sample qualitative study of student perceptions of blended learning at the University of Taiwan. The author examined 111 questionnaires from students participating in a blended learning science course. Students who collaborated with other students in the class were more satisfied with the blended learning model. It was reported that the success of a blended learning model depends on the students’ level of success, flexibility, and computer literacy (Owston & Murtha, 2013; So & Lee, 2013).

In conclusion, although educators believe that blended learning can be an effective learning method (Auster, 2016; Grabinski et al., 2015), the suitable mix of face-to-face and technology in a blended learning course is to be highly considered (Lo & Hew, 2017; Kihoza, Patrick, Zlotnikova, Bada & Kalegele, 2016; So & Lee, 2013). According to Al-Huneidi and Schreurs (2012), a single instructional model is not sufficient for successful learning. A combination of instructional models is needed. This combination can be found in a blended learning model where learners will have to interact with the instructor and receive immediate guidance, clarification, and feedback. However, the shift from a single face-to-face model to one that includes online strategies is not simple. Online learning requires special skills and different
instructional strategies that instructors should be aware of (Barber, Taylor & Buchanan, 2014; Luscombe & Montgomery, 2016).

The significance of the constructivist learning theory in a blended learning environment was highlighted by many researchers (Haugen, Ask & Bjørke, 2017; Tawil, 2018). Building an online learning community requires not only collaboration and proper communication but also cognitive development where the role and of the instructor is geared to a constructivist learning environment in which instructions are more learner-centered (Lee & Hannafin, 2016; Ronfeldt et al., 2015). The instructor’s role is more of a facilitator of the learning process. The instructor helps learners to connect and receive support from peers and share reliable ways of learning (Kuo, Belland & Kuo, 2017). Learners are expected to become more active (Barak, Hussein-Farraj & Dori, 2016). Moreover, the knowledge of the content of the subject, the pedagogical knowledge, and technological knowledge are highly needed. The TPACK theory illustrates how these knowledge interact. The present study adopted this theory as the main framework for the study along with the Social Constructivist Theory.

**Online Teaching in Saudi Arabia**

A rapid development in e-learning programs in Saudi universities has taken place since the implementation of the National Communications and Information Technology Plan in Saudi Arabia in 2006 (Abdullah, Rogerson, Fairweather & Prior, 2006). This rapid development was due to a number of important factors, including the massive population growth in the Kingdom (Al-Asmari & Khan, 2014). According to Al-Asmari and Khan (2014), “The potential need for e-learning in KSA (Kingdom of Saudi Arabia) has resulted from the massive population growth vis-a`-vis the scarcity of faculty members in both quantity and quality, and the need to reduce
financial waste.” (p. 4). Online learning has continued to be recognized as a valuable and valid method of education in Saudi Arabia.

Saudi universities, therefore, attempted to provide the best learning management systems available with the latest learning tools. Moreover, attempts were made to provide special training to teachers and program administrators to utilize these technological tools (Albuloushi, 2019). According to a report of Oxford Business Group (2015), the Saudi government has allocated more than 20 billion dollars to the enhancement of the education sector in the next five years, including training and development in the online teaching and learning systems. Recently, the spread the spread of the COVID-19 pandemic has forced universities in the Kingdom of Saudi Arabia to implement a fully online learning mode.

The Impact of COVID-19 in Saudi Arabia

In January 2020, a global health emergency state was announced by the World Health Organization Emergency Committee as a result of the spread of Coronavirus disease 2019 (COVID-19) internationally (Velavan & Meyer, 2020; Zhang, Wang, Yang & Wang, 2020). COVID-19 was announced as a pandemic that has spread all over the world. A lot of countries were severely affected by the spread of this virus. The pandemic has affected different life aspects, including the educational system. Schools were shut down in many countries, and classes were suspended (Moorhouse, 2020). Online learning has become the only instructional strategy possible. The situation in universities and schools in the Kingdom of Saudi Arabia was no exception. The Minister of Education had encouraged all institutions to implement online learning starting from March 8, 2020, due to the increasing spread of COVID-19 in the Kingdom. Face-to-face learning was entirely replaced by online learning. The replacement was instant, with a very limited time left for any kind of preparation. University instructors were
asked to resume their classes online within a week. The pandemic caused fully online language learning to occur in a sudden and completely unprepared situation despite the fact that online learning requires more time than face-to-face to prepare (Moorhouse, 2020). Moreover, transferring traditional educational techniques and strategies to an online environment is not simple. Extra effort is needed to cope with the situation (Chakraborty & Nafukho, 2014). Though a lot of research has been done quantitatively and qualitatively to investigate the effectiveness of online learning (Gonzalez & Louis, 2018), research on online learning carried out during a pandemic with rapid transition is rarely found, especially in English as Foreign Language (EFL) context (Arief Eko & Nugroho, 2020). As suggested by Moorhouse (2020), extensive researches that explore the switch of face-to-face classes into online learning is needed.

Summary

The purpose of this mixed-method study was to explore instructors’ perceptions on the effectiveness of their practice in the transition administered from the face-to-face learning environment to the online learning environment as the result of the spread of the COVID-19 virus. The TPACK framework was first presented as the main framework for the study. The history of the development of the framework and its significance was then presented. Relevant studies all around the world and those conducted in the Kingdom of Saudi Arabia were introduced. The researcher then presented some of the major learning theories with a special focus on Social Constructivism. Face-to-face, online, and blended learning were also explored. The state of online learning in Saudi Arabia was also highlighted. The impact of COVID-19 in Saudi Arabia was finally discussed. The sudden transition to online learning had caused some confusion among some instructors due to the differences between teaching face-to-face and teaching online. The relation between instructors’ TPACK background and their practice during
the COVID-19 pandemic was investigated in this study. Moreover, recommendations for a successful blended learning model based on the instructors’ practical experience for future implementations are highly needed. This study was an attempt to fill a gap in the existing literature regarding instructors’ perceptions of the implantation of online learning in EFL in Saudi Arabia’s higher education. One of the potential outcomes of this study is a more successful EFL online TPACK teaching experience in universities in the Kingdom of Saudi Arabia.
Chapter 3: Research Method

The spread of COVID-19 forced many universities all around the world to shut down leaving no other choice but to implement online teaching (Hasan & Bao, 2020; Toquero, 2020). Although the implementation of online teaching has become popular in recent years (Allen & Seaman, 2013), the sudden unexpected transition from fully face-to-face teaching to online teaching has been difficult. According to Niemotko and Tolan (2020), the sudden transition affected professors as well as students. Instructors were under pressure caused by the need to rapidly adapt to teaching techniques of the virtual classes setting. Moreover, although many learners were comfortable with the use of technology, some learners felt anxious about the independent nature of online learning (Niemotko & Tolan, 2020). Research done during this period showed that online learning did not always run well due to the lack of preparation and planning (Arief Eko & Nugroho, 2020). Similarly, in the Kingdom of Saudi Arabia, the transition from face-to-face instructional design in universities to online teaching was rapid and with little time allowed for structured planning. Therefore, EFL instructors, in particular, found it challenging to adapt to this new situation due to the interactive nature of their courses. The differences between face-to-face teaching and online teaching were to be considered (Spiegel, Golden, Kracinovich. Gikas, 2015). The implementation of this sudden shift required instructors to use their technological, along with their content and pedagogical knowledge for a successful online teaching process.

Instructors’ readiness for this sudden transition and their background knowledge was essential for the success of their online teaching experience (Schmidt et al., 2009). Many of the EFL instructors at the University of Jeddah have never taught any online EFL course before even though the platform was available to them. The move from face-to-face EFL teaching to online
teaching required them to put different types of knowledge combined together into practice within a limited time. The challenges instructors faced to move to online teaching was addressed in this study. The effectiveness of the implementation of online EFL teaching in a higher education institution was examined from the instructors' point of view in this mixed-method design study. Instructors’ perception of how effective online teaching can be in teaching EFL university learners was explored in this study using the TPACK online survey. Instructors’ content, pedagogical, and technological knowledge and its effect on how successful they think online learning can be was also investigated. A total of 52 female instructors teaching EFL in one of the largest universities in the Kingdom of Saudi Arabia participated in this study by completing the online survey. The following questions and hypotheses were tested:

**RQ1.** What are EFL instructors’ perceptions about the effectiveness of online teaching in their EFL courses based on the modified TPACK survey?

**RQ2.** To what degree, if any, does EFL instructors’ TPACK scores predict their perceived level of effectiveness in teaching during COVID-19?

**RQ3.** Based on instructors’ experiences teaching online during COVID-19, what are EFL instructors’ recommendations for a successful blended learning model?

The hypotheses tested are:

**H20.** There is no statistically significant relationship between instructors’ TPACK scores and their perceived level of effectiveness in teaching EFL online during COVID-19.

**H2a.** There is a statistically significant relationship between instructors’ TPACK scores and their perceived level of effectiveness in teaching EFL online during COVID-19.
The following sections present the research methodology and the research design, the population and sample of the study, the instrument and procedure for data collection and analysis, assumptions, limitations, delimitations of the study, and ethical assurances.

**Research Methodology and Design**

The present study followed the mixed-method triangulation design which is one of the most common and well-known approaches to mixed-methods (Hanson, Clark, Petska, Creswell, 2005). The triangulation design is considered as a one-phase design in which quantitative and qualitative data are collected concurrently (Hanson et al., 2005). This method was selected to measure different and complementary data on the topic to help in answering the research questions and hypotheses (Morse, 1991). This design was chosen over other designs to bring together the strengths of quantitative and qualitative methods, i.e., a larger number of participants with more detailed in-depth views (Patton, 1990). The combination of both the quantitative and qualitative methods allows for a better understanding of the phenomenon under investigation (Yin, 2013).

Variants of the triangulation design include the convergence model, the data transformation model, the validating quantitative data model, and the multilevel model. The validating quantitative data model is used in this study to enhance the findings from the survey. The validating quantitative data model is used to validate and expand on the quantitative findings from the survey using the open-ended qualitative questions (Ivankova, Creswell & Stick, 2006). Those questions can provide researchers with interesting quotes that can validate and enhance the quantitative survey findings. According to this model, the researcher collects both types of data within one survey instrument.
The survey used for the purpose of this study consisted of three parts. The first part consisted of six demographic questions, the second part consisted of 56 Likert-scale items and the third part consisted of five open-ended questions. The three parts of the survey helped in reaching a deeper understanding of the instructors’ perceptions about the effectiveness of their online teaching experience. The first two parts of the survey were analyzed using SPSS for the descriptive and correlational analyses. The open-ended part of the survey was analyzed using NVivo to support the findings of the survey and to reach a better understanding of the instructors’ perceptions and recommendations. This analysis helped in answering the research questions and hypotheses and provided suggestions and recommendations for better practice.

The combination of the two methods, quantitative and qualitative (Seawright, 2013), in this study was essential for two reasons. First of all, it gave a deep understanding of the instructors’ perceptions. Guiding participants to answer the Likert-scale questions guarantees that all essential points to answer the research questions were covered. Moreover, the open-ended part assured that the participants were given the chance to freely express their ideas. On one hand, limiting the study to the quantitative method would have reduced the participants' chances to express their ideas freely. Moreover, recommendations for future online teaching implantations would have only been based on the researcher’s views rather than the instructors themselves. On the other hand, restricting the research design to the qualitative research method would not be possible since the study is based on the TPACK theoretical framework. Additionally, the correlation between instructors’ TPACK background and their practical experience could not be investigated. Therefore, the mixed-methods study was the most suitable design for this study.
Population and Sample

Participants in this study were female EFL instructors teaching in the Eli at the University of Jeddah, one of the largest universities in the Kingdom of Saudi Arabia. Like all other universities in the Kingdom of Saudi Arabia, males and females are separated in different buildings. It was, therefore, more convenient for the researcher to collect the data from her section. The Eli offers general English courses to students joining the university in their first year. All instructors hold a degree in teaching English as a Foreign language or in Linguistics. Instructors are of different nationalities, but the majority are Saudis. The Eli offers general English classes for three different levels starting from the pre-intermediate level using the National Geographic Series as the textbook. The program is considered intensive, with 18 hours of face-to-face teaching per week. Instructors vary in their teaching load according to their other administrative loads assigned. The target population was 160 instructors teaching EFL in the Eli. For the purpose of this study, the convenience sampling method was used. The software program, G*Power was used to determine the necessary sample size for this study. A two-tailed test was run for a Correlation Bivariate normal model with significant power of 0.80 and a null hypothesis of zero correlation. The effect size of .50 recommended for a larger measure of the correlational coefficient was set at a standard alpha level of .05. The estimated number calculated by the software was 29. However, a total of 52 instructors participated in this study. Only 39 instructors completed all the parts of the survey. Missing data were excluded from the analyses.

Instrumentation

The instrument used in this study was a modified version of the TPACK survey (Schmidt et al., 2009). The survey was modified for the purpose of this study (see Appendix A). A copy was sent to the owner of the survey with a description of the intended usage and the site location
for the research to maintain a database of how the survey is being used based on his recommendation. The survey consisted of three parts. The first part consisted of six demographic questions including questions related to the participants’ educational background and their previous experience in teaching online. The second part of the survey was divided into two sections. The first section consists of 28 Likert-scale items. Those items were slightly modified from the original version of the survey to suit the EFL context. This part of the survey investigated the instructors’ TPACK background in general. Items were classified as follows: TK (Technology Knowledge), CK (Content Knowledge) Teaching English as a Foreign Language (EFL), PK (Pedagogical Knowledge), PCK (Pedagogical Content Knowledge), TCK (Technological Content Knowledge), TPK (Technological Pedagogical Knowledge), and TPACK (Technology Pedagogy and Content Knowledge). The final question investigated the percentage of how effective TPACK is from the instructors’ point of view. The second section consisted of 28 Likert-scale items as well. Those items were modified further to suit the online EFL teaching context. However, the classification presented above still applies to this section. This part of the survey investigated the instructors’ perceptions of the effectiveness of their online EFL teaching within the TPACK theoretical framework during COVID-19.

The five-point Likert-scale was used, ranging from strongly disagree to strongly agree. Each item response was scored with a value of 1 assigned to strongly disagree all the way to 5 for strongly agree. The reliability of the scores (Schmidt et al., 2009) are as follows,
Table 1

Reliability of Scores (Schmidt et al., 2009)

<table>
<thead>
<tr>
<th>TPACK Domain</th>
<th>Internal Consistency (alpha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology Knowledge (TK)</td>
<td>.86</td>
</tr>
<tr>
<td>Content Knowledge (CK)</td>
<td>.82</td>
</tr>
<tr>
<td>Social Studies</td>
<td></td>
</tr>
<tr>
<td>Pedagogy Knowledge (PK)</td>
<td>.87</td>
</tr>
<tr>
<td>Pedagogical Content Knowledge (PCK)</td>
<td>.87</td>
</tr>
<tr>
<td>Technological Pedagogical Knowledge (TPK)</td>
<td>.93</td>
</tr>
<tr>
<td>Technological Content Knowledge (TCK)</td>
<td>.86</td>
</tr>
<tr>
<td>Technological Pedagogical Content Knowledge (TPACK)</td>
<td>.89</td>
</tr>
</tbody>
</table>

The second part of the survey consisted of five open-ended questions. Those questions were developed by the researcher to answer the research questions. Questions were as follows:

1. How do you think, online learning helped students learn;
2. What do you see as the main strength of your online teaching experience;
3. What do you see as the main weakness of your online teaching experience;
4. What are your recommendations for a better online learning experience; and
5. What are your recommendations for a successful blended learning model of teaching.

Operational Definitions of Variables

The following variables were used for the purpose of this study,

Demographic information. For the purpose of this study, the demographic questions included the participants’ highest degree, participants’ years of teaching experience in general, online teaching in particular, online training in general, training on using Blackboard (the official platform used in the University of Jeddah) in particular, and the days of actual teaching per week
during COVID-19. This information was analyzed to determine if they have an effect on the instructors’ perceptions. The nominal and ordinal levels of measurement were sued for this section.

**Technology knowledge.** Technology knowledge (TK) is the knowledge of information technology and its right application (Kushner Benson & Ward, 2013). TK was one of the independent variables in the study. There were five questions under this category in the survey under each of the two sections in the survey. The five-point Likert-scale was used, ranging from strongly disagree to strongly agree. Each item response was scored with a value of 1 assigned to strongly disagree all the way to five for strongly agree. The ordinal level of measurement was sued for this variable to computed the sum of the five items. Scores ranged from 5 to 25 for the two sections. A score of five indicated the lowest possible TK, whereas 25 indicated the highest TK. The effect of this variable on instructors’ perceptions was then analyzed.

**Content knowledge.** Content knowledge (CK) is the knowledge attained regarding the subject matter (Cain, Koehler & Mishra, 2013; Koehler & Mishra, 2006; Koehler & Mishra, 2009; Kushner Benson & Ward, 2013). CK was another independent variable in the study. There were three questions under this category for each of the two sections of the survey. The five-point Likert-scale was used, ranging from strongly disagree to strongly agree to score this variable. Each item response was scored with a value of 1 assigned to strongly disagree all the way to 5 for strongly agree. The ordinal level of measurement was sued for this section. Scores ranged from 3 to 15. A score of 3 indicated the lowest possible CK, whereas 15 indicated the highest CK.

**Pedagogical knowledge.** Pedagogical knowledge (PK) is the knowledge of cognitive, social, and developmental theories of learning (Kushner Benson & Ward, 2013). There were
seven questions under PK. The same ordinal scale was used for this category. Scores ranged from 7 as the lowest score to 35 as the highest score. These variables interacted and generated more variables (Schmidt et al., 2009).

**Pedagogical Content Knowledge.** The pedagogical content knowledge (PCK) is the knowledge related to the teaching process. PCK combines content and pedagogy to develop better teaching practices in the content. According to Shulman (1986), it is how a particular topic, problem, or issue is organized and represented to learners of different learning abilities and interests (Koehler, Mishra, Kereluik, Shin & Graham, 2014). The five-point Likert-scale was used with the item under each of the two parts of the survey, one being the lowest score and five being the highest. The ordinal level of measurement was sued for this section.

**Technological Content Knowledge.** Technological Content Knowledge (TCK) is how technology can make new representations for the subject matter content. It is the knowledge related to the relationship between technology and content (Koehler et al., 2014). The five-point Likert-scale was used here again, ranging from 1 as the lowest score to 5 as the highest score for the one item under this category. The ordinal level of measurement was sued for this section.

**Technological Pedagogical Knowledge.** Technological Pedagogical Knowledge (TPK) is how various technologies can be used in teaching a specific pedagogical content (Koehler et al., 2014). There were nine items under this variable treated in the same way mentioned in the previous sections for scoring.

**Technology Pedagogy and Content Knowledge.** Technology Pedagogy and Content Knowledge (TPCK) is the knowledge needed by instructors to integrate technology into their teaching. It is the knowledge that relates the technology, pedagogy, and content that is required by instructors to create proper teaching approaches (Koehler et al., 2014). The five-point Likert-
scale was used again here with one item ranging from 1 for strongly disagree to five for strongly agree. The ordinal level of measurement was used for this section.

**Study Procedures**

Prior to data collection, the approval for the dissertation proposal and Institutional Review Board (IRB) application at Northcentral University was obtained. Site permission was also obtained from the head of the Scientific Research and the head of the Development Unit at the Eli at the University of Jeddah, Jeddah, Kingdom of Saudi Arabia. Moreover, the researcher completed the New Collaborative Institutional Training Initiative (CITI) program to guarantee the protection of the participants’ rights and to ensure that the researcher’s ethical knowledge is up-to-date. Participation in the study was voluntary and anonymity was used to assure confidentiality. The researcher also saved the collected data and ensured to destroy it based on the standards.

Participants were female EFL instructors at the Eli. A recruitment e-mail was sent to all EFL Eli instructors. The instructors’ university official e-mail address was used. The recruitment e-mail introduced the researcher, the purpose of the study, the activities required from the participants, the time needed to complete the survey, the anonymity and confidentiality of the data collected, and the contact information for the researcher, the chair, and the IRB. The recruitment e-mail also included a link to the consent letter. The consent letter, following the IRB requirements, consisted of different sections, including the introduction, eligibility, activities, risks, benefits, privacy and data protection, how the results will be used, and contact information. The online consent included a section about the participants’ voluntary rights to participate in the study. The consent form was designed in a way that took the participants to the online survey only if they agree to participate in the study. In case they decided not to participate
in the study, the from took them to a thank you ending note. The quantitative data collected were analyzed using SPSS, and the qualitative data were analyzed using NVivo.

**Data Collection and Analysis**

The data collected for this mixed-method study were collected using an online survey adopted from (Schmidt et al., 2009). Modifications were made to the survey for the purpose of this study. The owner of the survey was contacted via e-mail. The purpose of the study and the modifications made to the survey were shared with the owner based on his request. The online version of the survey was created using Qualtrics, software provided by NCU to create online surveys. The survey consisted of three parts, demographic questions, Likert-based items, and open-ended questions. The estimated time for completing the survey was 15 minutes. Collected data were analyzed using two different software. The demographic and quantitative part of the data was analyzed using SPSS. The analysis was conducted in two phases. The first phase focused on the descriptive analysis to explore the instructors’ background and their TPACK background knowledge. The second phase was the inferential analysis focusing on the correlation between instructors’ TPACK background knowledge and their actual online experience during the COVID-19 teaching period. The qualitative part of the study was analyzed based on nodes and themes using NVivo. The analysis provided answerers to the research questions and hypothesis.

**Assumptions**

The researcher assumed that a minimum of 30 instructors out of the 160 Eli instructors would agree to complete the survey. However, a total of 39 instructors completed the survey. The researcher also assumed that instructors would read the questions carefully and answer them based on their actual experience. Results obtained showed instructors’ keenness and awareness.
Moreover, the anonymity of the survey was expected to encourage the participants to express their ideas freely. The researcher also assumed that the data collected would answer the research questions and hypotheses.

Moreover, there were a number of assumptions related to the Pearson product-moment correlation coefficient test used in this study. Each subject was expected to provide an ordinal score for each variable to meet the related pairs assumption. Data were tested for normality to check that all scores on each variable were normally distributed. In addition, the relationship between the variables was expected to be linear, i.e., a scatterplot of scores was expected to be a straight line, not a curve. Another assumption related to this test was homoscedasticity. The variability in scores for all variables was expected to be similar. Finally, data were checked for any missing data not to affect the final results.

**Limitations**

The present study was conducted in the Eli with a limited number of EFL participants. Data collected from more participants from different majors are expected to provide more information. In addition, data were collected from one university in the Kingdom of Saudi Arabia. The same study can be replicated in other universities in the Kingdom for more generalized results. Moreover, the study can be conducted in different universities outside the Kingdom for a better understanding of the effect of TPACK on online EFL teaching. It is also worth mentioning that participants’ responses may have been subject to their past emotional attitudes during the period of data collection (Merriam & Grenier, 2019). Furthermore, the rapid changes occurring in the educational system in general and in technology, in particular, is to be considered as a factor affecting individuals views and believes (Abrami, Bernard, Bures, Borokhovski & Tamim, 2011).
Delimitations

Delimitations of this study were established based on the remaining period of the academic year in which online teaching during the pandemic took place. The researcher’s choice to base the study on the TPACK framework and the Social Constructivists theory in a higher educational institution is seen as a delimitation of the study as well. The survey was chosen as the only method to collect data. An additional delimitation was the choice to limit the recruitment site to the University of Jeddah’s EFL instructors. The nature of the EFL courses delimited the study.

Ethical Assurances

The researcher received approval from the Northcentral University’s Institutional Review Board committee to collect the data. The researcher was sure to satisfy all ethical regulations outlined in the 1979 Belmont Report to avoid causing any kind of harm to the participants, although no risk to human participants was expected. The regulations highlight protection from harm, informed consent, and the right to privacy. The form was sent via e-mail to all EFL instructors in the Eli with a clear indication of their right to choose not to participate or withdraw at any point. Furthermore, to protect the participants’ privacy, the survey was kept anonymous (Killawi et al., 2014). By the end of the study, data were stored securely.

Summary

The problem addressed in this study was the sudden transition from face-to-face teaching to online teaching as a result of the COVID-19 pandemic. EFL instructors’ perceptions and their TPACK were investigated using a modified version of the TPACK survey. This chapter described the mixed-method research design used in this study to address the research questions and hypotheses. The need and justifications for using this research design were highlighted in
this chapter. The minimum number of participants expected to participate in this study is 29 EFL instructors out of the 160 instructors teaching at the Eli. All instructors were asked to complete the online modified TPACK survey. The survey consisted of six demographic questions, 56 Likert-scale items, and five open-ended questions. The operational definitions of the variables, the procedure of the study, the research’s assumptions, limitations, delimitations, and ethical responsibilities were all presented in detail. The following chapter presents the findings.
Chapter 4: Findings

The purpose of this mixed-method triangulation design study was to examine the effectiveness of the implementation of online learning in teaching EFL in a higher education institution in the Kingdom of Saudi Arabia during COVID-19. Instructors’ perceptions were examined using a modified electronic Technological Pedagogical and Content Knowledge (TPACK) survey (Schmidt et al., 2009). The challenges instructors faced during their online teaching experience during COVID-19 and their recommendations for a more successful EFL online teaching experience were also examined. Fifty-two female instructors teaching EFL in one of the largest universities in the Kingdom of Saudi Arabia participated in this study by completing the modified TPACK online survey. The survey consisted of six demographic questions, 56 Likert-scale items, and five open-ended questions. Responses were kept anonymous to encourage instructors to express their views openly. Demographic data and Likert-scale items were analyzed using the Statistical Package for Social Science (SPSS). Open-ended questions were analyzed thematically using NVivo.

The present chapter starts by introducing the validity and reliability of the quantitative data. Assumptions for the correlational test are examined. The trustworthiness of the qualitative data collected is then discussed. Trustworthiness is discussed in relation to credibility, transferability, dependability, and confirmability (Lichtman, 2014). Results are then presented and organized according to the research questions and hypothesis. Each research question is discussed and the related analysis of the data is presented whether quantitively, qualitatively, or both. The quantitative analysis starts with a descriptive analysis of the participants’ demographics. The Pearson correlation results are then presented. The qualitative findings are
presented based on themes and codes. Finally, an evaluation of the results and the findings is presented in relation to the research’s questions and hypotheses.

**Validity and Reliability/Trustworthiness**

The instrument used in this study was first piloted and tested for validity (Miles et al., 2013). The survey was sent to a small number of instructors at the university’s English Language Institute (Eli). Upon receiving their feedback, the survey was then sent to the participants.

Since the survey was adapted from Schmidt et al. (2009), the reliability of the survey was found to be high (see Table 2).

**Table 2**

*Reliability of Scores Schmidt et al. (2009)*

<table>
<thead>
<tr>
<th>TPACK Doman</th>
<th>Internal Consistency (alpha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology Knowledge (TK)</td>
<td>.86</td>
</tr>
<tr>
<td>Content Knowledge (CK)</td>
<td>.82</td>
</tr>
<tr>
<td>Social Studies</td>
<td></td>
</tr>
<tr>
<td>Pedagogy Knowledge (PK)</td>
<td>.87</td>
</tr>
<tr>
<td>Pedagogical Content Knowledge (PCK)</td>
<td>.87</td>
</tr>
<tr>
<td>Technological Pedagogical Knowledge (TPK)</td>
<td>.93</td>
</tr>
<tr>
<td>Technological Content Knowledge (TCK)</td>
<td>.86</td>
</tr>
<tr>
<td>Technological Pedagogical Content Knowledge (TPACK)</td>
<td>.89</td>
</tr>
</tbody>
</table>

The trustworthiness of the data was established by addressing the following four criteria: confirmability, credibility, dependability, and transferability. The anonymity of the survey was important to assure the confirmability of the data. In addition, the credibility of the data was assured by using NVivo for analysis. Data were imported to NVivo directly assuring that nothing was missed or changed. For dependability, in-depth reading of each part of the data was done. Themes and codes were then developed. For transferability, sufficient sampling was maintained
(Boddy, 2016). A total of 52 participants participated in the study out of 160 instructors working in the Eli. Transferability was also supported by the amount of data collected (Bloomberg & Volpe, 2018). Triangulation was implemented (Maxwell, 2012) to assure trustworthiness and strength of findings. The mixed-method approach was; therefore, used in this study since triangulation provided different sources of data (Anderson et al., 2007).

Moreover, a statistical analysis was conducted to check the bivariate coefficient correlational test’s assumptions. The Pearson correlation analysis required running tests for several assumptions. Data were exported directly from Qualtrics to SPSS to avoid missing any required information. Assumptions were then tested for the two variables included, instructors’ general TPACK and their TPACK during COVID-19. Tested assumptions included the level of measurement. Variables in this study were mainly ordinal. All responses were assigned a value ranging from one to five based on the nature of the question. The variables used within this study, therefore, met the assumption of the level of measurement for a Pearson correlation analysis. The assumption of normality of variables and the absence of outliers were then tested for instructors’ general TPACK (GTPACK) and their TPACK during COVID-19 (DCTPACK). The assumptions of normality of variables test the sample to determine if the mean is normally distributed. The assumption of the absence of outliers is also important since Pearson’s $r$, or correlation coefficient can be significantly influenced by outliers. A number of outliers were found and were removed. Figure 2 and Figure 3 indicates that the data is normally distributed.
Figure 2. Normality Test for General TPACK
Figure 3. Normality Test for During COVID-19 TPACK

The assumption of linearity was also tested for instructors’ general TPACK and their TPACK during COVID-19. The assumption of linearity recognizes the existence of a linear relationship amongst variables. This assumption can easily be observed by plotting a scatterplot of the variables and visually inspecting the results. Visual inspection of scatter plots revealed a
linear relationship amongst variables as can be seen in Figure 4.

\[\text{Scatter Plot of DCTPACK by GTPACK}\]

**Figure 4. Linearity Assumptions Test**

Finally, the assumption of homoscedasticity was tested using the same methods of analysis that identify linearity. Visual observation of scatterplots with the dependent variable is presented in Figure 5.
Figure 5. Homoscedasticity Test

Since all assumptions for the bivariate coefficient correlational test were met, the analysis was conducted. The following section presents the results.

Results

Fifty-two instructors teaching EFL in the Eli before and during the period of COVID-19 responded to the survey. However, only 39 instructors completed the survey. The analysis was conducted using SPSS and NVivo. All missing data were excluded from the analysis. Demographic descriptive analysis was first conducted, followed by descriptive statistics and correlational inferential analysis to test the research questions and hypotheses. Research questions and hypothesis are the following:

**RQ1.** What are EFL instructors’ perceptions about the effectiveness of online learning in their EFL courses based on the modified TPACK survey?
**RQ2.** What relationship, if any, is there in instructors’ TPACK scores and their perceived level of effectiveness in teaching EFL online during COVID-19?

**RQ3.** Based on instructors’ experiences teaching online during COVID-19, what are EFL instructors’ recommendations for a successful blended learning model?

**Hypotheses:**

**H20.** There is no statistically significant relationship between instructors’ TPACK scores and their perceived level of effectiveness in teaching EFL online during COVID-19.

**H2a.** There is a statistically significant relationship between instructors’ TPACK scores and their perceived level of effectiveness in teaching EFL online during COVID-19.

**Demographic descriptive analysis.** As a first step, a frequency descriptive analysis was conducted for the demographic questions included in the survey. The following tables present a detailed description of the demographic information for all the participants. All missing data, as well as outliers, were removed. Table 3 shows that the majority of the participants, 79.4%, hold a master’s degree. While 14.7% hold a Ph.D., only 5.9% hold a bachelor’s degree.

Table 3

*Demographic Information: Highest Degree Obtained by Participants*

<table>
<thead>
<tr>
<th>Educational Level</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor</td>
<td>2</td>
<td>5.9</td>
</tr>
<tr>
<td>Master</td>
<td>27</td>
<td>79.4</td>
</tr>
<tr>
<td>Ph.D.</td>
<td>5</td>
<td>14.7</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 2 shows that 58.8% of the participants have over 10 years of teaching experience, 29.4% have taught from six to ten years, while 11.8% only have one to five years of teaching experience. This indicates that the majority of the participants are experienced EFL teachers.

Table 4

*Demographic Information: Years of Teaching Experience*

<table>
<thead>
<tr>
<th>Teaching Experience</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 5 years</td>
<td>4</td>
<td>11.8</td>
</tr>
<tr>
<td>6 to 10 years</td>
<td>10</td>
<td>29.4</td>
</tr>
<tr>
<td>More than 10 years</td>
<td>20</td>
<td>58.8</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>100</td>
</tr>
</tbody>
</table>

Despite the high percentage of instructors with long years of teaching experience, Table 5 indicates that 58.8% of those instructors never taught online courses.

Table 5

*Demographic Information: Previous Experience in Online Teaching*

<table>
<thead>
<tr>
<th>Experience in Online Teaching</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>20</td>
<td>58.8</td>
</tr>
<tr>
<td>Yes</td>
<td>14</td>
<td>41.2</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 6 indicates that the majority of those instructors, 79.4%, have received some kind of training for teaching online.

**Table 6**

*Demographic Information: Training of Teaching Online*

<table>
<thead>
<tr>
<th>Training on Online Teaching</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>7</td>
<td>20.6</td>
</tr>
<tr>
<td>Yes</td>
<td>27</td>
<td>79.4</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>100</td>
</tr>
</tbody>
</table>

Furthermore, 88.2% of those instructors have received training on using Blackboard, which is the official platform used in the University of Jeddah.

**Table 7**

*Demographic Information: Training on Using Blackboard*

<table>
<thead>
<tr>
<th>Training on Using Blackboard</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>4</td>
<td>11.8</td>
</tr>
<tr>
<td>Yes</td>
<td>30</td>
<td>88.2</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>100</td>
</tr>
</tbody>
</table>

Finally, Table 8 indicates the number of teaching days per week for all participants. A teaching day at the Eli ranges from 3 to 4 hours, with a total of 18 hours per week. Most of the instructors participating in this study, 47%, were full-time teachers. A small percentage, 5.9%, only taught one day since they were assigned other administrative duties at the Eli.
**Research question 1.** What are EFL instructors’ perceptions about the effectiveness of online learning in their EFL courses based on the modified TPACK survey? In order to answer the first research question, the percentage of how effective instructors believe they have combined content, pedagogical approaches, and technology in their teaching, in general, was investigated (see Table 9). The effectiveness of how they believe they have combined content, pedagogical approaches, and technology in their teaching during COVID-19 was also investigated (see Table 10). Moreover, open-ended questions were analyzed for a better understanding using NVivo for the thematic analysis.

Table 9 shows a high score for highly effective performance using TPACK. Most instructors believe that they have combined content, pedagogical approaches, and technology in their teaching with a 44% for ‘76% - 100%’ and 47 % for ‘51% - 75%’. Only 8.8% of the instructors believe their performance to be ‘26%-50%’ effective as far as TPACK is concerned, while none would consider their performance to be ‘25% or less’ effective.
Table 9

Effectiveness of TPACK in Teaching in General

<table>
<thead>
<tr>
<th>Effectiveness of TPACK in Teaching in General</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>25% or less</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>26% - 50%</td>
<td>3</td>
<td>8.8</td>
</tr>
<tr>
<td>51% - 75%</td>
<td>16</td>
<td>47.1</td>
</tr>
<tr>
<td>76%-100%</td>
<td>15</td>
<td>44.1</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>100</td>
</tr>
</tbody>
</table>

However, compared to Table 9, Table 10 indicates that EFL instructors in this study believe they have effectively combined TPACK during COVID-19 with a lower percentage. However, the majority, 38% and 41%, still believe they performed well, above 51%.

Table 10

Effectiveness of TPACK in Teaching During COVID-19

<table>
<thead>
<tr>
<th>Effectiveness of TPACK in Teaching During COVID-19</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>25% or less</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>26% - 50%</td>
<td>6</td>
<td>17.6</td>
</tr>
<tr>
<td>51% - 75%</td>
<td>14</td>
<td>41.2</td>
</tr>
<tr>
<td>76%-100%</td>
<td>13</td>
<td>38.2</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>100</td>
</tr>
</tbody>
</table>

Moreover, the qualitative analysis revealed similar results. An overall positive attitude was found in many instructors’ open-ended questions answers. The different ways in which instructors believed online learning helped students were organized into four major themes. Those themes include overall positive experiences, increasing students’ autonomy, boosting
students’ motivation, and effective use of technology (see Table 11). The following sections explore each of these themes.

Table 11

<table>
<thead>
<tr>
<th>Emergent Themes for Effectiveness of TPACK in Teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergent Themes</td>
</tr>
<tr>
<td>1 Overall Positive Experiences</td>
</tr>
<tr>
<td>2 Increasing Students’ Autonomy</td>
</tr>
<tr>
<td>3 Boosting Students’ Motivation</td>
</tr>
<tr>
<td>4 Effective Use of Technology</td>
</tr>
</tbody>
</table>

**Overall positive experiences.** One teacher clearly stated that “online learning has proven to be effective” while another one said, “it helped students a lot.” As far as the teachers’ performance itself is concerned, one teacher said, “with many learning techniques at hand, I am able to engage learners at their pace and level.” In addition, one teacher believed online learning had a positive psychological effect in enhancing students’ learning. According to her,

- Using mobile or smart devices for learning purposes enhanced their learning process and helped them get rid of their fear of face-face learning. Also, learning in a comfortable learning environment reduced the anxiety and stress for students.

In addition, one of the instructor’s views helped in explaining the high percentage of effectiveness observed in Table 10 during COVID-19. She illustrated her point by saying,

- I have always believed more in the effectiveness of learning in classroom; however: this year has proved to me that online teaching, especially for university age groups, is not all bad. On the contrary, it has many advantages in many ways.
Considering the fact that many instructors have no previous experience in teaching online, the COVID-19 crisis gave them the opportunity to explore their abilities despite the sudden transition. Those instructors expressed their strength, saying that “I was able to use many new strategies and I really enjoyed the different applications that were available to enhance students learning and let them enjoy the material.” Other participants expressed their views saying that, “my role as a facilitator has evolved by depending more on technological tools,” and “I was able to use task-based method and variety of techniques and technology to meet different learning styles.” Another participant believed that the online-teaching experience, “helps instructors to perform at her best and use all new, creative methods of teaching, which increases the self-development bar for the institute gradually” and, “using task-based method and variety of techniques and technology to meet different learning styles” by another teacher.

**Students’ Autonomy.** Nineteen references were coded in relation to students’ autonomy during online learning. Teachers found that the online experience helped students become independent learners. Students were able to develop “self-monitoring skills and management skills (time, efforts, prioritizing, etc.),” according to one teacher. Other teachers found that online learning “increased students’ autonomy and made them more exposed to the written part of the language,” “improved autonomous learning,” and “forced students to take responsibility for their own learning.” Another teacher also clearly stated that “I believe that students now are becoming more independent and their self-learning is becoming more effective with online learning.”

**Boosting Motivation.** Thirteen references were coded in relation to the effectiveness of online learning in motivating learners. Instructors believe that online learning helped their students. One teacher said that “it was a new experience for the students, yet they were very enthusiastic about online teaching.” Moreover, according to another teacher, “students were
determined to complete their course successfully and put in greater effort.” Another teacher went further to describe, in details, how her students performed,

My students had a positive attitude towards the online learning experience. They join class on time, participate in the chat box, discuss and ask questions by turning on their mics, and respond fast when I post assignments on Blackboard or other apps used in class.

**Effective use of Technology.** Six references were coded in relation to the effectiveness of technology in enhancing learners’ performance according to the participants in this study. Participants believe that “using mobile or smart devices for learning purposes enhanced their learning process and helped them get rid of their fear of face-face learning.” Another teacher expressed her attitude towards the effectiveness of online learning stating that,

Students learned how to use technology effectively, so they can enhance their learning by discovering many other ways to practice in their free time! Giving them the chance to participate in the online chat and discussion board.

Some teachers also expressed their positive attitude in relation to the platform used. They attributed the effectiveness of their teaching experience partially to Blackboard and the facilities provided. One teacher says,

BB is a very efficient platform. It’s user friendly. The same content that is normally delivered in really classes is delivered to students virtually. I can conclude that virtual classes served the purpose. It helped learners learn.

According to another teacher using Blackboard, “helps me greatly to engage each individual learner by asking for different activities, such as individual, pair or group work in their break up
groups on blackboard.” Moreover, other teachers believed the recording feature of the sessions on Blackboard to be an effective tool. One teacher said that,

> Availability of the recorded lesson helps students use them as references to better understand the lesson. The virtual classroom (BB) is accessible 24/7 for students too, which supports student-centered learning!

However, it worth mentioning that, as mentioned previously, although a positive overall attitude was found in instructors’ answers, a negative theme was also detected. Not being familiar with online teaching was highlighted. One teacher said that “I’m very visual and it was really hard for me at the beginning not have a face to face interactions but we are getting used to it.” Another teacher believed that “physical classes have more strength.” And according to another teacher, “we need to get in touch with students. Face-to-face teaching method is very important in delivering the message in the right way.” Some of the reasons teachers stated as a drawback for online teaching are the absence of body language and not being able to follow up with students. One teacher stated that “in online teaching, I missed the body language that helped me a lot in understanding students’ understanding” and according to another teacher, “many students are not participating, and sometimes it is very difficult to follow up with everyone.” Other teachers went even further to express their frustration and annoyances of the whole situations saying that,

> Sometimes the absence of physical interaction frustrates me. I can’t always tell if all my students understand the lesson taught. In a physical classroom, facial expressions and body language can tell a lot.

> I am a visual teacher. I am a good reader of eye contact and body language. The fact of not seeing my dear students annoys me.
According to one teacher, this frustration could be attributed to the sudden transition, “I think it needs time to be familiar with the situation,” even though others have seen this sudden transition as a strength, “The ability to cope with online teaching and the flexible curriculum that we could shift very easily into online” was stated by one participant.

**Research question 2.** What relationship, if any, is there in instructors’ TPACK scores and their perceived level of effectiveness in teaching EFL online during COVID-19? In order to answer this question, a Pearson product-moment two-tailed correlation coefficient analysis was conducted to investigate the relationship between the instructors’ TPACK in general and their perceptions on how effective their experience was during COVID-19. The analysis measures the strength and direction of the linear relationship between all the variables. The correlation coefficient can range from -1 to +1, where -1 indicates a perfect negative correlation and +1 indicates a perfect positive correlation, while 0 indicating no correlation at all. The analysis was also conducted to test the research hypotheses. The hypotheses tested are the following:

**H2a.** There is no statistically significant relationship between instructors’ TPACK scores and their perceived level of effectiveness in teaching EFL online during COVID-19.

**H2b.** There is a statistically significant relationship between instructors’ TPACK scores and their perceived level of effectiveness in teaching EFL online during COVID-19.

A correlational analysis for instructors’ knowledge in general compared to their teaching experience during COVID-19 for all categories in the survey was analyzed. The categories include (TK) Technological Knowledge, (CK) Content Knowledge, (PK) Pedagogical Knowledge, (PCK) Pedagogical Content Knowledge, (TCK) Technological Content Knowledge, (TPK) Technological Pedagogical Knowledge, and (TPACK) Technological Pedagogical and Content Knowledge. The 26 questions in the two parts of the survey were computed on SPSS.
and set into the categories they appear under in the survey. This was done using the Transform, Compute Variables option. The percentage of instructors’ general knowledge for all categories compared to their actual experience during the COVID-19 was compared.

Table 12 presents the descriptive statistics and the correlation between all variables of instructors’ general knowledge compared to their actual experience during COVID-19.

Table 12

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>General TPACK</td>
<td>109.0294</td>
<td>8.57935</td>
<td>34</td>
</tr>
<tr>
<td>During COVID-19 TPACK</td>
<td>102.4706</td>
<td>10.51186</td>
<td>34</td>
</tr>
</tbody>
</table>

The Pearson product-moment correlation coefficient analysis was conducted to answer research question 2 and to test the research’s hypothesis. Overall, there was a strong, positive correlation between EFL instructors’ general TPACK and their during COVID-19 TPACK, $r = .575$, $n = 34$, $p = <.001$.

Table 13

<table>
<thead>
<tr>
<th></th>
<th>During COVID-19 TPACK</th>
</tr>
</thead>
<tbody>
<tr>
<td>General TPACK</td>
<td>Pearson Correlation</td>
</tr>
<tr>
<td></td>
<td>.575**</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
</tr>
<tr>
<td></td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>34</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).
The Hypotheses tested are the following:

**H2a.** There is no statistically significant relationship between instructors’ TPACK scores and their perceived level of effectiveness in teaching EFL online during COVID-19.

**H2b.** There is a statistically significant relationship between instructors’ TPACK scores and their perceived level of effectiveness in teaching EFL online during COVID-19.

The null hypothesis was; therefore, rejected.

**Research question 3.** Based on instructors’ experiences teaching online during COVID-19, what are EFL instructors’ recommendations for a successful blended learning model?

In relation to question three, a number of recommendations were suggested by the participants. Most of those recommendations were centered around four themes (see Table 14).

**Table 14**

*Emergent Themes for Recommendations for a Successful Blended Learning Model*

<table>
<thead>
<tr>
<th>Emergent Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  The Need for Online-Teaching Training</td>
</tr>
<tr>
<td>2  The Availability of Technical Support</td>
</tr>
<tr>
<td>3  Activating Blackboard’s Extra Features</td>
</tr>
<tr>
<td>4  Flexibility with Assessments and Class Setting</td>
</tr>
</tbody>
</table>

The first theme focused on providing online-teaching training. The second theme focused on the importance of the availability of technical support. The third theme focused on activating Blackboard’s extra features, and the fourth theme focused on the need for more flexibility with assessments and class setting. The following section explores each theme.

**The Need for Online-teaching Training.** A number of teachers believe that more training on online-teaching is needed. Participants in this study highly expressed their need for
“attending more online workshops in order to enhance our skills and learn about many other
techniques.” They also recommended “providing training about interactive online teaching” and
“using different innovative apps and tools in the classroom.” According to one participant, the
Eli should provide “executive training to teachers to eliminate technology illiteracy.” She
believes that there is a strong need for “continuous development in relation to the best
technology to present the most appropriate teaching strategies.”

**Availability of Technical Support.** Another point that teachers’ recommendations
focused on is related to technical support. Some participants believe that there is a strong need
for “mentors to help instructors with the problems they may face.” According to one participant,
“for better online learning, there should be better technical support.”

**Activating Blackboards Extra Features.** Despite the positive attitude some instructors
expressed in dealing with Blackboard, some participants believe that Blackboard still needs to be
updated. According to them, there is a need to, “update the Blackboard to meet the needs of the
teachers.” This may include the availability of more interactive tools and activating the camera
while teaching online. Following are some of the participants’ replies expressing their
suggestions for a better Blackboard experience,

“Using different methods to engage students more,”

“Using various ways of technology or games to attract students attention,”

“It would be really helpful if teachers could see their students and vice versa,” and

“Using the online camera during class could offer better teaching/learning.”

**Flexibility with Assessments and Class Setting.** Another major theme found is related to
classes’ duration and the number of students in each class. Eli EFL classes’ duration ranges from
3 to 4 hours of daily teaching. The number of students in each class ranges from 32 to 38. Some
of the participants believed that fewer hours and a smaller number of students should be considered in an online teaching setting. They expressed a need to reduce the number of students in a class and shorten the class timing saying that “online classes should not last for 3 hours straight. The educational content should be shortened to suit the new medium,” “shorter sessions and less students,” and “reducing teaching hours” all appear as recommendations in the participants’ replies.

Other participants believe that adjustments should be made in how students are assessed. Each semester, students have to do two quizzes, three speaking tasks, three writing tasks, a final project in addition to the midterm and final exams. According to those instructors, different assessment strategies should be considered. One instructor stated that there is a need for “using alternative ways to assess students.” Others expressed a need for more flexibility in terms of curriculum and assessment to suit the online setting. However, none of them provided any details about suggested assessment methods, while few of them suggested fewer tasks to be considered. One participant drew attention to the need to “design curriculum in a way that helps the teacher to reach the goals and get involved with new technological practices.”

**Evaluation of the Findings**

The present study adopted the TPACK framework to allow for a deeper understanding of online instructors’ performance (Anderson, Barham & Northcote, 2013; Koehler, 2012; Koehler & Mishra, 2006; Koehler & Mishra, 2009; Kushner Benson & Ward, 2013). Data were collected from 52 female EFL instructors teaching at the University of Jeddah. The majority of the participants hold a master’s degree, 79.4%, and 14.7% of them hold a Ph.D. Most of the participants have more than 10 years of experience in teaching, but only 41.2% of them have taught online courses prior to COVID-19 though 79.4% of them have received some kind of
training on teaching online courses. Moreover, 88.2% received training on using Blackboard, the official online platform of the university, but never actually put that training into practice. However, an overall positive attitude was found in their replies despite the sudden transition to online teaching on Blackboard as a result of the spread of COVID-19. All instructors participating in this study taught at the same institution before and during the period of COVID-19. Their perceptions on how effective their online teaching was during this period and the relationship between their general TPACK and the actual online experience were investigated using the TPACK survey. Their recommendations for a better online teaching experience were also explored, and a number of themes emerged.

Research question one was investigated in two different ways. Participants were first asked to rate the effectiveness of how they believe they have combined content, pedagogical approaches, and technology in their teaching in general. The majority of the participants rated their performance above 51%, and those are around 90%. These results are different from what was found in (Al-Abdullatif, 2019), where Saudi pre-service teachers appear to have a low level of perceived competencies using digital technologies. However, when asked about how effective the participants in this study believe they have combined content, pedagogical approaches, and technology in their teaching during COVID-19, a lower percentage was found for instructors rating their performance above 51% though the majority still believed their performance to be above 51%. This can be explained in relation to what was reported in Alhababi (2017). Alhababi stated that teachers are going to be more ready and more productive with technology if it is integrated as part of the educational system. Open-ended questions showed a positive overall attitude of how well their performance was during COVID-19. Participants appear to be satisfied with their performance using technology and combining it with the pedagogical and content
knowledge. A number of themes emerged in relation to research question one, those themes include increasing students’ autonomy, boosting students’ motivation, and effective use of technology. Those themes can be used as an indicator of how effective participants think they performed.

In relation to question two, the instructors’ TPACK scores and their perceived level of effectiveness in teaching EFL online during COVID-19 were investigated using the Pearson product-moment correlation coefficient. Findings indicate a strong positive correlation. The null hypothesis was, therefore, rejected.

Research question three provided a number of recommendations for a better online teaching experience. Those recommendations mainly centered around four themes. The first theme focused on providing more training in online teaching. This theme goes in line with Albuloushi (2019), who suggested the need for more training programs to enhance teachers’ PK and TPK skills. The second theme focused on the importance of the availability of technical support to help instructors in solving occurring problems. The third theme focused on activating Blackboard’s extra features for a more interactive setting. Recommendations include more interactive features and visual aids. Finally, the fourth theme focused on the need for more flexibility with assessments and class settings. Different assessment methods and a shorter class time were suggested.

Summary

The present chapter started by establishing the validity, reliability, and trustworthiness of the data collected using the quantitative criteria of normality, linearity, homoscedasticity, and the qualitative criteria of confirmability, dependability, and transferability. The results of the data collected were analyzed using SPSS and NVivo. The demographic data was first analyzed. The
results were then presented according to the research questions and hypothesis in the same order they appeared in the research questions section. Research question one, dealing with the instructors’ perceptions about the effectiveness of online learning in their EFL courses based on the modified TPACK survey, was first investigated using the TPACK survey in addition to the open-ended questions. Three themes emerged dealing with students’ autonomy, students’ motivation, and the use of technology. Results for research question two, dealing with the relationship of instructors’ TPACK scores and their perceived level of effectiveness in teaching EFL online during COVID-19, were then checked. The Pearson product-moment correlation coefficient was then conducted to answer this question. Finally, recommendations for a more effective online experience were answered within four main themes. Themes included the need for providing training for teachers, the need for technical support, activating Blackboard extra features, and the flexibility with assessments and class setting. Finally, the evaluation of the findings was presented.
Chapter 5: Implications, Recommendations, and Conclusions

The problem addressed in this study was the sudden transition from fully face-to-face EFL teaching to online teaching as a result of the spread of the COVID-19 pandemic. Instructors needed to combine their content and pedagogical knowledge with their technological knowledge to create an effective learning environment. The purpose of this mixed-method triangulation design study was to examine the effectiveness of the implementation of online EFL teaching in a higher education institution in the Kingdom of Saudi Arabia during COVID-19. The study addressed the gap in the literature regarding instructors’ perceptions of the implantation of online teaching in EFL in Saudi Arabia’s higher education during pandemics.

Instructors’ perceptions were examined using a modified electronic Technological Pedagogical and Content Knowledge (TPACK) survey (Schmidt et al., 2009). The challenges instructors faced during their online teaching during the period of the COVID-19 pandemic and their recommendations for a more successful EFL online teaching experience were examined using the online modified version of the TPACK survey. Fifty-two female instructors teaching EFL in the English Language Institute at the University of Jeddah participated in this study. The modified TPACK survey consisted of six demographic questions, 56 Likert-scale items, and five open-ended questions to allow instructors to provide their perceptions in more detail. First, a descriptive statistics analysis was conducted for demographic questions. A Pearson product-moment correlation coefficient analysis was then performed for the Likert-scale items to find the relation, if any, between instructors’ general TPACK and their TPACK during COVID-19 TPACK. Finally, recommendations for a more successful online teaching experience were presented.
One limitation of this study included the number of participants. Data collected from more participants teaching different majors in different universities during pandemics can provide more information. The same study can be replicated in other universities for more generalized results, including universities outside the Kingdom of Saudi Arabia with a larger number of participants. Moreover, an experimental or quasi-experimental research design can be conducted to determine the effectiveness of EFL online teaching. In addition, students’ perceptions, in addition to instructors’ perceptions, would provide useful results. However, time restrictions and the difficulty to reach students during this period limited the researcher.

The present chapter discusses in detail the research’s implications. The discussion is organized in relation to the research’s questions and hypothesis. Recommendations for how the findings of this study can be applied and recommendations for further research are then presented. The chapter concludes with a summary of the study, the problem addressed, and the importance of the study.

Implications

The aim of the present study was to investigate Saudi EFL university instructors’ perceptions about their online teaching experience during COVID-19 using the modified electronic TPACK survey (Schmidt et al., 2009). The challenges instructors faced during their online teaching and their recommendations for a more successful EFL online teaching experience were also examined. Following are the research questions and hypotheses’ implications.

Research question 1. What are EFL instructors’ perceptions about the effectiveness of online learning in their EFL courses based on the modified TPACK survey? EFL instructors’ perceptions about the effectiveness of online teaching in EFL courses based on the modified
TPACK survey were investigated in this study. Most instructors believe that they have combined content, pedagogical approaches, and technology in their teaching with a high percentage. Around 90% of the participants rated the effectiveness of their general TPACK above 51%. None of them believed their general TPACK knowledge to be below 25%. These findings are consistent with previous findings (Gungoren & Horzum, 2015; Horzum, 2013). Similarly, Bingimlas (2018) found that the majority of the teachers participating in those studies rated their TPACK at an average and higher than average levels. Although the actual experience during COVID-19 revealed a slightly lower percentage presented by EFL instructors in this study, around 80% still believe their performance to be above 51%, and none of them rated the effectiveness of their performance below 25%. These findings are aligned with Alshehri (2013), who indicated that pre-service teachers' level of technology competencies is positively affected by their participation in actual courses. Alharbi and Lally (2017) rightly suggested that teachers would be more ready and productive with technology if it is integrated as part of the educational system, a case that was evident in this study.

Moreover, participants illustrated an overall positive attitude towards online teaching. They raised a number of themes, including students’ autonomy during online learning. Teachers found that the online experience helped students become independent learners. According to the constructivist theory, learning should focus on the learner as an active participant in the learning process (Hoy et al., 2013; Murthy et al., 2015; Sabzian et al., 2013). The online experience gave learners the chance to become more active and independent, according to participants in this study. The instructor’s role became more of a facilitator, as stated by the participants in this study. In addition, the constructivist learning theory placed a special focus on student-centered learning (Li & Guo, 2015), a goal that some teachers believe was achieved during online
teaching. The second theme raised by participants in this study deals with students’ boosted motivation towards learning. According to what was presented in the reviewed literature, digital natives appear to be more interested in activities that are oriented to visual media (Imbriale, Schiner & Elmendorf, 2017). Learners’ positive attitude towards the integration of technology in education has been found to boost their motivation in addition to improving their learning outcomes (Solano et al., 2017). Researchers have found that the implementation of technology in teaching can positively affect learners’ motivation, increase their interaction, and improve their learning outcomes (Yapici, 2016). However, others have found no significant differences resulting from the integration of technology in teaching, which can be attributed to the inadequate implantation (Kucuk & Sahin, 2013). The present study supports the first view.

However, some teachers faced problems not being familiar with online teaching. The sudden transition confused those teachers. According to them, the sudden transition caused frustration and discomfort. Other teachers believed the absence of body language in face-to-face interaction to cause problems. This can be explained considering what Kassner (2013) saw as the biggest advantages of face-to-face learning (Kassner, 2013, Scheg, 2014; Wendt & Rockinson-Szapkiw, 2015).

**Research question 2.** What relationship, if any, is there in instructors’ TPACK scores and their perceived level of effectiveness in teaching EFL online during COVID-19? The degree to how EFL instructors’ general TPACK scores correlate with their perceived level of effectiveness in teaching during COVID-19 was also investigated in this study. The analysis was conducted to test the research hypotheses. The hypotheses tested are the following:
**H2a.** There is no statistically significant relationship between instructors’ TPACK scores and their perceived level of effectiveness in teaching EFL online during COVID-19.

**H2a.** There is a statistically significant relationship between instructors’ TPACK scores and their perceived level of effectiveness in teaching EFL online during COVID-19.

The Pearson product-moment correlation coefficient analysis revealed a strong positive correlation between EFL instructors’ general TPACK and their perceptions of their performance during COVID-19 TPACK. The null hypotheses related to this question, there is no statistically significant relationship between instructors’ content, pedagogical and technological knowledge, and their views on the success of their EFL online teaching was, therefore, rejected. In contrast, results indicate a statistically significant relationship between instructors’ content, pedagogical, and technological knowledge and their views on the success of their EFL online teaching.

**Research question 3.** Based on instructors’ experiences teaching online during COVID-19, what are EFL instructors’ recommendations for a successful blended learning model?

Finally, EFL instructors’ recommendations for a successful blended learning model were presented. Findings appear to be consistent with previous studies indicating a strong need for online-teaching training (Meylani, Bitter & Castaneda, 2014). Participants in this study believe that more training on online-teaching is needed. Similarly, Alshehri (2013) suggested a need for high-quality training programs. Bingimlas (2018) also suggested that the Ministry of Education needs to provide more effective technological training. Al-Abdullatif (2019) recommended reforming the teacher training program within the TPACK framework.

The availability of technical support was also recommended by participants in this study. Participants also highlighted the need for activating Blackboards’ extra features to engage students more through interactive activities and camera use. Another point raised was the
flexibility with assessments and class setting. Participants believed that fewer hours and fewer students should be considered in an online teaching setting compared to the face-to-face setting. Adjustments should also be made, according to them, on how students are assessed. A curriculum should be designed in a way that can help teachers reach their goals and involve learners with new technological practices.

**Recommendations for Practice**

Based on the findings presented in this study, a need to implement a blended learning model is highly recommended for the post-pandemic period. Students’ autonomy and motivation raised by the implementation of online teaching should be preserved. According to the literature, learners' positive attitude towards the integration of technology was found to boost their motivation and their learning outcome (Solano et al., 2017). Considering these facts, the traditional 100% face-to-face EFL learning setting implemented in the Kingdom before the COVID-19 pandemic period should not be conserved. According to a study conducted by Bukhari and Basaffar (2019), students’ preference for 40% online teaching should be genuinely considered.

Moreover, instructors’ recommendations for professional TPACK training in general and technological training in particular should also be considered by the institution as recommended in other studies (Al-Abdullatif, 2019; Alshehri, 2013; Bingimlas, 2018; Meylani et al., 2014). A strong need for regular intensive training programs should be provided for all instructors. Moreover, technological support should also be provided to all instructors; this support would definitely help overcome appearing technical issues. Other points to be considered are related to the classroom setting, including the number of students in the class and the number of hours of the sessions. Participants suggested fewer students and fewer hours for online teaching. A final
point deals with the curriculum itself and the assessment strategies. The differences between the face-to-face setting and the online setting highlighted should be carefully considered in the new blended learning setting.

Recommendations for Future Research

Considering the limitations of this study, a number of recommendations for further research are suggested. The present study followed a nonexperimental design. A quasi-experimental design study is recommended for further research to determine how effective EFL online teaching can be. The study can be implemented on two groups. One group will serve as the control group, where the traditional full face-to-face setting is implemented, while the other group will serve as the experimental group where a blended learning model is implemented. All other variables, other than the variable under investigation, can be controlled, and pre- and post-tests can be used to measure learners’ performance. Learners’ learning outcomes in the fully face-to-face setting can be compared to learners’ learning outcomes in the online learning or blended learning setting. This kind of research can provide more information on how effective online EFL teaching is.

Moreover, this study has only focused on instructors’ perceptions. Investigating learners’ perceptions can provide useful insight. How effective online EFL learning is from the learners’ point of view and their recommendations and suggestions should be considered. The same study investigating EFL teachers’ perceptions can also be replicated in different universities in the Kingdom of Saudi Arabia. The present study focused only on one university in the city of Jeddah in the Kingdom of Saudi Arabia. Investigating teachers’ perceptions in other universities in the city of Jeddah and outside Jeddah can provide more information. The study can also be conducted at different educational levels since online learning has been implemented not only in
universities but also in schools during the COVID-19 pandemic period in the Kingdom. How effective online learning was at high schools and middle schools from the teachers’ perceptions and their recommendations and instructors’ TPACK as well as the learners’ perceptions are strongly needed by the Ministry of Education in the Kingdom of Saudi Arabia to maintain future plans.

Future studies may also consider investigating the nature of the teacher training programs suggested by instructors in this study. The type of programs needed, and the duration of these programs, is an essential step to consider for future research. Moreover, looking into different assessment strategies, as suggested by instructors in this study, and providing more information on how to implement these assessment strategies is needed.

The number of participants is a limitation of this study. A larger number of instructors can provide more information. Investigating instructors’ perceptions from the males’ section at the University of Jeddah is highly recommended. Finally, data in the present study was collected using the survey only. Collecting data using different data collection strategies, including interviews and focus groups, can provide a more comprehensive view of instructors’ TPACK knowledge. Those studies can yield different results and can be compared to results obtained in this study.

Conclusions

The aim of the present study was to examine the effectiveness of the implementation of online learning in teaching EFL in a higher education institution in the Kingdom of Saudi Arabia during COVID-19 from the participants’ point of view. The problem addressed in this study was the sudden transition from fully face-to-face EFL teaching to online teaching as a result of the spread of COVID-19. The study addressed the gap in the literature regarding instructors’
perceptions of the implantation of online teaching in EFL in Saudi Arabia’s higher education during pandemics. Instructors’ perceptions were examined using a modified electronic Technological Pedagogical and Content Knowledge (TPACK) survey (Schmidt et al., 2009). The challenges instructors faced during their online teaching experience during COVID-19 and their recommendations for a more successful EFL online teaching experience were also examined. Fifty-two female instructors teaching EFL in one of the largest universities in the Kingdom of Saudi Arabia participated in this study by completing the modified TPACK online survey. The survey consisted of six demographic questions, 56 Likert-scale items, and five open-ended questions. Demographic data and Likert-scale items were analyzed using the Statistical Package for Social Science (SPSS). Open-ended questions were analyzed thematically using NVivo. Research question one, dealing with the instructors’ perceptions about the effectiveness of online learning in their EFL courses based on the modified TPACK survey, was first investigated using the TPACK survey in addition to the open-ended questions. Most instructors believe that they have combined content, pedagogical approaches, and technology in their teaching with a high percentage. Around 90% of the participants rated the effectiveness of their general TPACK above 51%, while none of them believed their general TPACK knowledge to be below 25%. Similarly, 80% of the participants in this study believe their TPACK during COVID-19 effectiveness to be above 51% and none of them rated the effectiveness of their performance below 25%. This positive perception is found to be similar to studies reviewed in the literature (Alzahrani, 2014; Bingimlas, 2018; Gungoren & Horzum, 2015; Khine, 2015; Tondeur et al., 2016). Several themes emerged in this regard dealing with students’ autonomy, students’ motivation, and the use of technology. According to participants in this study, the online experience gave learners the chance to become more active and independent.
was also found to boost learners’ motivation for learning. These results are consistent with findings presented in other studies dealing with the effect of implementing technology in teaching (Imbriale, Schiner & Elmerndorf, 2017). However, it is important to highlight that some teachers reported facing problems not being familiar with online teaching. The sudden transition confused those teachers, causing frustration and discomfort. The absence of face-to-face interaction could not be overcome as an obstacle (Kassner, 2013; Scheg, 2014; Tschida, 2014; Wendt & Rockinson-Szapkiw, 2015).

Results for research question two that deals with the relationship between instructors’ TPACK scores and their perceived level of effectiveness in teaching EFL online during COVID-19 were then checked using the Pearson product-moment correlation coefficient analysis. A statistically significant relationship between instructors’ content, pedagogical, and technological knowledge and their views on the success of their EFL online teaching was found, $r = .575$, $n = 34$, $p = <.001$. The null hypotheses stating that there is no statistically significant relationship between instructors’ content, pedagogical, and technological knowledge and their views on the success of their EFL online teaching was, therefore, rejected.

Finally, the research question dealing with recommendations for a more effective online experience was answered within four main themes. Themes included the need for providing training for teachers, the need for technical support, activating Blackboard’s extra features, and the flexibility with assessments and class setting. Findings appear to be consistent with previous studies indicating a strong need for online-teaching training (Al-Abdullatif, 2019; Alshehri, 2013; Bingimlas, 2018; Meylani et al., 2014). The availability of technical support was also recommended by participants in this study. Participants also highlighted the need for activating Blackboard’s extra features to engage students more through interactive activities and camera
use. Another point raised was the flexibility with assessments and class setting. Participants believe that fewer hours and fewer students should be considered in an online teaching setting compared to the full face-to-face setting. Adjustments should also be made, according to this study, to how students are assessed. A curriculum should be designed in a way that can help teachers reach their goals and involve learners with new technological practices.


Al-Shehri, A. M. (2010). E-learning in Saudi Arabia:‘To E or not to E, that is the question’. *Journal of Family and Community Medicine, 17*(3), 147.


Angeli, C., Valanides, N., & Christodoulou, A. (2016). Theoretical considerations of technological pedagogical content knowledge. *Handbook of Technological Pedagogical Content Knowledge (TPACK) for Educators, 11*


Ferheen Bukhari, S. S., & Mahmoud Basaffar, F. (2019). EFL learners’ perception about integrating blended learning in ELT. *Arab World English Journal (AWEJ) Special Issue on CALL, (5)*


*Educational Sciences: Theory & Practice, 15*(3)


*Computers in the Schools, 34*(1-2), 3-8.


Kassner, L. (2013). A review of literature: Mix it up with blended learning in K-12 schools. *Online Submission,*


h&AN=143337801&site=eds-live


Saadatmand, M., & Kumpulainen, K. (2014). Participants’ perceptions of learning and networking in connectivist MOOCs [massive open online courses]. *Journal of Online Learning and Teaching*.


Survey of preservice teachers' knowledge of teaching and technology

Technological pedagogical content knowledge (TPACK) the development and validation of an assessment instrument for preservice teachers. *Journal of Research on Technology in Education, 42*(2), 123-149.


Appendix A: Survey

Survey of Preservice Teachers' Knowledge of Teaching and Technology

Denise A. Schmidt, Evrim Baran, and Ann D. Thompson
Center for Technology in Learning and Teaching
Iowa State University

Matthew J. Koehler, Punya Mishra, and Tae Shin
Michigan State University

Usage Terms: Researchers are free to use the TPACK survey, provided they contact Dr. Denise Schmidt (dschmidt@iastate.edu) with a description of their intended usage (research questions, population, etc.), and the site locations for their research. The goal is to maintain a database of how the survey is being used, and keep track of any translations of the survey that exist.

How do I use the survey? The questions you want are most likely questions 1-46 starting under the header “TK (Technology Knowledge)”. In the papers cited above, these categories were removed so that participants were not oriented to the constructs when answering the survey questions. The items were presented in order from 1 through 46, however. The other items are more particular to individual study and teacher education context to better understand results found on questions 1-46. You are free to use them, or modify them. However, they are not the core items used to measure the components of TPACK.

How do score the survey. Each item response is scored with a value of 1 assigned to strongly disagree, all the way to 5 for strongly agree. For each construct the participant’s responses are averaged. For example, the 6 questions under TK (Technology Knowledge) are averaged to produce one TK (Technology Knowledge) Score.

Reliability of the Scores (from Schmidt et al, 2009).

<table>
<thead>
<tr>
<th>TPACK Domain</th>
<th>Internal Consistency (alpha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology Knowledge (TK)</td>
<td>.86</td>
</tr>
<tr>
<td>Content Knowledge (CK)</td>
<td></td>
</tr>
<tr>
<td>Social Studies</td>
<td>.82</td>
</tr>
<tr>
<td>Mathematics</td>
<td>.83</td>
</tr>
<tr>
<td>Science</td>
<td>.78</td>
</tr>
<tr>
<td>Literacy</td>
<td>.83</td>
</tr>
<tr>
<td>Pedagogy Knowledge (PK)</td>
<td>.87</td>
</tr>
<tr>
<td>Pedagogical Content Knowledge (PCK)</td>
<td>.87</td>
</tr>
<tr>
<td>Technological Pedagogical Knowledge (TPK)</td>
<td>.93</td>
</tr>
<tr>
<td>Technological Content Knowledge (TCK)</td>
<td>.86</td>
</tr>
<tr>
<td>Technological Pedagogical Content Knowledge (TPACK)</td>
<td>.89</td>
</tr>
</tbody>
</table>
Thank you for taking time to complete this questionnaire. Please answer each question to the best of your knowledge. Your thoughtfulness and candid responses will be greatly appreciated. Your responses will be kept completely confidential and will only be used for the purpose of this study.

DEMOGRAPHIC INFORMATION

1. Highest Degree Obtained
   a. Bachelor
   b. Master
   c. Ph.D.
   d. Others

2. Years of Teaching Experience
   a. Less than 1 year
   b. 1-5 years
   c. 6–10 years
   d. More than 10 years

3. Have you ever received any training on how to teach online?
   a. Yes
   b. No

4. Have you ever received any training on how to use Blackboard?
   a. Yes
   b. No

5. Do you have any previous experience, prior to COVID-19, in teaching online courses?
   a. Yes
   b. No

6. During COVID-19, how many days per week were you teaching online?
   a. One day
   b. Two days
   c. Three days
   d. Four days
   e. Five days
Technology is a broad concept that can mean a lot of different things. For the purpose of this questionnaire, technology is referring to digital technology/technologies such as computers, laptops, iPods, handhelds, interactive whiteboards, software programs, etc. Please answer all of the questions and if you are uncertain of or neutral about your response you may select "neither agree or disagree".

The following section focuses on your general knowledge in dealing with technology, your EFL content knowledge, and your pedagogical knowledge.

<table>
<thead>
<tr>
<th>TK (Technology Knowledge)</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Agree or Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I know how to solve my own technical problems.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I can learn technology easily.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I keep up with important new technologies.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I know about a lot of different technologies.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. I have the technical skills I need to use technology.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CK (Content Knowledge)</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Agree or Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching English as a Foreign Language (EFL)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. I have sufficient knowledge about various EFL teaching methods</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. I can apply EFL teaching methods in my classroom</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. I have various ways and strategies of developing my EFL teaching methods.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PK (Pedagogical Knowledge)</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Agree or Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. I know how to assess student performance in a classroom.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. I can adapt my teaching based upon what students currently understand or do not understand.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. I can adapt my teaching style to different learners.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. I can assess student learning in multiple ways.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. I can use a wide range of teaching approaches in a classroom setting.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. I am familiar with common student understandings and misconceptions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. I know how to organize and maintain classroom management.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PCK (Pedagogical Content Knowledge)</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Agree or Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>16. I can select effective teaching approaches to guide student thinking and learning in EFL classes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TCK (Technological Content Knowledge)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>17.</td>
<td>I know about technologies that I can use for EFL classes.</td>
<td></td>
</tr>
</tbody>
</table>

### TPK (Technological Pedagogical Knowledge)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>18.</td>
<td>I can choose technologies that enhance the teaching approaches for a lesson.</td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>I can choose technologies that enhance students' learning for a lesson.</td>
<td></td>
</tr>
<tr>
<td>20.</td>
<td>I usually think about how technology can influence the teaching approaches I use in my classroom.</td>
<td></td>
</tr>
<tr>
<td>21.</td>
<td>I am thinking critically about how to use technology in my classroom.</td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>I can adapt the use of the technologies that I am learning about to different teaching activities.</td>
<td></td>
</tr>
<tr>
<td>23.</td>
<td>I can select technologies to use in my classroom that enhance what I teach, how I teach and what students learn.</td>
<td></td>
</tr>
<tr>
<td>24.</td>
<td>I can use strategies that combine content, technologies and teaching approaches that I learned about in my coursework in my classroom.</td>
<td></td>
</tr>
<tr>
<td>25.</td>
<td>I can provide leadership in helping others to coordinate the use of content, technologies and teaching approaches at my university.</td>
<td></td>
</tr>
<tr>
<td>26.</td>
<td>I can choose technologies that enhance the content for a lesson.</td>
<td></td>
</tr>
</tbody>
</table>

### TPACK (Technology Pedagogy and Content Knowledge)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>27.</td>
<td>I can teach lessons that appropriately combine TEFL, technologies and teaching approaches.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>25% or less</th>
<th>26% - 50%</th>
<th>51% - 75%</th>
<th>76%-100%</th>
</tr>
</thead>
</table>

### Models of TPCK

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>28.</td>
<td>What is the percentage of how effectively you think you have combined content, pedagogical approaches, and technology in your teaching?</td>
<td></td>
</tr>
</tbody>
</table>
The following section focuses on your recent, COVID-19, online teaching EFL experience with Blackboard (BB). Please answer each question based on your experience during the second part of semester two, 2020.

<table>
<thead>
<tr>
<th>TK (Technology Knowledge)</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Agree or Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>29. I was able to solve my own technical problems.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30. I was able to use Blackboard easily.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31. I was able to share presentations on Blackboard</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32. I was able to share videos on Blackboard</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33. I was able to share documents on Blackboard easily</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| CK (Content Knowledge) Education | | | | | |
|----------------------------------| | | | | |
| 34. I had a difficult time implementing my knowledge about various teaching methods on Blackboard | | | | | |
| 35. I was able to apply my teaching methods during my online classes | | | | | |
| 36. I was able to find various ways and strategies to develop my online teaching practice | | | | | |

| PK (Pedagogical Knowledge) | | | | | |
|----------------------------| | | | | |
| 37. I was able to assess students’ performance during my online classes. | | | | | |
| 38. I was able to adapt my teaching based upon what students understand or did not understand. | | | | | |
| 39. I was able to adapt my teaching style to different learners. | | | | | |
| 40. I was able to assess students’ learning in multiple ways. | | | | | |
| 41. I was able to use a wide range of teaching approaches in my online classroom setting. | | | | | |
| 42. I was able to figure out students’ understandings and misconceptions. | | | | | |
| 43. I was able to organize and maintain my online classroom management. | | | | | |

| PCK (Pedagogical Content Knowledge) | | | | | |
|-------------------------------------| | | | | |
| 44. I was able to select effective teaching approaches to guide my students’ thinking and learning in their online EFL classes. | | | | | |
### TCK (Technological Content Knowledge)

<table>
<thead>
<tr>
<th>Question</th>
<th>25% or less</th>
<th>26% - 50%</th>
<th>51% - 75%</th>
<th>76%-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>45. I implemented some of the technologies that I have always used in my EFL classes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### TPK (Technological Pedagogical Knowledge)

<table>
<thead>
<tr>
<th>Question</th>
<th>25% or less</th>
<th>26% - 50%</th>
<th>51% - 75%</th>
<th>76%-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>46. I was able to use technologies that enhanced the teaching approaches for my online lesson.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>47. I was able to choose technologies that enhance students' learning for the lesson.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>48. I could think about how technology can influence the teaching approaches I use in my classroom.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>49. I was thinking critically about how to use technology in my classroom.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50. I was able to adapt the use of the technologies that I am learning about to different teaching activities.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>51. I was able to select technologies to use in my classroom that enhance what I teach, how I teach and what students learn.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>52. I was able to use strategies that combine content, technologies and teaching approaches that I learned about in my coursework in my classroom.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>53. I was able to provide leadership in helping others to coordinate the use of content, technologies and teaching approaches at my university.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>54. I was able to choose technologies that enhance the content for a lesson.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### TPACK (Technology Pedagogy and Content Knowledge)

<table>
<thead>
<tr>
<th>Question</th>
<th>25% or less</th>
<th>26% - 50%</th>
<th>51% - 75%</th>
<th>76%-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>55. I was able to teach online lessons that appropriately combined EFL, technologies and teaching approaches in my online classes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Models of TPCK

<table>
<thead>
<tr>
<th>Question</th>
<th>25% or less</th>
<th>26% - 50%</th>
<th>51% - 75%</th>
<th>76%-100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>56. What is the percentage of how effectively you think you have combined content, pedagogical approaches, and technology in your online teaching during COVID-19?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Please complete this section by writing your responses in the boxes.

1. How, do you think, online learning helped students learn?

2. What do you see as the main strength of your online teaching experience?

3. What do you see as the main weakness of your online teaching experience?

4. What are your recommendations for a better online learning experience?

5. What are your recommendations for a successful blended learning model of teaching?
Appendix B: UJ Permission Letter

Data Collection Permission Form

This form should be filled by the researcher then approved by the Head of Scientific Research Unit and the Vice-Dean for Development and Sustainability at ELI in the University of Jeddah.

Part I: Researcher’s Statement of Commitment

<table>
<thead>
<tr>
<th>Researcher’s Name- UJ ID</th>
<th>Fatima Mahmoud Basaffar – UJ ID # 04102188</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Title</td>
<td>The Effect of the Technological, Pedagogical, and Content Knowledge of English as a Foreign Language University Instructors’ on their Perceptions of Online Teaching in Saudi Arabia during COVID-19</td>
</tr>
<tr>
<td>Research Overview (purpose/objectives/methods) *No less than 150 words.</td>
<td>The purpose of this mixed-method study is to examine the effect of the technological, pedagogical, and content knowledge of English as a foreign language university instructors’ on their perceptions of online teaching in Saudi Arabia during COVID-19. Instructors’ perceptions will be examined using a modified electronic Technological Pedagogical and Content Knowledge survey (Schmidt et al., 2009). In addition, the challenges instructors faced during their online teaching during the period of the COVID-19 pandemic and their recommendations for a more successful EFL online teaching experience will be examined. Participants will be female instructors teaching EFL in the University of Jeddah in the Kingdom of Saudi</td>
</tr>
</tbody>
</table>
Arabia. The survey will consist of demographic questions, 49 Likert-scale items, and five open-ended questions to allow instructors to express their views in detail. Responses will be kept anonymous. Demographic data and Likert-scale items will be analyzed using the Statistical Package for Social Science (SPSS). Open-ended questions will be analyzed using NVivo.

<table>
<thead>
<tr>
<th>Participants:</th>
<th>EFL instructors at the Eli, UJ.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(level/number of students or teachers)</td>
<td></td>
</tr>
<tr>
<td>Number of Sessions/Hours</td>
<td>15 minutes online survey</td>
</tr>
<tr>
<td>Data Collection Instrument(s):</td>
<td>Online survey</td>
</tr>
<tr>
<td>(questionnaire, interview, classroom observation, etc)</td>
<td>* Please attach a copy of the actual research tool.</td>
</tr>
</tbody>
</table>

I confirm that I will fully address the following ethical issues:

- The participant has been given enough information about the purpose of the research; the reason why she was chosen as a participant; and place, time, duration and frequency of data collection sessions.
- The participant is made aware that she can withdraw from the study at anytime. However, students cannot withdraw from classes where data collection has been approved by ELI.
- The participant is reassured of anonymity and confidentiality issues.
- Sufficient precautions will be taken in the processing and storage of confidential material (interviews, completed questionnaires, written samples/reflections).
Part II: Approval

<table>
<thead>
<tr>
<th>Researcher’s Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatima Baziafar</td>
<td>28/11/1441 – 19/7/2020</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Head of the Research Unit</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Hajar Al-Harthi</td>
<td>22/7/2020</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vice-Dean for Development and Sustainability</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Ahdab Saaty</td>
<td>22/7/2020</td>
</tr>
</tbody>
</table>
Appendix C: IRB Approval Letter

Date: September 16, 2020
PI Name: Fatima Basaffar
Chair Name (if applicable): Monifa Beverly
Application Type: Initial Submission
Review Level: Exempt - Category 2
Study Title: The Effect of the Technological, Pedagogical, and Content Knowledge of English as a Foreign Language University Instructors on their Perceptions of Online Teaching in Saudi Arabia during COVID-19

Approval Date: September 16, 2020

Dear Fatima:

Congratulations! Your IRB application has been approved. Your responsibilities include the following:

1. Follow the protocol as approved. If you need to make changes with your population, recruitment, or consent, please submit a modification form. Remember that we have office hours and group writing sessions to support you.
2. If there is a consent process in your research, you must use the consent form approved with your final application. Please make sure all participants receive a copy of the consent form.
3. If there are any injuries, problems, or complaints from participants (adverse events), you must notify the IRB at IRB@ncu.edu within 24 hours.
4. IRB audit of procedures may occur. The IRB will notify you if your study will be audited.
5. When data are collected and de-identified, please submit a study closure form to the IRB. See the IRBManager instructions on our website.
6. You must maintain current CITI certification until you have submitted a study closure form.
7. If you are a student, please be aware that you must be enrolled in an active dissertation course with NCU in order to collect data.

Best wishes as you conduct your research!

Respectfully,

Northcentral University Institutional Review Board
Email: irb@ncu.edu