# Investigating the Experiences of Lecturers Using Mobile Technology to Teach English at Saudi Universities

**Nouf Almofadi**

A thesis submitted in partial fulfilment of the requirements of
Liverpool John Moores University for the degree of
Doctor of Philosophy

November 2020

# List of Contents

# List of Figures

# List of Tables

# List of Abbreviations

| | |
|---|---|
| BI | behavioural intention |
| BYOD | bring your own device |
| BYOPHD | bring your own personal handheld device |
| CALL | Computer-Assisted Language Learning |
| CALT | Computer-Assisted Language Testing |
| EE | effort expectancy |
| EFL | English as a foreign language |
| FC | facilitating conditions |
| H | habit |
| HM | hedonic motivation |
| ICT | information and communication technology |
| LMS | Learning Management System |
| MALL | Mobile-Assisted Language Learning |
| MMS | multi-media service |
| PDA | personal digital assistant |
| PE | performance expectancy |
| PIMS | Personalised Intelligent Mobile learning System |
| PV | price value |
| SAR | Saudi Arabian Riyal |
| SD | standard deviation |
| SMS | short message service |
| SI | social influence TEFL |
| TESOL | Teaching English to Speakers of Other Languages |
| TOEFL | Test of English as a Foreign Language |
| UB | use behaviour |
| UTAUT | Unified Theory of Acceptance and Use of Technology |
| UTAUT2 | extended Unified Theory of Acceptance and Use of Technology |
| VIF | variance inflation factor |

# Abstract

Mobile learning as a support to teaching English as a Foreign Language (EFL) is still in the early adoption stage worldwide, and in Saudi universities in particular. Such adoption requires several elements to be considered, including the readiness and acceptance towards adopting mobile learning among instructors, which is a critical aspect of ensuring successful implementation. Therefore, this study investigates lecturers' perceptions and use of mobile learning in teaching EFL, using the Unified Theory of Acceptance and Use of Technology (UTAUT2) to guide the research and illuminate the factors that affect the acceptance of mobile learning in the Saudi context.

This study followed a mixed-method sequential explanatory approach, with data collected through a questionnaire survey (n=270) and semi-structured interviews (n=12). The quantitative data were analysed using SPSS, which included both descriptive and inferential statistics, with the qualitative data from the semi-structured interviews analysed via thematic analysis.

The regression and moderation analyses revealed that habit and hedonic motivation have the most significant impact on the behavioural intention of the lecturers to use mobile technology in teaching practice, followed by performance expectancy and effort expectancy. Secondly, facilitating conditions have the most significant influence on the use behaviour to use mobile technology, followed by habit and price value. The education level of the lecturers moderated the relationship between effort expectancy and behavioural intention to use mobile technologies, with the effect increasing as the level of education decreased. Age also moderated the relationship between effort expectancy and the use behaviour to use mobile technologies, where the effect increased with age, as per the relationship between social influence and the behavioural intention to use mobile technologies. Age and education also moderated the relationship between facilitating conditions and the behavioural intention to use mobile technologies, with the effect increasing as the education level decreased and the age increased. Furthermore, gender moderated the relationship between facilitating conditions and the use behaviour to use mobile technologies, where the impact was greater among females than males. Experience also moderated the relationship between price value and use behaviour, with the effect increasing as the level of experience decreased.

This study presents recommendations to those responsible for implementing mobile learning in Saudi universities, such as government decision-makers and university leaders, which relate to the type of training needed, concerns regarding university policy, mobile learning strategy, and overcoming culture and privacy, particularly for female instructors. The study is expected to be submitted to the Saudi Ministry of Education in 2020 to support its review of the Vision 2030 initiative.

# Declaration

I hereby certify that this submission is my own work and contains no material which has been previously published for the award of any other degree or diploma of the University or other institute of higher learning.

# Acknowledgments

All praise and thanks are due to Allah the most gracious and most merciful, who has given me the patience, health, strength, and knowledge to continue this PhD journey towards its conclusion.

My utmost gratitude goes to my Director of Studies, Dr Amanda Mason, for whom I am sincerely grateful for her guidance, encouragement, patience, constructive comments, and tremendous support throughout all the stages of my PhD journey. I would like also to thank my second supervisor, Ms. Brigitte Hordern, and my third supervisor, Dr James Turner, for their invaluable advice and comments.

To my loving parents, I would like to extend my deepest appreciation and my sincere gratitude for their support. They have always been there to support and encourage me on my journey in every way possible.

Particular thanks are also conveyed to my lovely brother and sisters for their continuous support and encouragement.

Finally, and most importantly to my beloved family, to my husband, Salah, for his unconditional support, patience, and sacrifice by providing me with encouragement, love, support, and for always being there for me. I also dedicate this PhD thesis to my two lovely daughters, Muzun and Zayna, for their endless love and patience.

# Chapter 1
# Introduction

## 1.1 Introduction

The purpose of this study is to explore and examine the experiences of English language lecturers in the use of mobile technology in state universities in the Kingdom of Saudi Arabia. This research will investigate the attitudes of Saudi English as a foreign language (EFL) lecturers towards mobile technology in order to determine the reasons that might prevent or hinder their implementation of such technology in their teaching. This introductory chapter provides an overview of the nature of the study, as well as the context of examining the introduction of mobile language learning into the framework of higher education in the Kingdom of Saudi Arabia. It emphasises the importance of the lecturer's role in promoting mobile learning in EFL education, which is imperative to the economic development of the student and state, as reflected by the substantial national investment in technological reform. The aim, objectives and research questions that emerge provide a foundation for the study.

## 1.2 Background of the Study

In common with much of the world, the use of mobile technology in the Kingdom of Saudi Arabia has burgeoned, facilitated by the youth population (under 25 years) comprising over half of the 35 million population (Worldometer, 2020). Data from Global Media Insight (2020) indicate a high level of internet usage and an information and communication technology (ICT) literacy of 32.23 million or 93.31%, with 25 million or 72.38 % of the population being active social media users, often accessed by smartphones. Global Media Insight (2019) conclude:

> *Today, Saudi Arabia has the largest social media presence in the world. With 40.20 million mobile subscribers, mobile penetration stands at 116% of the total population. The major reason for the high number of active social media users is due to the high rate of smartphone ownership. With more than 84% of the country living in urbanized areas, with super-fast internet connections.*

It is reasonable to assert that virtually all university students in the Kingdom of Saudi Arabia, as well as those worldwide, have a particular attachment to their smartphones in terms of organising and managing their lives and communicating with others, as well as arranging meetings (Alsadoon, 2012; Chartrand, 2016). Anecdotally, the researcher notes

that smartphones are deemed an essential electronic accessory on Saudi campuses by both male and female students. Therefore, there appears to be little reason why these devices should not be exploited to advance educational goals through adopting social media for collaborative interaction and the diverse EFL learning platforms. Studies such as that of Alebaikan and Troudi (2010), conducted a decade ago when technology was less sophisticated, indicate that learners appreciate new digital developments, provided that there is a considerable base of motivation for integrative pedagogical practices.

### 1.3 Vision 2030

In 2019, pursuant to the Vision 2030 reforms, the expenditure on the public and higher education sectors was expected to be Saudi Arabian Riyal (SAR) 192.82 billion (over £40 billion) for workforce training, with a further SAR 4.89 billion (nearly £1 billon) allocated for the Vision Realisation Programs for human capital development initiatives (Ministry of Finance, 2019). A large proportion was invested in ICT enhancement, resources and teaching.

Vision 2030 represents the most recent programme of reform initiatives, targeted towards Saudi society and the economy, while including the integration of women into the workforce, since the ruling family seeks to (i) build on its leading role at the heart of the Arab and Islamic worlds; (ii) exploit its investment power to create a more diverse and sustainable economy; and (iii) harness the nation's strategic location to construct a role as an integral driver of international trade through connecting the three continents of Africa, Asia and Europe (Vision 2030, n.d.). Educational reform will develop the skills of the socio-economic sector to drive economic development and employment opportunities, with a focus on technological training.

Mitchell (2017, p.324) notes that "*the English language is seen as a tool for economic development and a demonstration of a nation committed, through educational processes, to cultivating and, potentially, reconstructing a future citizen and society*". This is a reflection of the plans for tertiary education in the Vision 2030 initiative, which aims to (i) reduce and bridge the gap between employment and business needs; (ii) enhance the global status of the most prestigious Saudi universities; and (iii) improve the competitiveness of Saudi Arabian graduates in the global markets (Al-Shehri, 2020).

In the teaching of English, Al-Zahrani (2017) suggests that improvement in pedagogy can be achieved in accordance with Vision 2030's demands through technological liaison

with native speakers, although he does not explore the effectiveness of mobile technology in student learning. Moreover, technology has the potential to introduce aspects of foreign and/or English culture into the learning process, which aids understanding and is essential to the critical skills of lexical choice during communication (Alrabai, 2018). Nevertheless, Aldosemani (2019) suggests that the aims of the initiative have stimulated a greater sense of purpose and motivation for teachers, alongside greater academic awareness of the benefits of the English language for student development and a desire to improve the methods of teaching. This provides considerable impetus for the development of mobile learning that is being embraced by Saudi students.

Al-Shehri (2020) argues that in order for Vision 2030 to be successfully implemented and improve education, amongst other measures there must be (i) an incorporation of technology with which the student is familiar, and the use of social media to provide real-life scenarios; (ii) effective, open-minded teacher training; (iii) an understanding that change and modernisation need not undermine national identity; and (iv) improved communication with teachers. Despite mobile technology not appearing to merit specific reference in the Vision 2030 initiative programme, the programme effectively advocates for a change in teaching attitudes and methodologies, which would benefit from the utilisation of mobile technology's benefits.

## 1.4 ICT and the Tatweer Principles of Reform

A new Tatweer (development) teaching framework, for example, was introduced into 900 Saudi schools in 2013 as part of a ten-year project to modernise the traditional methods of teacher-led pedagogy, to promote more autonomous learning, and to foster critical thinking in order to prepare students for the workforce (Assulaimani, 2019). The central resource-based factor in the 'new' teaching practices is the more general and effective utilisation of ICT by teachers and students. With an initial five-year budget of SAR 80 billion (£16 billion), largely focused on technological advancement, the expectation is that further educated, re-trained teachers will mentor peers in their new skills and teaching methods (Assulaimani, 2019). Thus Dr Ali Al-Hakami, General Manager of the Tatweer teaching framework, asserted that the project will ensure the student and the teacher will benefit both professionally and personally from the range of change (Sofaraa English, 2011).

The aim of the Tatweer teaching framework is to "*provide all students with the knowledge and skills that they need to succeed in an increasingly networked global knowledge*

*economy*" (Tatweer, 2010).

Although the Tatweer project is ostensibly aimed at school reform, its principles apply to the realm of higher education, namely the modernisation of curricula to incorporate the economic and skills development necessary for a new workforce to compete in the global market. This is to be achieved by student-focused pedagogy and a more integral approach to teaching and learning through ICT both inside and out of the classroom, requiring the extensive retraining of educators who can promote students' practical experience, exceptional creativity, higher-order cognitive skills, critical thinking and self-confidence, while enhancing their educational, social, and attitudinal development (Tatweer, 2010).

The Ministry of Education has therefore prioritised the modernisation of the education system in Vision 2030, placing greater focus on electronic and mobile learning (e-learning and m-learning, respectively) in Saudi teaching and learning processes (Kingdom of Saudi Arabia, 2017). This investment, and the value it adds to teaching, are examined in this study as the Saudi authorities continue their drive to transform the national economy away from dependence on the price-volatile finite natural resource of oil into a diversity of manufacturing, knowledge and information-based industries.

## 1.5 Higher Education in Saudi Universities

Formal education is available without charge in the Kingdom of Saudi Arabia, from kindergarten to university, for all Saudi nationals who meet the requisite qualifications of each stage in order to progress to the next level (Saudi Embassy, 2020). Further, education is compulsory until the end of secondary school. This reflects a fundamental development in the provision of a substantially broader provision, primarily, of literacy and numeracy learning after 1932, with Islam at its core, where such learning was previously only available to the wealthy elite (Alhamed et al., 2007; Saudi Embassy, 2020). Whilst deemed by the government as being essential to societal and economic well-being, public education was not controlled by a central, essentially independent ministerial body until 1954, which signposted a major shift through the new development of the Ministry of Education.

Prior to the foundation of the King Saud University in Riyadh in 1957, suitably qualified male students who met the standards of Saudi secondary education would travel abroad to the USA, Egypt and Europe for their higher education needs (Alhamed et al., 2007). However, there are now 25 public universities and 14 private universities in the Kingdom

of Saudi Arabia, with a number of specialised adjunct junior or community colleges. In order to administer the university framework a Higher Education Ministry was founded in 1976, which was subsequently amalgamated into the Ministry of Education in 2014 (Ministry of Education, 2018), representing a rationalisation of the structure to promote the international reach and reputation of the institutions, whereby its student and staff population increased to 1,300,000 and 64,000, respectively (Al-Wabil, 2015). Regarding their educational system and policy, all public universities are equal, receiving the same level of governmental support and having the same properties in terms of departments, deanships and majors.

Education provision is gender-segregated at all levels, with no interaction between male and female students. Therefore, the Kingdom of Saudi Arabia's education system and institutions are currently single-sex, with males and females having equal learning opportunities across campuses, despite studying separately (Ministry of Education, 2018). This segregation remains rooted in conventional norms of observable behaviour, observance and modesty, and the equal right of female students, although separately, to the same education as their male counterparts. It is not the purpose of this research to examine the foundation, justification and continuation of gender segregation, or the 'separate but the same' principle of education, save insofar as it impacts on the use of mobile technology in language learning (Alhamed et al., 2007).

## 1.6 Introduction to EFL Learning in the Kingdom of Saudi Arabia

The Ministry of Education (2017) calculated that in the 2015–16 academic year there were 1,165,091 students enrolled in 25 Saudi government-sponsored public universities, with a further 54,673 university faculty members. This is a result of considerable expansion with 18 new universities and various branches of the existing institutions. English has been taught in the Kingdom of Saudi Arabia since its formation, as the nation sought advantage from its geographical position as a fundamentally important route to the Middle East and beyond by the West (Al-Ahaydib, 1986). Since then, it has generally become the primary language employed in higher education institutions for all subjects in the sciences and arts (Ministry of Education, 2010). Indeed, as the global medium of business communication, English is essential to learn and has become the exclusive language of teaching at the internally renowned public institutions of King Fahd University of Petroleum and Minerals, and the King Abdullah University of Science and Technology. Competence is seen as a route to individual economic advantage,

employment and social improvement, while enhancing the standard of living and business status (Picard, 2018)

Nevertheless, there is a considerable need to address the failures in EFL teaching at the secondary educational level as a large proportion of students leave school without adequate English competency (Alrabai, 2016). An official report of the Test of English as a Foreign Language (TOEFL) results released in 2017 shows that between January and December 2016, the average score achieved by Saudi students was 69 out of a possible 120 (see Table 1.1). This represents the lowest average score in the Middle Eastern and North African regions, several of which had been war zones for the past decade.

**Table 1.1: Average TOEFL score for Middle East and North African students (Adapted from the EF English Proficiency Index, 2017)**

| Country | Reading | Listening | Speaking | Writing | Total |
|---|---|---|---|---|---|
| Lebanon | 21 | 22 | 23 | 23 | 89 |
| Bahrain | 19 | 22 | 24 | 22 | 86 |
| Egypt | 20 | 22 | 22 | 22 | 86 |
| Islamic Republic of Iran | 21 | 21 | 21 | 21 | 84 |
| United Arab Emirates | 19 | 21 | 23 | 21 | 84 |
| Oman | 19 | 21 | 22 | 21 | 82 |
| Qatar | 18 | 21 | 22 | 21 | 82 |
| Morocco | 19 | 21 | 21 | 20 | 81 |
| Syrian Arab Republic | 19 | 21 | 22 | 20 | 81 |
| Jordan | 19 | 21 | 21 | 20 | 80 |
| Sudan | 18 | 20 | 22 | 19 | 79 |
| Palestine Territories | 17 | 19 | 21 | 20 | 77 |
| Libyan Arab Jamahiriya | 18 | 20 | 21 | 19 | 78 |
| Algeria | 18 | 20 | 21 | 19 | 78 |
| Kuwait | 16 | 19 | 21 | 19 | 76 |
| Iraq | 16 | 18 | 20 | 18 | 72 |

| | | | | | |
|---|---|---|---|---|---|
| Yemen | 16 | 18 | 20 | 18 | 73 |
| The Kingdom of Saudi Arabia | 15 | 18 | 20 | 17 | 69 |

Given the investment in education by the Saudi government over recent decades, the plethora of development plans and the expressed but as yet unfulfilled goals, the Kingdom of Saudi Arabia's low regional position is troubling, particularly in the realm of EFL teaching and learning deemed essential to modernisation and global influence. Hence, this study will explore the perspectives of lecturers on using mobile technologies in their teaching, with particular focus on the use of mobile devices both inside and out of the lecture hall, in order to seek solutions to the evident obstacles to learning.

### 1.6.1 The effectiveness of mobile technology in contributing to second language learning

Botero, Questier and Zhu (2019) argue that mobile technology can make a significant contribution to language learning as a result of its integrated nature. Currently, language education is not restricted to the classroom (Sarica & Cavus, 2009), with smartphone applications capable of transforming a workplace into an efficient language-learning setting (Komppa & Kotiainen, 2018). Mobile technology is constantly being improved, while the range of available smartphone applications continues to expand rapidly (Troussas, Krouska, & Virvou, 2017).

Earlier studies (e.g. Chinnery, 2006; Kukulska-Hulme & Shield, 2008; Duman et al., 2015) demonstrated that the flexibility and accessibility of mobile-assisted language learning (MALL) facilitates in the continuation of learning post-class, enabling students to practise language learning in their day-to-day lives, absorb manageable chunks of information, employ expressions in their daily communication and cultural activities, and receive instant feedback from their peers and tutors, thus serving as a strong motivator for learning. In MALL, mobile devices enable immediate internet access, making a broad range of applications available that have the potential to enhance the language learning experience. Kukulsaka-Hulme (2018) notes that these opportunities include listening to the radio while on the move, playing language games in queues, reading blog posts on holiday, and watching foreign films while travelling.

Researchers have highlighted the key role of the intercultural component of language education and the opportunities that the development and ubiquity of mobile phones offer

for intercultural communication (Yang, 2016; Kan, Owen, & Bax, 2018). Chun (2011) claims that intercultural competence plays a major role—alongside linguistic and communicative competence—in second language acquisition. Godwin-Jones (2013) highlights that students require cultural understanding in order to accurately comprehend the meaning of specific words, even if they have outstanding phonological, lexical and grammatical awareness. Byram (1997) concludes that intercultural communicative competence in language learning could provide students with the opportunity to (i) familiarise themselves with other cultures, (ii) enhance their understanding of their own cultural origins, (iii) reinforce their identity, (iv) acquire a more comprehensive understanding of their lives through learning about the lives of others, and (v) form a new global perspective.

Computer and mobile technologies are constantly developing, offering foreign language teachers a broad choice of mobile applications and tools to harness for teaching purposes. This emphasises the importance of ensuring that teachers accept the use of such tools and embrace mobile devices, if the latter are to be successfully introduced into their teaching practice. Further research must therefore be undertaken to analyse the role of teachers, as well as their views and attitudes towards the use of mobile devices in language teaching.

## 1.7 Problem Statement and Purpose of Study

The Saudi government has spent billions of dollars on provisions for technology-based education over recent years, whereby the Kingdom of Saudi Arabia, despite being a developing country, has sought to become technologically advanced in order to attain developed nation status and take advantage of the technological revolution. The Saudi government has established a nationwide £300 million programme (Tatweer) to provide diverse ICT-based applications in the educational setting, with this investment intended to benefit both students and staff by advancing the quality of the e-learning process.

The teaching of English is deemed central to the evolution of business development, and indeed has been part of the education curriculum since the formation of the Kingdom of Saudi Arabia in 1929 (Alshahrani, 2016). English is currently the only foreign language taught in Saudi schools and universities, and therefore is one of the main subjects studied by students (Alrashidi and Phan, 2015).

However, despite several years of English language teaching and learning in the Kingdom of Saudi Arabia, learners have gained, at best, only basic literacy aptitude and

considerable problems remain in terms of communicating effectively in the language. Relevant research has demonstrated that Arabic speakers, including Saudi students, consider studying English challenging. Therefore, the assumption is that traditional learning methods do not lead to satisfactory results (Javid, Farooq and Gulzar, 2012; Liton, 2012; Al-Khairy, 2013; Suvorova et al., 2019).

It has been anecdotally noted by the author in the course of her teaching experience in Saudi universities, and indeed confirmed by Almarwani (2011) and Alrabai (2015), that in Saudi universities, language education has traditionally taken place in teacher-centred classrooms. Instructors appear to be resistant to implementing mobile technology in their teaching, and despite the best efforts of the Saudi Ministry of Education, teachers still tend to use traditional methods such as grammar translation (Abahussain, 2016).

The traditional teacher-centred lecture approach of grammar translation thus remains favoured by Saudi institutions and teachers of English, despite Al Asmari (2013) pointing out that the approach is focused on teaching rather than learning, while fostering dependence on the teacher instead of interactive learning. Broughton et al. (2003, p.22) describe this conventional method of teaching as being "*teacher-dominant interaction*", where the lack of complementary interaction may result in boredom, mistakes and, essentially, resistance to learning (Rosegard and Wilson, 2013). As confirmed by many scholars, the potential of mobile learning in improving language teaching cannot be denied (Christensen and Knezek 2018; Sullivan et al., 2019).

Mobile technology is the most recent, conveniently available accessory to language teaching, and given the ubiquitous and accessible nature of smartphones and tablets, it is important that their actual use by teachers is investigated. This study aims to investigate the perspectives and perceptions of lecturers towards the uses of these portable devices in enhancing language learning. However, this study's investigation is not seeking to replace traditional classroom learning, but rather to offer support to the formal teaching and learning processes through using mobile technology to facilitate language learning by language interaction and practice inside and outside classrooms.

As the teacher is considered to be located at the core of the educational process, the perceptions of the teachers' role in supporting learners in using mobile technology is essential, since students look to their teachers for guidance and motivation. Given that the instructors' perspective is the target of the study, mobile technology learning can only be

implemented where they want, and are motivated to, use the mobile technology. It is integral to the purpose, aim and objectives of this study to ascertain the intention and uses of mobile technology by instructors in order to promote its adaptation into their teaching and the students' ability to communicate effectively by using the English language. Therefore, due to the novelty of mobile learning and teaching, as well as the significant importance of those who have the power to drive such novelty (i.e. the faculty), it is important to investigate the levels of acceptance and readiness for adopting such innovations.

Research has become increasingly common in the exploration of the student experience in the use of mobile learning, with the findings tending to be positive (Alasmary and Zhang, 2019). Recently, following the coronavirus global pandemic, researchers have aimed to review the students' perceptions of e-learning for EFL in Saudi universities during this unprecedented period as the only viable means of learning, owing to e-learning's documented benefits and marginal drawbacks. Studies found that students had positive views of Google Docs, as it improved their writing quality (Ahmad, 2020); Telegram, which was used for vocabulary learning (Abu-Ayfah, 2020); Nearpod, which led to their collaboration (Hakami, 2020); and mobile technologies, which improved student–teacher communication (Alshehri and Cumming, 2020). Meanwhile, slow internet speed was reported as a drawback (Hakami, 2020).

Nevertheless, there has been less academic inquiry into the experience of lecturers using mobile technologies to teach EFL, despite such instructors being central to the success of a relatively new pedagogical practice, and this thus represents a primary purpose of the current study.

In the Kingdom of Saudi Arabia, only small-scale studies have thus far explored the teachers' perspective on the use of mobile technologies for teaching. These studies concluded that language instructors tend towards a positive attitude to the use of mobile phones in the classroom (Al-Fahad, 2009; Almarwani, 2011; Altameem, 2011; Nassoura, 2012; Tayan, 2017) However, some teachers demonstrate a certain resistance to the implementation of mobile technologies. A recent study by Al Alshammari (2020) implied that when comparing students' and faculty members' use of mobile devices for improving English language learning, students' informal use of mobile devices to support their learning is better aligned than faculty members' formal uses of these devices in terms of what one might consider mobile device best practice. Hence, a comprehensive study

exploring the issue through both quantitative and qualitative methods involving all Saudi public universities is needed to acquire an in-depth understanding of the actual use and the experience of using mobile technologies in English language teaching at the university level, to shed light on those barriers that could prevent the lecturers' use of such technology to promote teaching and learning.

## 1.8 Aim and Objectives of the Study

The overall aim of this study is to explore and examine the experiences of English language lecturers in the use of mobile technology in state universities in the Kingdom of Saudi Arabia through the extended Unified Theory of Acceptance and Use of Technology. The objectives of the study are as follows:

1) To determine the usage of mobile learning among English language lecturers in state universities in the Kingdom of Saudi Arabia.
2) To consider the traditional, cultural and practical obstacles to the use of mobile technology among English language lecturers in the research context.
3) To gain a deeper understanding of the perceived benefits and the challenges of using mobile technology to teach the English language.

## 1.9 Research Questions

The following research questions have been developed to achieve the objectives of the study:

1) What is the Saudi university lecturers' experience of using mobile technology?
2) What are the factors that are associated to the Saudi university lecturers' perceptions on the adoption of mobile technology to teach the English language in state universities?
3) What are the challenges faced by English language lecturers in using mobile technology, and how might these challenges affect their usage of mobile technology in their teaching?

## 1.10 The Significance and Rationale of the Study

It is anticipated that this research will make valuable contributions to the body of knowledge on using mobile technology in the teaching of foreign languages, especially for teachers. Therefore, this study is important because it will help to determine the readiness of Saudi lecturers in particular, and lecturers internationally in general, to use

mobile technology in their teaching by investigating their current and actual such use for educational purposes. Moreover, the study can provide decision-makers and university administrators, as well as governments, with valid and reliable data on the optimum means of integrating mobile learning into higher education.

This study is based on the theory and model of technology acceptance in order to predict lecturers' acceptance behaviour in terms of mobile learning technology. The findings of this study will add to the existing body of knowledge regarding the factors related to the acceptance of mobile learning and teaching, by validating the use of the extended UTAUT2 originally developed by Venkatesh et al. (2003), and then extended by Venkatesh et al. (2012). The UTAUT2 was tailored to specify the factors related to the acceptance of mobile technologies in a consumer-use context, while the Unified Theory of Acceptance and Use of Technology (UTAUT) was developed in an organisational context. What is original in the current study is the application of the UTAUT2 model by considering the faculty as consumers within an organisation, as well as the particular cultural context of the Kingdom of Saudi Arabia. While the findings of previous studies have encouraged the use of mobile technologies in learning and teaching across disciplines (Al-Fahad, 2009; Almarwani, 2011; Altameem, 2011; Nassoura, 2012; Tayan, 2017), with the rapid change and advancement of these technologies, understanding the faculty context is essential to successfully implement mobile learning and teaching, and to ensure the economic success of higher education investments.

Finally, moderators such as gender, age, teaching experience and educational level are expected to play major roles in influencing Saudi higher education instructors, and that the future practice of using mobile learning technology in the Saudi context can be informed by considering these moderators and their effects.

## 1.11 The Structure of the Thesis

**Chapter One** provides an overview of the nature of the study and the context of examining the introduction of mobile language learning into the framework of higher education in the Kingdom of Saudi Arabia. It emphasises the importance of the role of the teacher in promoting mobile learning in EFL education, an imperative to the economic development of the student and state reflected in the substantial state investment in technological reform. The aim, objectives and research questions then provide a foundation for the study.

**Chapter Two** presents the literature review that explores the value of mobile technology to language teaching and learning in accordance with the theoretical framework of the study and research questions. This foundation of existing knowledge and research facilitates in addressing the philosophical methodology and practical methods of data collection.

**Chapter Three** introduces the methodology and methods employed in organising and conducting this research**,** explaining the basis of the approach to gathering data on the experiences of Saudi lecturers in the use of mobile technology to support the teaching of the English language. The research context and participant selection are discussed, with a reflective justification for the data collection processes and methods selected.

**Chapter Four** explains the procedures and tools used for the quantitative analysis of the findings emerging from the study data through the descriptive and parametric statistics acquired from the participant lecturers in terms of their questionnaire responses. This preludes the discussion of the qualitative findings, with the results of the mixed-methods approach supporting the veracity and accuracy of the data.

**Chapter Five** considers the data in conjunction and synthesis with prior research results. It presents the interpretation of the main findings of the quantitative and qualitative research, with the focus on how these findings respond to the research questions and thus satisfy the research objectives.

**Chapter Six** draws conclusions from the data, which then form the basis of recommendations for improvement in tertiary language education's use of mobile technology. The limitations of the study are also considered, with a view to the stimulation of further research.

# Chapter 2
# Literature Review

## 2.1 Introduction

Drawing from major published work concerning mobile technology in EFL, this chapter discusses key concepts that are pertinent to addressing the research aim of investigating the experiences of lecturers using mobile technology to teach English at Saudi universities, as well as responding to the research questions, while relating the findings to previous knowledge and providing further research suggestions. It is not possible, nor appropriate, to investigate all the previous studies, and thus choices must be made to ensure the relevance to the current research and its objectives. With this in mind, the objectives of this study guide the literature investigation and are restated as follows:

1) To determine the usage of mobile learning among English language lecturers in state universities in the Kingdom of Saudi Arabia.
2) To consider the traditional, cultural and practical obstacles to the use of mobile technology among English language lecturers in the research context.
3) To gain a deeper understanding of the perceived benefits and the challenges of using mobile technology to teach the English language.

First, a review of technology in education and language education is presented as an introduction to mobile learning. This is followed by an exploration of mobile learning, which considers mobile technology's nature and MALL, its characteristics, and its qualities. After that, digital learning theories are considered, such as behaviourism, cognitivism, constructivism, and connectivism. Then, teachers' perspectives, including their potential resistance to mobile technology in teaching and learning, and teachers' attitudes to mobile learning, are presented. This is followed by a discussion on the instructors' guidance role and how lecturers might employ mobile technology in their teaching, with potential examples provided such as mobile apps for language learning and social networking. After that, the chapter provides a review of the related literature on mobile technology acceptance in the field of learning and teaching EFL worldwide. This review concludes with research on mobile learning and teaching in the Kingdom of Saudi Arabia in general, and then more specifically with research in the Kingdom of Saudi Arabia for language learning. Finally, a theoretical framework based on the

Extended Unified Theory of Acceptance and Use of Technology is presented, with an explanation of its components and a justification for its selection in the current study.

## 2.2 A Historical Overview of Technology in Education and Language Education

According to Reiser and Ely (1997), 'educational technology', 'technology in education' and less frequently, 'instructional technology', all refer to the same subject. Podolskiy (2012) notes that audiovisual instruction first emerged in the 1950s to describe using the senses of sight and sound to assist in the process of learning. Then 'instructional media' alludes to any methods utilised to provide education to students, and thus covers teachers, computers, printed texts, audiovisual aids and a range of other devices (Reiser, 2001).

### 2.2.1 The early twentieth century

The first example of how technology was employed in education can be traced back to the 1900–1910 period, when audiovisual aids such as films were introduced into the classroom (Reiser, 2013). This new approach to learning was embraced in North America with a considerable number of schools, museums and bureaus of visual education arising, which provided schools with access to visual teaching materials such as films, portable exhibits from museums, printed texts, slides and stereographs. Schools also began to employ projectors and educational films as teaching and learning tools (Reiser, 2001, 2013). By the 1920s, the popularity of visual media as a learning tool stimulated the emergence of the visual education movement.

The 1920s and 1930s saw the expansion and development of radio broadcasting, and sound and motion pictures, with the radio soon becoming integrated into educational practice, and thus transforming the visual education movement into the audiovisual education movement. The outbreak of World War II saw audiovisual materials being utilised as training tools in the military services, as well as to prepare civilians for their role in industry. Furthermore, radio represented a highly effective medium for disseminating propaganda. With radio being an effective medium of instruction, once the war was over, audiovisual instruction began to play a key role in schools, and its role in language teaching and learning was particularly valued, where audio, images, photographs, texts and video increasingly supported language development. Salaberry (2001) notes that written texts were soon complemented by audio, images and videos. In the 1920s and the 1930s, language learning theories focused on grammar translation along with the direct method, where the former aims to ensure that students can comprehend

the target language and are familiar with its grammatical requirements, with speaking and communication thus of less importance. Many critics believed that the grammar translation approach was not effective, and it was therefore replaced by the direct method (Ariza, 2011) that focuses on speaking and favours teacher–student oral practice, where the teachers asked questions and the students respond. The direct method does not use the native language of the learner, and in its place a range of objects and visual materials provide verbal inputs. Audiovisual aids are therefore essential for the direct method (Ariza, 2011; Otto, 2017).

### 2.2.2 The post-war period: new devices and fresh opportunities

Salaberry (2001) asserts that the 1950s witnessed the increasing use of radio and television as tools of instruction, which was echoed by the launch of several television channels dedicated to education. By the 1960s, the poor quality of the content on these channels led to a decline in the use of television for education, although programmes of a cultural and instructional nature continued to be made (Reiser, 2001). Television also had an impact on language learning, due to the key role played by audiovisual tools. This period saw the launch of the audio-lingual method, which stresses the importance of communication and comprehension, while favouring repetition, and employed audio tapes and films to develop these skills (Otto, 2017). Furthermore, it was at this point that schools and universities began to develop language laboratories that comprised of rooms containing electronic equipment to enable learners to access authentic materials for learning the target language, as well as facilitating the independent practising of listening and speaking (Peel, 2017). By the 1970s, language laboratories were widespread, and had become an accepted feature of language teaching and learning.

The decision to introduce computers in the classroom was a key milestone in the educational sector. In the 1950s, the first mainframe computers were introduced in universities, and in 1952 IBM built the first commercial and electronic mainframe computer (IBM, n.d.; Otto, 2017), which signalled the onset of an era when computer-based projects with educational aims began to prevail; for example, the University of Illinois designed a computer-based project to allow students to listen to pre-recorded lectures and interact with a range of different resources. At this time, computers were increasingly being employed in linguistics and language education programmes to facilitate in the analysis of texts, such as the widespread use of digital corpora, with the first electronic corpus, the Brown Corpus of Standard American English, developed in

1961 (Fotos and Browne, 2004). This corpus included over one million words drawn from a broad number of fields, including politics and literature (Francis and Kucera, 1964). At present, many free corpora are available online, for example, the Corpus of Contemporary American English and the British National Corpus.

Computers evolved in the 1960–1970 period, and became more sophisticated than the early models since they included components such as floppy disks and keyboards (Crompton, 2013; Otto, 2017). Computer-based learning projects were still being conducted at the New Jersey Institute of Technology and Canada's University of Guelph, for example, while Europe witnessed a surge of interest in educational technology. The UK Council for Educational Technology provided its support for a number of projects, which focused on computer-aided learning (Kaware and Sain, 2015). The late 1960s saw a number of major Computer-Assisted Language Learning (CALL) projects launched, including Programmed Logic for Automatic Teaching Operations (PLATO) by the University of Illinois; the Tutorial Russian Project by Stanford University; and Time-shared, Interactive, Computer-Controlled Information Television (TICCIT) jointly developed by the University of Texas and Brigham Young University (Otto, 2017).

### 2.2.3 Computers in ascendency

The 1980s witnessed the arrival of micro-computers, with computer technology spreading from niche users to the general public. As a result, educators increasingly recognised the importance of computers for educational purposes, since the new models could store the same volume of information, but were smaller and more straightforward to use than their predecessors. Nazimuddin (2015) asserts that by the end of the decade, computers were increasingly being used in schools in the USA, as well as Europe and other industrialised nations. Nevertheless, audio and video tapes were still the primary technological tools employed for language teaching and learning, and CALL remained relatively unpopular. However, once authoring software became available, teachers had the freedom to design their own language programmes, while gaming software started to be linked with language learning. New means of assessing students' outcomes and levels were required, with testing software created as a response. Computer-Assisted Language Testing (CALT) was positively received due to its reduced cost, increased objectivity and safety, thus resulting in shorter testing sessions (Otto, 2017). Over time, CALT has continued to expand and now offers a range of applications.

The final decade of the 20$^{th}$ century saw the arrival of a new generation of computers,

along with novel technological features and devices. Microphones and CD/DVD players became the standard, with the latter beginning to replace audio and video tapes, while increased internet availability made access possible outside of official environments. The internet facilitated easier sourcing of information, communication, locating authentic materials, fact checks and conducting research on any subject. As a result, computers significantly expanded the range of materials and the formats available to users (Teeker and Gray, 2000; Bonaiuti, 2006). Language learning thus underwent change due to the wide availability of authentic materials for communication simplifying the collection of language knowledge and effective communication, as well as raising awareness of the most suitable register of language to address a target culture. Otto (2017) concludes that during this period both computers and the internet facilitated the study of languages and the ability to communicate. However, a large number of schools decided against using computers as a learning and teaching tool, and students did not spend considerable periods of time on their computers or have immediate access to the internet (Reiser, 2001). Otto (2017) adds that educational institutions perceived computers as cost-intensive, and preferred to use traditional books as the primary medium of instruction, although these were regularly supplemented with CDs or multimedia resources.

Higher education institutions, business, industry and the military were the first sectors to fully embrace computers, due to their realisation that information and training courses could be conducted online at far lower cost and with greater accessibility, while learners would be able to follow instructions and undertake various tasks by using computers (Reiser, 2001).

### 2.2.4 Educational technology: the current status

Over the past two decades of the 21st century, technology has expanded to impact every area of our daily lives, including education. Computers are constantly becoming more powerful, while laptops are portable, fast and popular. In 2007, various new technological devices became available, namely smartphones, tablets and more straightforward devices such as e-book readers. Laptops, tablets and smartphones are mobile devices that enable users to access the internet from any place and at any time, with the same functionality of a computer. These devices have also been integrated into education (Dabas, 2018; Persson and Nouri, 2018). The beginning of this century witnessed the arrival of the second generation of the World Wide Web: Web 2.0. Web pages have now become both active and interactive, with a vast number of forums, blogs and social media platforms

allowing users to create, post and share content instantaneously. In addition, the number of websites and resources has also significantly increased (Bonaiuti, 2006). Meanwhile, those normally excluded from mainstream education now have the opportunity to access educational tools and materials. In terms of the theories of language learning, the new emphasis is on interaction, telecollaboration and ensuring access to the target language and culture. Each one of these elements is central and of major importance to exploiting technology to facilitate language learning and teaching (Salaberry, 2001; Otto, 2017).

Keegan (2002) asserts that as the Industrial Revolution of the 18th and 19th centuries changed and reshaped society, so the Electronics Revolution of the 1980s and the Wireless Revolution at the end of the 20th century have driven transformations in education, and the transition from distance learning, to e-learning, to mobile learning, being seen in the same lifetime.

Mobile technologies continue to develop at a rapid rate, in response to the global demand for such handheld devices and the functionalities they offer. This transformation of our societies is particularly noticeable in our social and economic lives. A large number of educational institutions and projects have embraced the use of mobile technologies and harnessed them to improve learning and teaching, as well as to simplify administrative tasks, thus leading to the birth of a new educational notion: mobile learning (m-learning) (Lee et al., 2020). Not only has mobile learning been embedded in higher education, but it has also drawn the attention of teachers and researchers. Mobile learning is currently the most visible, high-profile trend in educational circles and education itself, with many researchers highlighting its advantages (Ismail et al., 2016). The development of mobile technology and Web 2.0 have facilitated new styles of education, namely, mobile learning and MALL. MALL is closely connected to CALL, as they are considered the most common classifications of educational technology for language learning. Moreover, to some extent, MALL is an evolution of CALL as mobile devices derived from computer technology, and therefore there has been a shift from using desktop computers to utilising mobile devices in language education. As the focus of this study is primarily the use of smartphones and tablets, in the sections that follow the researcher explores the nature and role of mobile learning, before then considering mobile technology's nature and MALL, its characteristics, and its qualities.

## 2.3 Mobile Learning

Mobile learning has given rise to a number of definitions from educators and researchers. In previous studies, descriptions have been based on the mobility of learners (El-Hussein and Cronje, 2010) and the size of the device, which is often "*handheld, palmtop*" (Traxler, 2005, p.262)

Mobile learning is distinguished by certain main features closely linked to the concept of using portable and personal devices, as stated above. Therefore, learners can access materials and conduct activities through mobile devices, irrespective of time, and place. Learning is not limited to the time spent in classrooms (McQuiggan et al., 2015). Mobile learning is quite customisable and flexible. In reality, mobile devices can monitor learners' paths and help them concentrate on the activities and resources that fulfil their needs (Ammar, 2017). Thus, definitions of mobile learning appear to be largely based on the process and the nature of the technology. Essentially, the development of the definitions commenced with the technology of the devices, and then moved on to the content and capacity of the device software. Indeed, Brown and Mbati (2015, p.117) warn that "*[t]echnology should always be regarded as the enabler and not as the driver of our teaching and learning activities*". Technology does not inherently advance education outcomes, but its use enables enhanced teaching and learning. The value of the mobility of access to learning material offers new opportunities for collaboration, communication, activities and knowledge accumulation through building, expanding and complementing the learning space (Scanlon, 2014).

Pachler et al. (2010, p.6) focus their understanding on the methods of use and capability of devices, asserting that it "*is not about delivering content to devices but, instead, about the process of coming to know and being able to operate successfully in, and across, new and ever-changing contexts and learning spaces*". The UNESCO report on Policy Guidelines for Mobile Learning explains the context of mobile learning by placing emphasis on the accessibility to content, as follows:

> *the use of mobile technology, either alone or in combination with other information and communication technology (ICT), to enable learning anytime and anywhere. Learning can unfold in a variety of ways: people can use mobile devices to access educational resources, connect with others, or create content, both inside and outside classrooms.* (Kraut, 2013, p.6)

The eLearning Guild base their rationale on the productivity of the devices, as the definition moves from technological precepts to content and the facilitation of life and learning:

> *any activity that allows individuals to be more productive when consuming, interacting with, or creating information, mediated through a compact digital portable device that the individual carries on a regular basis, has reliable connectivity, and fits in a pocket or purse.* (Wexler et al., 2008, p.7)

This develops the definition and value beyond the simple availability of mobile learning processes towards a description of how such devices are used to access learning content. There are, however, technological and accessibility restrictions, with Laurillard (2007, p.156) describing "*digitally-facilitated site-specific learning*", and thus distinguishing it from a fixed physical environment.

Mobile learning should be perceived an approach to learning promoted by the advancement in mobile technology and education (McQuiggan et al., 2015). Thus, it is vital to explore mobile technology and its features as an educational approach.

### 2.3.1 Mobile technology

In the last 15 years, with the aid of modern internet services, mobile devices' features have significantly improved. Today, not only are handheld devices easy to carry, but they also deliver a wide range of multimedia content and internet connectivity. Laptops, tablets, and smartphones are considered to be the most popular mobile devices (McQuiggan et al., 2015). The spread of these devices is verified by a GSMA (2019) study reporting that 5.1 billion or 67% of the global population had a subscription to mobile device services in 2018, which is the web-based account for mobile technology access to the internet. A significant proportion of these subscriptions were for smartphones (60%). Therefore, most internet access requires the use of smartphones.

In addition, the smartphone represents the greatest leap in mobile technology, comprising functions and the size of a mobile phone with many computer functionalities. The use of cell phones for different tasks, including the field of education, is of great importance today (Becker et al., 2017). Smartphones have been enhancing their functionality over the years, incorporating a small computer's functionality with a smartphone that features larger and enhanced touch-screens, virtual keyboards, high resolution, and expanded storage capacity (Godwin-Jones, 2017). Although all of these considerations are highly relevant, internet access is the primary factor since many smartphone functions are

associated with internet access: emailing, chatting, social networking, and browsing. Indeed, smartphones offer the potential of a computer in a portable device, with the ability to carry out several activities simultaneously, and thus have become an essential commodity (Godwin-Jones, 2017).

A remarkable perception of the smartphone was held by Moreno and Traxler (2016, p.78), as "*an extension of human cognition, sense and memory*", while the smartphone was described by Godwin-Jones (2017, p.4) as a "*digital appendage*" that can play an important role in education. In order to provide innovative mediums for delivering education, this expansion of mobile technology has been deemed a positive factor. Mobile technology has fascinating features that can be applied to education through mobile learning, and for the purposes of this study in language learning. Therefore, the next section explores and focuses on mobile technology for language learning.

### 2.3.2 Mobile-Assisted Language Learning

Kukulska-Hulme (2018) provides a recent definition of MALL as "*the use of smartphones and other mobile technologies in language learning, especially in situations where portability and situated learning offer specific advantages*". In other words, MALL reflects the acquisition of languages assisted by a portable device. Handheld devices such as laptops, smartphones, and tablets are mobile devices (Kukulska-Hulme and Shield, 2008). MALL has its origins in mobile learning and CALL. Indeed, mobile learning involves the utilisation of mobile devices for educational purposes, while CALL outlines the use of computer technology in language learning (including internet services). Thus, MALL is a mobile learning branch and an expansion of CALL (Stockwell and Hubbard, 2013).

As a tool and source of content, mobile devices can offer a straightforward and cost-effective approach to language learning. Indeed, it is tool not only for formal education, but also for real-life interactions, such as between Saudi citizens and the expatiate population (Bahrani, 2011). Kukulska-Hulme (2009) reflects on the advantages that mobile learning has to offer the user, while emphasising its effect on the manner in which EFL can be taught and learned. It is a process without limits, with teaching and learning possible both within and outside the classroom, in formal and informal environments, allowing learners a degree of control over their EFL journey. Kukulska-Hulme (2009) explains the challenges of developing and designing a mobile-learning structure that can

clearly differentiate between notions that are best taught in a classroom, and those that should be learnt outside, as well as how they can be connected.

The characteristics and features of mobile devices as mentioned in section 2.3.1 can be effectively used in the field of language learning to develop listening, speaking, writing, and reading skills, as well as vocabulary and grammar, which will be explored in detail in section 2.6.2 in terms of the benefits for language education. The next section provides a reflection on the use of technology in compliance with language learning theories.

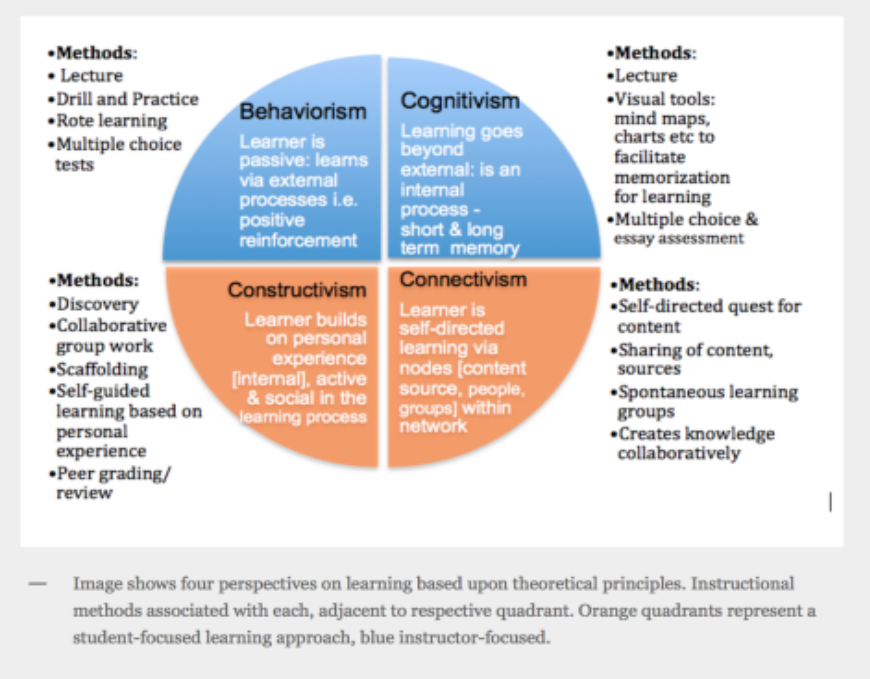
## 2.4 Why Go Digital? Theories of Digital Learning

Hennessy et al. (2010) reported that the rapid evolution of technological development and the inevitable result of cultural and societal change means that the facilities of digital use and competence required the reassessment of the balance of its value in education as a complement to teaching and learning. Digital usage has had a profound effect on the delivery of information; how people share news, ideas and materials; and the manner in which groups collaborate, all of which have been heavily impacted by technology's potential for considerable advantages in teaching and learning methods. Mobile technology also provides a range of capacities that can assist organisation, memory recall and learning accumulation and management through electronic note-taking, email, photo capture and editing, audio and video playback, recording and editing, text messaging and internet browsing (El Hariry, 2015).

Nevertheless, proposals for change in educational practice should not be based on anecdotal accounts of what may or may not improve teaching and learning, but must be grounded in evidence that is capable of providing a theoretical foundation (Timperley et al., 2007). It is not for this study to seek to create a new theory based on mobile learning, but the social constructivism of Vygotsky (1978), Piaget's (1936) cognitivism and the controversial connectivism of Siemens (2005), arguably a sub-theory of constructivism, are worthy of examination in order to ascertain the theoretical basis of how students learn and manage their knowledge. Behaviourism, as well as "*teacher-directed pedagogical practices*", have for decades been the prevailing learning practices in Saudi classrooms, with little contribution in terms of improved student learning outcomes (Sulphey, 2017, p.6.1).

Despite all the practical challenges, nowadays technology constitutes one of the main sources of learning. The aforementioned theories represent some of the most influential

learning theories. Since technology plays a central role in the establishment of such networks, its use in all aspects of education is of paramount importance for learning to take place. These theories are discussed as the theoretical support for this study, which is to identify the use of mobile learning in teaching and learning settings. The four theories targeted for this study are discussed in the next section, with Figure 2.1 below showing the four theories in relation to learning perspectives.




— Image shows four perspectives on learning based upon theoretical principles. Instructional methods associated with each, adjacent to respective quadrant. Orange quadrants represent a student-focused learning approach, blue instructor-focused.

**Figure 2.1: Learning perspectives (Donachy, 2014)**

### 2.4.1 Behaviourism and mobile technology

In the formulation of his thoughts on behaviourism, Watson (1930) argues that behavioural acts such as seeing, hearing, memorisation and recall exhibit the indistinct and co-existent integration of the body and mind (Malone, 2017). The results of activities are measurable, while the operation of the mind is not. This is a reflection of Pavlov's (1927) findings and his experimentation with dogs in a form of conditioning, whereby animals can be trained to respond to an external stimulus to behave in a particular manner, generally that which produces the reward (Peel, 2004). There is no essential difference between the teaching and learning experience of animals and human beings. In terms of education, Budiman (2017, p.102) asserts that "*the task of the teacher is to control the stimulus and the learning environment in order to change the desired destination*", namely, the memorisation of the presented knowledge. The teacher controls the stimulus,

the delivery of knowledge, and the reward in the form of credit and praise where change is achieved, or criticism when this is not the case. The results are observable and measurable.

This theory essentially renders the student as a passive recipient of the teacher's stimulus through presentation, with little involvement in his or her own learning, apart from the provision of a response. What happens in the mind of the learner between the stimulus and response is speculative and unmeasurable (Budiman, 2017). Skinner (1953, p.65) develops behaviourism further, adding to the mix of developing behaviourist theories that of the broader learning environment, asserting that this conditioning of the human subject is "*the strengthening of behaviour which results from reinforcement*". This offers a broad purview of the impact in and upon society and culture, reinforcing norms without critical assessment. Behaviourist education is therefore arguably aimed at transferring accepted knowledge as opposed to emphasising the individuality of the learner, which has broadly suited the establishment value demands of the Saudi administrators.

The introduction of technology, and the exponential burgeoning of widespread knowledge, must necessarily alter behaviourist perspectives of learning. El Hariry (2015, p.306) suggests that mobile technology, whether through learning apps or interaction with teachers, supports the behaviourist learner where "*teaching materials or specific questions is considered a stimulus, while obtaining responses from learners is a response, and reinforcement occurs by providing appropriate feedback*". Online services provide the student with myriad questions and answers, practical exercises and access to audio and visual services, quizzes and translation facilities (Godwin-Jones, 2018). The learner is able to prepare his or her bespoke learning lists to facilitate memorisation and recall, which at face value somewhat underutilises the facilities of mobile software, but is effective for many students accustomed to teacher-presented and directed knowledge and learning. Technology also provides the opportunity to develop new skills of cognition and construction as confidence in the psychological processing and critical analysis of information grows.

### 2.4.2 Cognitivism and mobile technology

Cognitivism acquired momentum as a counter-attack to behaviourism, which depends upon observable behaviour as the basis of human learning. Cognitivists (Paiget, 1936) highlight the function of internal mental practices and how the mind works throughout

the learning process. Cognitivism asserts that knowledge is subjective, whereby the learner's knowledge is constructed based on his or her personal experiences.

Students who adopt a cognitive learning strategy in their education are not passive recipients of knowledge from the teacher–presenter, but rather they create, evaluate and apply information, actively engaging in the development of their own understanding and interpretation of what they are taught or learn (Driscoll and van Barneveld, 2015). Guidance and direction in terms of what must be learned is provided by the teacher as a basis of knowledge and language that the student then processes and questions before 'storage' in the short- and then long-term memory for later recall when required, representing a method of processing information as it attributes learning to a psychological process that cannot be seen beyond the behavioural outcomes (Schunk, 2012).

Piaget (1936) concentrated his study and the theory of cognitive development on children, identifying how a child develops a vision of the world as he or she begins to mature and interacts with the environment. It is not specifically concerned with education, but rather with understanding the surroundings. In the sensorimotor stage, a baby uses its body and senses to explore the world directly; followed by object permanence, which refers to comprehending that something may exist, despite not being visible; and deferred imitation, where a child mimics others' behaviour (Babakr et al., 2019). To these could be added egocentrism, where the child believes that everyone interprets experiences as he or she does (Kesselring and Muller, 2011). In the final operational stage of cognitive development (ages 11 and above), the child matures into logical and abstract thinking, with these skills supporting the evaluation and application of knowledge as life progresses (Babakr et al., 2019). In its application to the world of young adult learning, the student will access information from his or her learning environment, understand it, question its value and archive it for future use.

Mobile learning technology changes the environment from which the student draws his or her knowledge and awareness, moving beyond the physical to the virtual sphere and exponentially increasing the information that requires evaluation, assimilation and management. It offers new directions for teaching practice, where educators may provide a considerable diversity of collaborative as well as individual activities and problem-solving tasks to challenge the student and further evolve the skills of recall and adaptation of their managed knowledge (Darling-Hammond et al., 2020). The fact that, subject to

internet connectability, learning is not confined to any particular place or time, enables teachers and learners to devise methods for accessing a broader range of knowledge to be exploited in addressing the challenges established by the teacher (Kearney et al., 2012). Knowledge will be recalled and evaluated, and then used or discarded from the store of information previously accumulated by the student. Teacher involvement is the guidance to aid in the 'scaffolding' of information, building upon the student's prior knowledge, and providing a task basis that is factored according to the individual's independent learning ability (Lajoie, 2005).

### 2.4.3 Constructivism and mobile technology

The constructivist approach to learning involves "*an active process in which learners construct new ideas or concepts based on both their current and past knowledge*" (Naismith et al., 2004, p.2). Vygotsky's sociocultural theory (1978) proposes that learning is a result of social interaction and participation in human activity relevant to an individual's personal reality, including their willingness to learn something new, and thus supplementing their existing knowledge and understanding. The teacher's role is therefore to direct and facilitate learning, whilst the student takes responsibility for the structure of their learning by interacting with culturally constructed artefacts such as tools, objects, rules and their community (Wortham, 2003). Learning occurs when a person actively participates in an engaging activity where they can experience a range of outcomes, and then meaningfully reflect upon these (Lantolf and Poehner, 2014). In the development of their learning, students "*discover and transform information, check new information against old, and revise rules when they do not longer apply*" (Bada, 2015, p.66).

Indeed, learners construct their own reality based on experiences from their environment, interaction with peers and teachers, and their own desire to find information that fits into what is already retained or memorised, or that which supersedes its value. Thus, active participation in the learning process means the application of new experiences to what is currently understood, making judgements on its accommodation in the pantheon of existing knowledge, or modifying the same (Phillips, 1995). A study by Lantolf and Poehner (2014) found that such interaction in activity-based learning, under the guidance of an experienced teacher, results in more meaningful levels of understanding.

Farris and Ylimaki (2010) envisage the creation of learning communities made up of students, teachers and experts, more easily accessible through internet interaction via

digital tools to access information, share ideas and experiences, and communicate with their peers. Such communities will facilitate new methods of teaching in the constructivist manner of activity-based, real-life experiences for learning and "*games such as role playing or social interaction simulating real world interactions by using their own mobile devices*" (El Hariry, 2015, p.307).

The use of mobile devices enables the student to prepare and construct their own learning materials, avoiding the mere reliance on what they are presented with in class and via textbooks. Pimmer et al. (2016) focused their study on the use of mobile devices as an integral component of pedagogical design and constructivist learning, using video and images to enrich the diverse technological range of learning materials. The constructivist approach introduces different sources and materials to provide a broader dimension to how knowledge is accumulated, learned and psychologically 'stored', before being shared with peers and teachers (Mogashoa, 2014). Lan et al. (2012), for example, advocate using the camera function of smartphones to create visual learning materials, while Zahn et al. (2013) compared the quality and effectiveness of learning between a group of students who prepared and watched short video clips, and another who read newspaper articles, with the results indicating significant differences between students who produced YouTube videos and those who read the articles. The results indicated that video is highly applicable in higher education contexts.

Learning outcomes were improved by those who constructed their own learning materials and used technology to record the teacher's guidance, with Schepman et al. (2012) finding that language students would record their lecturers' thoughts, reflections and knowledge from the classroom in order to aid in the accumulation of pertinent information and enhance the practice of, for example, fluency. Note taking on mobile devices was less comprehensive than the traditional pen and paper approach, with a lack of detail to facilitate practical construction in its amalgamation with existing knowledge (Schepman et al., 2012). The use of devices to aid in the acquisition of learning also appears to have the benefit of simplifying the learning and construction process through the exchange of ideas and the discussion features of the technology (Kessler and Bikowski, 2010). Mobile technology thus expands the manner in which students learn and needs to be embraced by teachers in their pedagogical programmes, reflecting the context of the study and the role of the teacher as the facilitator of opportunities for the constructivist learner using mobile technology.

### 2.4.4 Connectivism: a learning theory for the digital age

Siemens (2006, p.30) describes his theory of connectivism as the process of knowledge accumulation and learning in a "*nebulous environment of shifting **core** elements, not entirely under the control of the individual … driven by an understanding that decisions are based on rapidly altering foundations*". Psychological adjustments are made to 'knowing' through the environmental change, the diversity of information sources and opinions, and the acquisition of the skill to recognise connections and patterns across different situations (Siemens, 2006). This is aided by the knowledge acquired from non-human technological resources, requiring the constant updating and evaluation of information. Mittal et al. (2020) suggests that learning may be considered as regularly reconstructed, with the emphasis on digital knowledge diversity arguably being an adjunct to constructivism. Nevertheless, Siemens (2005) provides a base for the universality, flexibility and usability of different mobile technology on the knowledge accumulation, assessment and management to be introduced into the education framework of independent student learning.

Marham (2006) asserts that the implementation of the theory in practice depends on the trust the student will place on the network of people, tools and content of digital sources. Learning theories and mobile technology cannot alone ensure improvement to the educational outcomes, but they do play their part in the enrichment of the learning process (Craig and van Lom, 2009). Much depends on how teachers and researchers integrate technological practice and theory in the ever-burgeoning learning environment, with Siemens (2005) considering the process to be distinct from the theories of knowledge building in the pre-digital era, with new practice structures deserving a novel philosophy. Marhan (2006) describes the connectivity of technology in learning-community building as being a more vibrant environment than top-down instruction, constituting:

> *a total shift in the balance of power. It depends totally on learners being mature enough to take advantage of it, and teachers being mature enough to accept that their position is fixed only while they are useful to the learners. What is needed, at all levels of education and learning, is an emphasis on developing [skills].* (Marhan, 2006, p.3)

This is a reflection of the development of the young adult student as a 'digital native' (Prensky, 2002), that is, a member of a generation raised on the use of technology to organise their lives, with an enhanced ability to multi-task, communicate freely, share knowledge and satisfy needs (Rakhmawati and Kusuma, 2016).

The digitally accessed Web 1.0 was perceived simply as a mine of information and knowledge, featuring static pages for the delivery of content (Choudhury, 2014). It was arguably a managed and content-updating textbook. This changed with the dynamism of Web 2.0 that facilitated "*participatory, collaborative, and distributed practices which enable formal and in-formal spheres of daily activities on going on [the] web*" (Choudhry, 2014, p.8097). Its capacities and facilities underpin Siemens's (2005) reflection on the development of connectivism theory. The social web "*is often used to characterise sites that consist of communities. It is all about content management and new ways of communication and interaction between users*" (Choudhry, 2014, p.8097). This has profound effects on the construction of learning, from collaboration to the building, supplementing, re-evaluation and assessment of replacing accumulated knowledge.

In terms of foreign language education, Veselá (2013) asserts the potential of connectivism to help learners perceive system and order in apparent chaos (e.g. the intricacies of tense in the English language), to enable learners to keep pace with the evolution of language (e.g. the emergence of new lexis), and to view language as a series of networks to be understood (e.g. lexicology, phonology, syntax and semantics), as well as the connections between them. Nevertheless, Duke et al. (2013) caution against perceiving connectivism as the sole learning theory, and that despite forcing educators to re-evaluate digital education's role in instruction and learning, connectivist theory should ideally be applied as a tool to facilitate learning. Moreover, Gerard and Goldie (2016) posit connectivism as a valuable lens through which to understand teaching and learning via digital technologies, as opposed to a unifying theory to explain learning through networks enabled by technology. Utecht and Keller (2019) highlight the shift that that has occurred in the connected era where educators need to teach learners how to acquire and apply the knowledge required. Therefore, the skills required include applying criticality to information sourced online, making connections between data drawn from different sources, and then applying this information in practice. With contemporary learners being highly familiar with mobile phone technology and social media, connectivism presents opportunities to conceptualise learning through mobile devices that embrace the rapid evolution of such technologies (Al-Shehri, 2011).

In their quantitative study examining technology and online communication platforms' role in connectivism-based English language learning, Sozodoguru et al. (2019) employed questionnaires to investigate how online communication tools impacted the learning process of EFL students. They found that online social networking tools such as

blogs and Facebook exemplify how connectivism is supported through technology, leading to enhanced motivation and enriched learning, since the engagement of learners in learning processes based on connectivist theory facilitates increased collaboration and reflection. As engaged learning is reliant upon such collaboration within the learning community (Conrad and Donaldson, 2004), these social connections enable learners to create structure and meaning from their experiences, which can be stored cognitively and applied in future scenarios (Duke et al., 2013).

In summary, the literature explored thus far has justified the four theories selected as the theoretical support for this study in the mobile technology domain. Such a diversity of new and rapidly evolving technological methods of information delivery and analysis led Bessenyei (2008) to claim that it has resulted in learning theories re-inventing teaching and learning practices, and indeed the purpose of educational institutions. Nevertheless, it is emphasised that seeking proof of this perspective forms no part of the current study.

The realities of teaching makes the implementation of lesson plans based on theory problematic in practice. Freeman and Johnson (1998) raise this point, highlighting the challenges of applying knowledge taken from research for direct and effective use in the classroom. As a result, a great deal of the knowledge in second language acquisition may not be particularly useful for practising teachers. Papert (1980, 1993) adds that the learning theories representing the foundations of change in education remain disparate, due to the philosophical assumptions that underpin them, as well as the absence of stakeholders, learners and instructors who could test these arguments in real educational settings. There is therefore a need to link theoretical views with real-life educational contexts. Theory offers a detailed understanding of learning, but is insufficient in terms of shaping instructional decisions. Tess (2013) underscores that social technologies are reliant upon the instructor ensuring the tool is integrated into the course goals and, perhaps more importantly, to verify the theoretical model for introducing the technology as a learning resource when it is implemented in practice. Web 2.0 tools are in danger of overpowering educational environments, and it is crucial to conduct research to ensure that theory is embedded in the realities of classrooms, with guidelines provided for instructional processes. Such studies will introduce innovation into the classroom, optimising how tools and functionalities are employed within the context of carefully designed and theory-based activities.

Naturally, employing media may require the instructor to assess the most appropriate way of integrating the tool into the course goals, alongside consideration of the theoretical framework for the application of the technology as an effective and appropriate learning resource. Merchant (2021) points out that the latter has been overlooked by both instructors and researchers to date. McLoughlin and Lee (2010) consider the provision and principles of selecting mobile learning as a teaching option, arguing that teaching with technology is associated with one of social constructivism's (Vygotsky, 1978) central concepts, namely, that learning is a dialogue and series of exchanges, whereby mobile technology can drive inquiry-based methods and collaborative work. McLoughlin and Lee (2010) also assert that social software applications encourage active involvement, self-motivation, independent learning and the creation of personal meanings.

After discussing theories in relation to mobile learning, it is worth exploring whether the use of technology is a common practice amongst teachers. Therefore, teachers' perspectives of mobile technology that include identifying potential teacher resistance to mobile technology, their attitudes, identifying challenges that may be faced and suggesting opportunities to help teachers incorporate technology in their practice are discussed in the following sections.

## 2.5 Teacher Perspectives of Mobile Technology

Teachers' perceptions and perspectives of mobile technology as a learning tool, coupled with their desire to test the application of the technology and implement such devices in their classroom, will be a major factor in their successful assimilation in academia. Students are also likely to be heavily influenced by their teachers' attitudes and experience of using mobile technology, thus impacting on their successful use of the tools (MacCallum, 2011). Whilst university lecturers show positive attitudes towards the use of mobile technology in the classroom, and indeed are open to discovering new means of implementation, the reality is that such tools are only infrequently utilised (Davidson et al., 2014; Kennedy, 2014). Traditional educational beliefs, particularly in terms of the teacher–student relationship of authority, limitations of time due to congested schedules and workloads, a lack of technical knowledge and ability, and the failure of authorities to address this in professional development training, are all inhibitive factors highlighted by Brown (2016). Such extrinsic influences, matched to educators' intrinsic lack of self-confidence due to their unfamiliarity and lack of training in the use of the technology,

reinforced by personal beliefs and values, coalesce to hinder the adoption of mobile learning by teachers (Ertmer et al., 2006).

It is to be expected that teachers, as professional practitioners, are motivated by improvement, both of themselves and in their students' learning, and so hindrances are perceived as challenges rather than obstacles (Cho, 2014). Ertmer et al. (2006) suggest that the attitude to the teaching role and its socio-economic purpose will serve to motivate instructors, with the majority of those interviewed able to learn and adapt their teaching methods to include the effective use of digital technology. The self-confidence that comes with training and familiarity with mobile technology enables teachers to overcome intrinsic fears and integrate its use into their teaching practices, classroom management, curriculum design and the planning of learning activities. Teachers may therefore need to change their perceptions of what constitutes teaching. The next section explains in further detail the potential for teacher resistance to mobile technology in teaching and learning.

### 2.5.1 Potential teacher resistance to mobile technology in teaching and learning

These are practical and somewhat minor irritations for the teachers in terms of the use of mobile technology in their teaching, and although they are relatively easy to overcome, there appears to be a reluctance to incorporate the facilities of mobile technology, despite their obvious advantages to learning (Prescott, 2014). The manner in which an educator teaches is largely directed by the personal proclivity influenced by the cultural background, with the current study undertaken in the Kingdom of Saudi Arabia, one of the most conservative states in the region. While the status of tradition is firmly embedded in society and the education of its citizens, this is not static, and initiatives have been introduced to expand the technological provision of learning, particularly Vision 2030 (see section 1.3).

Ajjan and Hartshorne (2008, p.71), however, assert that "*while some faculty members feel that some Web 2.0 technologies could improve students' learning, their interaction with faculty and with other peers, their writing abilities, and their satisfaction with the course, few choose to use them in the classroom*", while Alsolamy (2017, p.194) notes that 28% of the participant academics in his research on a Saudi university "*believe that the relationship between lecturers and students should be formal, even if it takes place in an online setting*". Particularly in the use of social media for educational interaction, over half of the participant academics indicated that the privacy and protection of their image and status as a teacher was a major concern, as was also reflected in a minority of the

student attitudes. This perception somewhat negates the purpose and benefit of mobile interaction and the building of relationships in a class-based learning community.

Research identifying the substantial change in the role of the teacher and the overcoming of entrenched approaches to the presentation of approved knowledge to receptive students as information and knowledge is now available from myriad sources and sites that are technologically accessed (Luzon and Gonzalez, 2006; Collins and Halverson, 2018). In the context of cultural traditions based on obedience and arguably deference to authority:

> *the teacher must assume a role of guide and counsellor, being necessary that he or she should possess a technological knowledge of mobile devices, while also integrating his or her pedagogical knowledge in order to establish the conditions required to foster teaching and learning processes that fit the demands of contemporary society.* (García-Martínez et al., 2019, p.8)

Alharbi et al. (2017) note that mobile technology use in higher education teaching is rare, despite accessibility, while there is a lack of vision and strategic planning (Al-Shehri, 2010). Nevertheless, the approach to teaching and motivation of the teacher for change in personal character traits, cultural beliefs or simply the availability of time and institutional support, will impact on the students' learning experience and attitude to learning with technologies (Alhawsawi, 2013).

### 2.5.2 Teachers' attitudes to mobile learning

The shift in teacher's perceptions and the overcoming of resistance to change, particularly that which is embedded in upbringing, cultural traditions and practices, gives rise to the question of how this can be achieved, and what can be done to motivate the adoption of professional improvement (Zimmerman, 2006). Teachers' attitudes can be intrinsic, extrinsic or institutional, as discussed in sections 2.5.2.1 and 2.5.2.2 below.

#### *2.5.2.1 Intrinsic barriers and solutions*

Reticence in the introduction of mobile technology, given the volume of research indicating student positivity and indeed government economic initiatives over the past two decades, cannot be a result of misunderstanding or the failure to understand the need for change to educational practice (Greenberg and Baron, 2000). The inhibitions may be personal, intrinsic and a consequence of past experiences, or, for example, an inadequate institutional orientation to support change. Andrews and Rothman (2002) emphasise the role of school leadership in promoting improvement and the quality of student outcomes. Habit, fear of failure and the unknown are further intrinsic factors that need to be

addressed by a leadership who understand how to manage, motivate and educate its staff. Simple personal preferences, as well as the basic attitudes towards the use of ICT and the perceptions of what is required to make it of value to learning, will impact intrinsic motivation (Siragusa and Dixon, 2008; Gasaymeh, 2009).

It has been noted that the teacher's level of skill, knowledge and self-confidence will influence the implementation of technology into an educational setting (Lister et al., 2020). Purcell et al. (2013) surveyed 2,500 American teachers, with 69% affirming that the internet had significantly impacted their ability to share knowledge, ideas and working practices with other teachers, while 92% reported that it had improved their access to teaching materials. Three-quarters of respondents, however, felt that their role had become more demanding and stressful due to their need to acquire a broader range of skills. Younger teachers were generally more likely to share ideas and discuss their use of technology with colleagues, while the older, more experienced counterparts often felt that their students were more technologically astute, although this is hardly surprising given the amount of time students typically spend on their devices. Research into teachers' resistance to the use of mobile technology in the classroom, such as that of Zimmerman (2006) and Siragusa and Dixon (2008), indicate the effect of the instructor's personality and attitude, which may be linked to the teacher's level of digital literacy skills and his or her ability to manipulate the capabilities of the software and platforms to effect positive adaptation (Kebritchi, 2010).

The negative attitudes and ingrained resistance to change expressed by some teachers are two of the most significant challenges faced when attempting to implement mobile technology into academic environments (Gomes, 2005), which reflects a lack of digital literacy in terms of the ability to access information and activities, and to integrate and manage technological facilities to the desired context. Low digital literacy inhibits the development of a programme for the use of technology to promote collaborative class learning, which is essential for EFL teachers to meet the outcome requirements of the government (Pianfetti, 2001), and can only be effected through training and the continuing professional development of instructors, particularly those lacking the experience of digital dependence in other facets of their life (Anderson and Rainie, 2018). Digital literacy enables teachers to convey and instil the knowledge and skills their students require to navigate the modern technology-based landscape, a reflection of the ever-changing needs of a society where technology dominates most aspects of life, including the workplace.

#### *2.5.2.2 Institutional, extrinsic barriers and solutions*

Overcoming technological anxiety regarding change to institutional and teaching practice is the function of effective leadership through the encouragement of interaction and knowledge exchange between peers (Olutanji et al., 2014). Constant technological innovation is a challenge, particularly in a traditional education environment, and as indicated in section 2.5.1, this can give rise to personal positive or negative attitudes towards its use. The leaders of the institution must ensure these challenges are overcome in order to meet their obligations to the students and the stakeholders, especially in the context of government initiatives and economic development in the Kingdom of Saudi Arabia. However, the positivity of attitude is not sufficient to effectively adopt innovative technology-based teaching tools in academia, with Zimmerman (2006, p.241) pointing out that "*if school leaders expect teachers to take risks in learning and practicing new behaviours, they themselves must be open to change and willing to expose their own weaknesses by becoming learners*". Changes of strategies, and the fostering of a culture of cooperation and collaboration amongst teachers are the responsibility of a visionary principal promoting participation in decision-making and planning (Zimmerman, 2006).

Support from the institutional leadership improves self-confidence, particularly when it is supported by a programme of continuing professional development (Hoy and Hoy, 2003). Mission statements are not simply for public consumption, but rather intended as a programme for action that all teachers share and strive towards, being realistic and ambitious in their content, and defining the values of the institution and its strategic aims (Cortes-Sanchez, 2017). Schmoker (1999, p.37) cautions that "*umpteen reforms have come and gone, using up time, money, and hope. They have left a crippling disillusionment in their wake, a cynicism about staff development and any belief that training or innovation benefits students*". This, it is suggested, is an inevitable result of the preparation of a vision statement that is never actively implemented. With a reward system and extrinsic incentives focused on mission and vision achievement, and an effective continuing professional development programme, teachers' personal reticence may be overcome and the quality of service to students and other stakeholders improved. There is little doubt that mobile technology is a popular educational tool amongst learners, and that it remains the duty of the teacher to implement its diversity of value, with the next section exploring the teachers' role in mobile learning implementation.

## 2.6 The Role of the Teacher as a Guide and the Potential Use of Technology in Education

Mobile technology is a supplementary support to teacher-assisted and directed interactive practice. Students now have an expectation of higher-level technical skill from their educators, and are less tolerant of what they consider to be out-dated practices (Beetham et al., 2009). Students should be aware about how to use technology to effectively learn a language, and therefore the guidance role of teachers is important. Thus, they demand guidance on the cultivation of their own learning environment, merging social and formal interactions, both face-to-face and virtually (Beetham et al., 2009).

In regard to EFL teaching and learning in the Kingdom of Saudi Arabia, Alrabi (2018, p.103) notes that "*Saudi learners lack authentic situations for practising English communication skills outside the classroom*" and therefore must seek, at least in the first instance, such interaction and communication via technological means. Mobile learning capacity enables this to be achieved (Karimi, 2016).

In the digital environment of education and knowledge building, learners are properly taught by technologically competent teachers either inside or outside the classroom (Lyddon, 2016). However, while learners may be constrained by the university curriculum requirements and institutional rules of conduct and assessment, outside of the classroom there are new opportunities to learn and consolidate learning through a diversity of accessible media (Thorne et al., 2009). The communication and interaction between teachers and students are unconstrained by the limitations of time and presence. The individualisation of learning remains in large part the choice of the student who selects the time, device and media required for the task, with the added benefit of teacher feedback and guidance on the outcome (Cheon et al., 2012).

With respect to mobile devices supporting language classrooms, teachers should consider them as a useful tool rather than a challenge to their function. Language is acquired as it is used by interaction and communication practices, according to the communicative approach. Using mobile devices means providing a tool and an unlimited source of materials to support these educational activities, while the teacher fulfils the role of a guide and facilitator. Teachers can demonstrate how to use mobile devices during class activities. Instructors should obviously consider how mobile devices can be used in the classroom, as well as for homework (Godwin-Jones, 2017). Furthermore, instructors should be encouraged to adopt mobile devices in class as students' use is widespread, and

therefore it would be valuable to teach them how to exploit such devices for education in and beyond the class environment. Instructing students on harnessing mobile technology for accomplishing various tasks is connected to the recent rise in digital literacies (Sawin, 2017). The next section explores different tools and resources of mobile technology that could be used under the guidance of teachers to enhance language learning.

### 2.6.1 Mobile apps for language learning

The development of hardware technology via the evolution of mobile devices is supplemented by the software development of electronic applications, designed to stimulate the learner to download programmes that will enhance his or her language learning (Brand-Gruwel et al., 2014). Education offers significant opportunities for companies seeking to attract students to their software and meet their needs for learning and entertainment, with instantaneous feedback and correction (Hennessy et al., 2010). Students may research and adopt programmes and platforms most suited to the planning of their own learning strategy, be this in respect to portability, screen size or convenience in terms of the hardware, as well as giving consideration to the nature of the activities, communication capacity and the features of the software (Steel, 2012). However, the number and capabilities of software provision in the tertiary language education app market have burgeoned in the last decade, making student choice difficult without guidance from technologically experienced teachers, especially when they are to be employed as a complement to formal learning (Dashtestani, 2016).

It is suggested that continuing software development has led to the free facilities of apps being more than sufficient for language learning, although this is ultimately a matter of personal judgement for the student user. Moreover, it would be inappropriate and unethical for teachers to encourage student expenditure on commercial products. Nevertheless, teacher guidance to help in the evaluation of the diverse range of apps is vital to ensure that all language skills are developed, from new vocabulary acquisition to communicative competence, thus strengthening motivation and building confidence and participation in classroom activities (Klimova, 2019).

Godwin-Jones (2011, p.3) highlights that hardware development, and particularly the iPhone, with its "*larger, high-resolution screen, more powerful processor, more internal (RAM) memory, and faster Internet connectivity*", has encouraged app developers to create applications for learning, news and leisure, downloadable through the Apple App Store. These include language learning software, although in 2011 Godwin-Jones was

somewhat critical of their quality and limitation of activity, incorporating basic flashcard exercises, dual language dictionaries and phrase books aimed at vocabulary acquisition rather than communicative competence. Improvement came with competition incorporating video, images, animated and audio activities with access to real-life situational information on the target language use through, for example, travel guides (Godwin-Jones, 2011). It is only recently that apps have begun to provide communication platforms among users, with those applications that enable learners to have a video call for speaking practice becoming popular. Cambly, for example, is an app for practising English with native English speakers over video chat (Dincer and Dariyemez, 2020). Another example of apps that can enable students to engage in authentic conversation as well as the use of the language is Duolingo, which provides the opportunity to design 'Clubs' where users can communicate and discuss (Goyal, 2018). Communication can thus be achieved through a language learning app and play an active role in the learning process.

Development has not neglected the more original features of mobile language learning, improving and building upon the flashcard game by spacing repetition to embed vocabulary learning, with audio phrase books enhancing pronunciation. The method of the app's delivery of knowledge and learning also has a significant effect on the desire of students to use their lifestyle-enriching mobile devices for EFL learning. Gaming is a much-utilised activity on mobile devices, and thus potentially "a motivational, interesting, and enhanced learning tool" for EFL (Gamlo, 2019, p.49). Games appeal to students' innate sense of challenge, and may be described as engagement in active learning (Fotouhi-Ghazvini, 2009; Lopes, 2014). Mazer, Murphy and Simonds (2007), Shih (2011) and Wilkinson (2016) found that in EFL teaching, the introduction and integration of visual, entertaining activities into the formal classroom education process enhanced motivation and reinforced student learning.

The level of challenge is adaptable to learner confidence, with Lopes (2014) asserting:

> *The game structure should be sufficiently complex to attain curiosity, giving the player some expectations about what will happen. Curiosity can involve sensory stimuli, such as light, sound or other, or it can result from informative feedback, surprising, but also constructive, helping the player to perceive how to make his knowledge more complete and consistent.* (Lopes, 2014, p.567)

The entertainment value of gaming in learning cannot be overstated, and "*grammar and vocabulary games and quizzes can be highly addictive for adults, as they try to improve*

*their best scores and earn rewards*" (Zilber, 2012, p.17). Searching amongst the vast range of software is likely to be beyond the skill and time of the most dedicated of teachers, but considerable effort is necessary to identify robust, learning-focused games with authentic, real-life scenarios combined with solid educational principles (Fotouhi-Ghazvini et al., 2009). Apps conjoin the time-limited formal classroom-based learning with the personal, informal, unconstrained education strategy of students, merging the guidance of app activities with social media interaction, communication and collaboration to promote real-life experience as a foundation for learning (Greenhow and Lewin, 2015).

### 2.6.2 Social networking for language learning

Social networking applications (e.g. WhatsApp, Facebook and Twitter) have become an integrated part of English language learning worldwide (Shih, 2011). Note should be taken in the implementation of mobile learning of the learning complementarity of social networking to the formal and informal learning process, with over 67% of the Saudi population being active users, and around 50% primarily on a mobile device (gmi_blogger, 2019).

In terms of the interactive teaching and learning of language, writing, reading, listening and speaking skills can be enhanced with social networks, as an effective way to practise these skills. For example, in terms of writing skills, social networks have become a digital platform for the activities of circular writing. Social networking interaction takes place in context and is related to the use of real language, so it is possible to learn the pragmatically and socially appropriate use of language (Godwin-Jones, 2017, 2018). Teachers can exploit social networks for class activities as they can establish a private group for their students and encourage them to share posts in WhatsApp as a social network. The same activities can be carried out with a WhatsApp group. Moreover, spelling is accurate as a built-in virtual keyboard suggests the correct form of the word.

The more concise and visual the message, the more conducive the information is to memory retention (Huang et al., 2012). The stimulation of learners' interest (Katz and Yablon, 2011) is facilitated by the use of WhatsApp to continue teaching beyond the classroom, effecting significant improvement in assisting language learning, while increasing motivation, interaction and autonomy (Mufanti and Susilo, 2016). Almekhlafy and Alzubi (2016) note that the EFL students of Najran University in the Kingdom of Saudi Arabia were given permission to interact with native English speakers on a range of subjects, and the ensuing general discussion enabled the development of their

vocabulary bank while enhancing their communicative competence and reducing their anxiety about using English, which is vital to increase self-confidence, and thus the motivation to explore and learn.

As part of their lesson and curriculum planning, teachers have to become proficient in the use of social media and messaging facilities, particularly in tertiary EFL education where the division between formal and informal teacher-guided learning is more blurred (Kukulska-Hulme, 2012). Messaging has evolved from the limitations, and expense, of the short message service (SMS), to the considerably broader facilities of internet platforms and apps such as WhatsApp. This offers the potential for additional methods of communicating information and tasks, sharing learning and documentation, and for providing audio and visual prompts through specifically established, private and secure class groups (Alshammari et al., 2017). Castrillo et al. (2014) report high levels of engagement and motivation in the participation of collaborative activities via WhatsApp, with teachers harnessing the platform for interactive vocabulary learning, aiding reading comprehension, and the sharing of ideas and advice (Hazaea and Alzubi, 2016).

Twitter has become the third most-visited social network worldwide (eBizMBA, 2016), and has inspired millions of users with its short format and innovative mode of interaction (Chartrand, 2012). Twitter can initiate and integrate many EFL listening, writing, vocabulary, and research activities because it can develop the written communication skills of students, as well as their collaborative, analytical, and social networking skills (Mork, 2009). Twitter can also build a community in the classroom, foster collaborative writing, promote editing skills, provide students with opportunities to address issues in formal and informal settings, develop literacy skills, provide reader responses, facilitate collaboration across schools and countries, encourage the assessment of opinion, and promote interaction on a given subject (Grosseck and Holotescu, 2008). Dunlap and Lowenthal (2009) suggest that students and teachers "*were able to participate in networking, teamwork, problem solving, brainstorming, and developing moment-to-moment experiences*" after integrating Twitter in the classroom. In addition, Twitter could improve the fluency of students in oral (listening and speaking) and written (writing and reading) skills, encouraging focus on what they want to say, leading to more engaging and dynamic discussions, and enhancing the interlocuters' metacognition (Mork, 2009; Harmandaoglu, 2012).

There is a quasi-experimental aspect to the use of social media in pedagogical studies of classroom and informal learning, which tends to focus on student attitudes and motivation as opposed to that of the teachers. There may be a negative perspective for practical or cultural reasons, particularly in the traditions of Saudi education practice, which thus negates the value of directed informal learning (Alhadhrami, 2016). In their study of language students and teachers at an unidentified university in the Central-North of the Kingdom of Saudi Arabia, Alshammari et al. (2017) found that lecturers were reticent, and indeed nervous, about the use of WhatsApp for informal group education, with one of the lecturer's responses worthy of particular consideration:

> *Personally, I would be scared to take on a WhatsApp group. I would think ... well I, I don't know how to go about it. I would need to [ask] somebody who had done it to build my confidence to do that.* (Alshammari et al., 2017, p.78)

This is indicative of the training required for language teachers to meet the more experienced expectations of their students, which is suggested to be pertinent to each of the methods of app and social media teaching and learning. Nevertheless, teacher training will shift the focus of responsibility for learning, as well as some of the time pressure, from teachers to students, avoiding the over-reliance on educators who have to set parameters for their availability outside the classroom. Instructors will be able to take advantage of the building of a productive learning community, with a clear sense of identity, purpose and trust enabled to foster engagement and sustained learning (Alshammari et al., 2017).

### 2.6.3 Teacher education and professional development

According to Alshaikhi (2018), the professional development available to EFL teachers does not fulfil the reform agenda required to introduce basic changes to how teachers practise and acquire knowledge. Such programmes lack experiential and practical elements that relate to the classroom environment, with the approach to training, and workshops generally unsuccessful, since many teachers neither develop nor practise the skills acquired during the training (Alshaikhi, 2018). Training has been criticised for its restrictive view of both teaching and learning. Experts are brought in to improve teachers' skills, and thereby raise competencies to ensure that practices meet the national standards. From this perspective, teachers are merely passive technicians, or intermediaries who deliver knowledge, with their main responsibility to introduce the educational reform laid down by the educational authority (Kennedy, 2005). Finally, training has been criticised for failing to effectively close the gap between theory and practice, and for the lack of

accommodating classroom realities and real-time experiences, since it is typically not contextualised.

Two of the research questions in this study involve the discovery of those factors that are associated to the Saudi university lecturers' perceptions on the adoption of mobile technology to teach the English language in state universities, and their experience of using mobile technology. Therefore, the intention to use mobile devices is dependent upon attitudes. Specifically, the researcher set out to investigate whether and which attitude (factors) predict Saudi university lecturers' intention to use or their actual use of mobile technology, and whether some factors are influential. Drawing from the above, it has been established that while it is essential to improve teachers' technological pedagogical content knowledge in order to encourage technology usage in their teaching practice, this in itself is insufficient since other factors such as teachers' beliefs must also be considered (Chai et al., 2013).

### 2.6.4 Language teacher cognition

In terms of second and foreign language learning, cognition refers to the teachers' thoughts, knowledge and beliefs, and how these mental constructs relate to what teachers do within their classrooms (Borg, 2003). Borg (1999) highlighted the gradual acceptance in the literature of the conceptualisation of teaching as a series of decision-making processes that are informed through the teachers' assumptions, attitudes, beliefs, knowledge and theories (i.e. their cognitions). For example, in her research exploring how ESL teachers' beliefs informed classroom practice for beginners, Burns (1992) found a complex network of beliefs that centred on (i) the nature of learning a language, (ii) the written–spoken nexus, (iii) appropriate level-specific strategies, (iv) the learners' capacity to acquire a new language, and (v) the language classroom and the role of the teacher. Moreover, Freeman (2002) explored the conceptualisation of teacher knowledge and learning, identifying the following pertinent themes: the roles of prior knowledge and social/institutional context, how teachers learn teaching practices, and the manner in which their mental processes are conceived.

Borg (2006) sought to shine a light on how language teachers are distinct from those teaching other subjects such as chemistry, history and mathematics, with his study highlighting the teaching content and methodology, the nature of teaching a second or foreign language, the relationship that develops between the teacher and learners, and the native/non-native learner contrasts. In a 2012 interview exploring teacher cognition and

the education of language teachers, Borg underscored the importance of considering language teachers' beliefs due to the realisation that such teaching represents more than merely behaviour, with the influence of underlying beliefs, knowledge and associated constructs meaning that to fully comprehend teachers it is essential to understand their attitudes, beliefs, knowledge and feelings (Birello, 2012). Through their literature review exploring teachers' beliefs in English language teaching and learning, Gilakjani and Sabouri (2017) found that such beliefs are acquired from teachers' experiences of professional development and teaching, which are affected by their words and actions in the classroom, and influence their behaviour, decision-making and learner interactions. This echoes Borg's (2003) assertion that for language teachers, cognition is pivotal and based on their prior experience of language learning, professional development, contextual factors, and classroom practice (Figure 2.2).

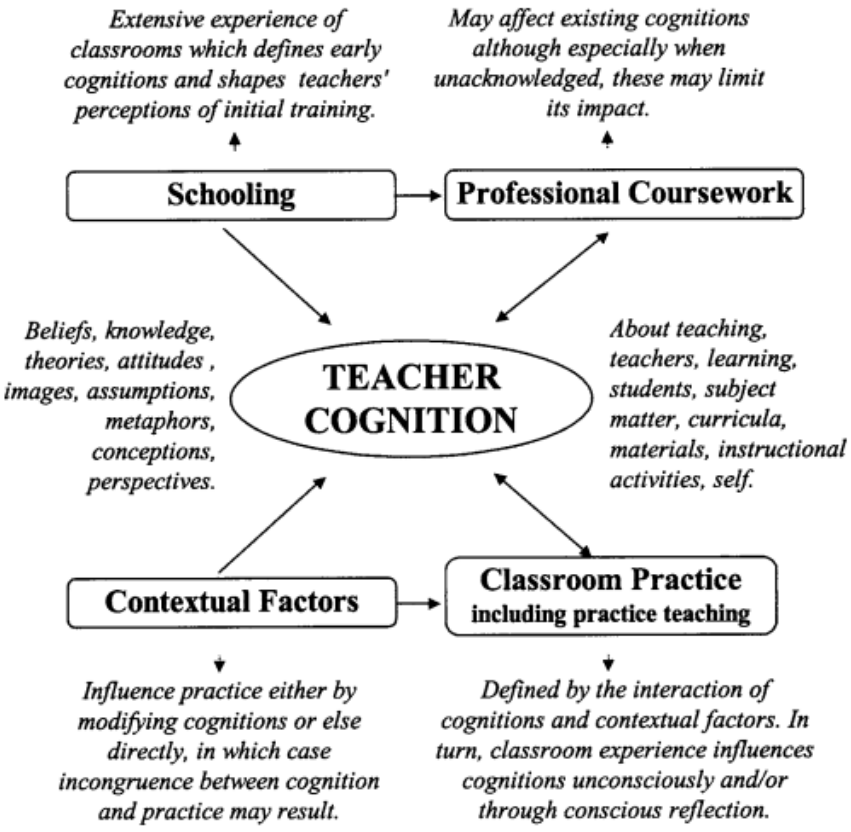



**Figure 2.2: Language teacher cognition: components and processes (Borg, 2003, p.82)**

Regarding this study's focus on the experiences of lecturers using mobile technologies to teach English at Saudi universities, clearly the impact of language teacher cognition will be pertinent to their acceptance and adoption of such technologies, which will be informed and influenced by the lecturers' own educational experiences, professional

development, classroom practice and other contextual factors such as the university setting and national context of the Kingdom of Saudi Arabia. The next section explores the impact of cognition and professional development on learning assisted by computers and mobile technologies.

### 2.6.5 Cognition and professional development: the impact on CALL and MALL

Teachers play a vital role in ensuring the successful implementation of educational change and innovation (Lawrence, 2014). It is broadly accepted that besides employing technology to support their pedagogical purposes through facilitating learner interaction, mediating learning, increasing engagement and setting a context for activities, teachers also utilise technology to enhance the presentation of their lessons, create bespoke materials, and engage in professional development (Li, 2020). Therefore, implementing technology through CALL has gained considerable attention (Alsuhaibani, 2019). As teachers' conceptions of technology's role and function will differ, and due to the significance of the teacher's role in ensuring the successful implementation of technology (Galvis, 2012), consideration of teachers' perceptions and practice of CALL is important (Alsuhaibani, 2019). For example, Blume (2019) explored the behaviours and beliefs of pre-service EFL teachers in terms of language learning via digital games, which shone a light on how their experiences of playing digital games was positively correlated with their beliefs towards using such games for language learning, and links back to Borg's (2003) assertion of the influence of contextual factors on teacher cognition. Moreover, Alsuhaibani (2019) reports on the need to investigate teachers' shifting beliefs towards technology use and CALL, and how this influences their classroom practice.

In the Iranian EFL context, Hedayati et al. (2018) investigated the impact of CALL training on the practice of 78 EFL teachers, where only sporadic use of CALL technologies in their practice was reported due to the participants' professional development being based on self-training as opposed to the participation in workshops, as well as a lack of professional learning communities to facilitate cooperation and peer learning. Despite the participants' self-assessment of being reasonably competent in CALL implementation, they also cited concerns over the lack of guidance on the design and evaluation of such technology use. Lawrence (2014) therefore asserts that ESL teachers require robust training to extend their awareness of CALL's potential, as well as ensuring opportunities through peers to develop their beliefs and critical understanding of CALL, together with their ability to modify their teaching practice to meet contexts

that are undergoing continual change. Li (2020) highlights the extensive literature on understanding how teachers learn to teach, and the manner in which their knowledge and beliefs about teaching and learning change, develop or consolidate, as well as their perceptions of being a teacher.

Teacher education and professional development both play a role in forming teachers' beliefs and practices, representing a relatively overlooked domain in the literature. In addition, the impact of MALL-driven understanding has not been examined in significant detail. Investigating how teachers engage with MALL is vital, with Barnard and Burns (2012) asserting the need for ongoing research into teachers' beliefs and practices in order to monitor the evolution of their relationships with important issues over time, as a component of their continuous professional development (Kubanyiova, 2012). In relation to MALL teacher education, Dean et al. (2015) state that professional development can only have a significant and permanent impact if it directly shapes a teacher's behaviour on a daily basis within the learning context. This argument emphasises the importance of assessing how teachers engage with MALL on a developmental level, and the manner in which this affects and moulds their professional practice.

Ertmer et al. (2012) and Gil-Flores et al. (2017) found that one of the most significant variables for predicting whether teachers will introduce technology into the classroom is their attitude to its use. Such studies categorise attitudes into seven types, namely, performance expectancy, effort expectancy, attitude towards the use of technology, social influence, facilitating conditions, self-efficacy, and anxiety. Taken collectively, or in combination, these factors will predict whether a teacher will use mobile devices (Scherer et al., 2015). Scherer et al. (2015) note that not all these factors have to be taken into account, since only some are likely to have a direct effect on behavioural intention (González-Sanmamed et al., 2017).

Teachers' beliefs and practices play an important role in developing awareness of mobile phone utility and the shift from technophobic to mobile-friendly participation. Their attitudes to mobile phones are formed by personal experience, their mobile phone usage and the facilities they tend to access, which also forms their perceptions of mobile phones in general, while affecting their willingness to use them in practice. Parsons et al. (2019) point out that online continuing professional development courses can offer positive support for teachers' ongoing learning, provided that they are flexible and enable teachers to engage socially and educationally with their peers, while taking into account specific

contexts. It is this inter-teacher dialogue that creates the mental loop they develop through participation in social activities, and ultimately determines their future cognitive function.

According to Warford (2011), as teachers internalise their discoveries, they increasingly demonstrate their capacity to utilise the pedagogic skills and information acquired during training programmes. Guskey (2002) also emphasises that the transformation of teachers' beliefs should be understood against the backdrop of improvements in practice, and when teachers recognise the potential of the programme content, their beliefs will change. Teachers also reported less hostility towards using mobile phones in the latter phases of training, and that the use of mobile phones was being gradually internalised (Van Praag & Sanchez, 2015).

In the context of the current study, it will interesting to note whether cognition or professional development are raised by the Saudi lecturers as being a facilitating or impeding factor in their decisions to use CALL/MALL technologies in their classroom practice, as well as their reflections on the successes of such implementation.

## 2.7 The Advantages and Disadvantages of Mobile Technology

The positive attributes of mobile devices reported by Hsu (2012) are their portability and ease of internet access, thanks to their small size and weight, their affordable pricing and their flexibility of use. Further, Sipra and Ahmad's (2017) study into the effect of technologically enhanced learning on the vocabulary acquisition and comprehension of EFL students found that learning activities completed using a computer in a language laboratory scenario, complemented with vocabulary cards presented on a mobile device, were both effective methods of language acquisition. The authors did not advocate for the exclusive use of technology, but rather to introduce a new dimension of learning to the teacher's presentation. Dong and Jiang (2017) collected EFL learners' perceptions of mobile-assisted feedback on oral production and found that learners who received feedback via their mobile device held a more positive attitude towards their learning, where the immediacy encouraged correction and embedding, and the learners had greater confidence in their spoken English abilities.

The value of mobile technology in learning depends on the societal demographics of ownership amongst young adults, with Thornton and Houser (2005) reporting that 95% of the Japanese population aged 15 to 24 years owned an internet-enabled mobile phone, which is comparable to its proliferation in the Kingdom of Saudi Arabia, with 99% of the

333 university students surveyed regularly using their device to send language learning-related emails to their peers and instructors. They utilised internet-based media and videos to enhance their understanding of both the meaning, and the context, of popular idioms. In the evaluation of their activities, the students commented upon the improvement in confidence due to their interactions and the comfort of using the features of the smartphone for learning English.

Social media such as Twitter and WhatsApp, online forums, news outlets and dictionaries, media content, videos and other recordings, with free apps and educational games, as discussed in sections 2.6.1 and 2.6.2, are just some of the digital facilities that can be harnessed to learn outside the classroom (Lai and Gu, 2011; Lan et al., 2012).

The disruptive or distracting nature of mobile devices is a problem experienced when young adults are permitted and encouraged to use their personal devices, since their wider lives are brought into the classroom. Moreover, the use of the smartphone in particular in the classroom does give rise to concerns of interruption, noise and disruption (Brown, 2020). Olufadi (2015) examined the use of mobile phones in the language education context of students at two Nigerian universities, and found a tendency to multi-task, combining learning with the social domain during class or while completing homework. This led to less favourable outcomes, suggesting a reduction in such students' ability to learn effectively. Students themselves, according to Gikas and Grant (2013), are aware of how integral their mobile devices are to successful learning through the immediacy of access to knowledge, while they also recognise their potential to distract and adversely affect their study. The belief of experienced learners that they can multi-manage their educational and social needs without compromising the former is arguably misguided. Mental acuity and technical ability rarely coalesce, especially in more dynamic classroom-learning environments (Cheon et al., 2012).

The studies have shown that the practical convenience of learning and embedding knowledge with the use of accessible portable devices in which students are 'native' experts offers considerable benefits to continuing language acquisition outside of the classroom. Mobile devices provide access to learning apps and multimedia capacities, through which the student personalises, organises and develops their knowledge, thus enabling a learning community monitored by trained teachers familiar with the technology (Miao et al., 2017). However, the use of mobile devices in the classroom can be an irritant, with students potentially overestimating their ability to multi-task while

staying focused on the learning activity, although this threat can be resolved with classroom-approved rules of usage. The introduction of novel practices of educational pedagogy in the Kingdom of Saudi Arabia has met with bureaucratic resistance, and particularly amongst teachers who already believe they are overworked and burdened by expectation, in addition to the continued prevalence of traditional perspectives and attitudes. Therefore, the next sections explore studies that address the acceptance of MALL around the world, and then more specifically in the Saudi context.

## 2.8 Mobile-Assisted Language Learning in Diverse Global Areas

Kukulska-Hulme (2019) suggests that using mobile devices to promote language learning is becoming increasingly popular. This is based upon her observation of the extensive growth of ICT, and particularly mobile technologies that are portable and can exploit the broad availability of wireless networks. This reflects the widespread device ownership in Saudi society, especially by young adults, and thus access to language learning has become increasingly simplified, convenient, and adaptable to students' particular needs and plans. The application of the MALL programme of definitions and principles is applied to gain an understanding of the benefits associated with practice and the use of mobile learning. Earlier, Kukulska-Hulme (2009, p.164) explained the somewhat transparent motivation for language learners, whereby "*what makes mobile technology so intriguing is that it has an affinity with movement between indoors and outdoors, across formal and informal settings, allowing learners to lead at least some of the way*".

Pemberton et al. (2010, p.144) note that "*mobile phones have a number of characteristics that can be exploited to design the most appropriate learning services for language learners*". Steel (2012) documented the experiences of 134 Australian university students who used mobile apps in their free time to supplement their language learning in Korean, Chinese, Japanese, French, German, Spanish, Italian, Portuguese, Russian and Indonesian, with the students citing advantages such as the apps' ease of use and portability, as well as the time-efficient aspect of learning remotely, with this being indicative of the need for a focus on the design of a complementary mobile learning framework to the classroom. Further, Bozdogan (2015) reviewed 32 MALL research papers published between 2010 and the first half of 2015, finding considerable improvement of language learning in each study where mobile activities were used to supplement class-based materials such as textbooks and the teacher-led presentation of knowledge. This conclusion was supported by the review of Taj et al. (2016), while Sung

et al. (2015) found through their empirical research that 70.7% of students in the experimental groups, who were learning through the use of a mobile device, recorded a significant improvement in language learning, with no discernible improvement in the control group.

EFL teachers find it more practical to use established proprietary applications and platforms that are adaptable to student learning needs and a community of learning programme, since any attempt to develop bespoke apps is cost-intensive and requires a high degree of technical expertise. Hunter and Daly (2013), for example, at the University of Waikato in New Zealand, conducted a small scale EFL MALL research project titled 'Working with Cultural and Linguistic Diversity'. The first part of the study was concerned with identifying appropriate tablet apps for children that incorporated a user-friendly interface and were cost-effective for a modest school budget, while the second phase involved an examination of specific applications utilised by pre-service prospective teachers in order to gauge their opinion on the potential learning value. The study's findings were that while all of the examined apps had potential to facilitate improved communication, interaction and pronunciation, two were more limited. Beyond examining the specific proprietary apps, the study was particularly useful in developing the critical evaluation skills of the prospective teachers.

Cruz (2012) designed a mobile learning project, with the students using a free app via their iPhone or iPod Touch to promote vocabulary development in English language learners of different linguistic backgrounds, in a biology class of an American high school. The use of the app was examined in the context of preparation for a state biology test, with Cruz employing a range of qualitative data methods to explore the benefit of the app in promoting language learning improvement, although the students were less enthusiastic about the biology curriculum. Even those who were broadly unimpressed by the language app, still engaged with it as a study aid. Although the teacher was a traditionalist as far as behaviourist-based teacher-presentation was concerned, he too noted that the app had positively influenced the students' motivation. Nevertheless, there was no outcome assessment, since the purpose of the study was a qualitative evaluation that provided evidence of positive support for mobile app use in language learning.

Begum (2010) reports that the Jahangirnagar University of Bangladesh employed mobile devices as a method for teaching students the use of English prepositions, with mobile phone usage having increased exponentially in recent years due to the inability to afford

personal computers, and demonstrating that mobile devices had tremendous potential as an educational tool, despite certain obstacles that could be addressed by the institution. Over 60% of the participants were aware of the potential of their mobile devices as learning tools, but had little inclination to utilise that purpose as they primarily viewed their devices as instruments to facilitate communication with family and friends. Indeed 5% of female students found the use of mobile devices in learning distracting and tantamount to social abuse, preferring to use them to communicate with their friends, family and teachers. Begum (2010) concluded that teachers and other educational authority figures must be more instrumental in demonstrating the effectiveness of the devices in terms of language education, suggesting that this would be achievable through the setting of usage rules for the classroom, the development of collaborative activities and the use of app platforms to create a closed class community for learning.

Chen and Hsu (2008) indeed attempted to cultivate a flexible, effective environment for students to learn English and improve their vocabulary acquisition by reading English news reports, referred to as a Personalised Intelligent Mobile learning System (PIMS). The fifteen subjects were elementary school English teachers at the National Hualien University of Education in Taiwan who received two hours of training on the use of the personal digital assistant (PDA) devices and the PIMS application before the start of the trial. Data collection was conducted by questionnaire pre- and post-tests in order to identify different levels of English reading skills. The PIMS assessment process facilitated significantly improved English reading and vocabulary learning, with 66% of the participants agreeing that the system was of some benefit to them, 86% that the system's interface was user friendly, and 93% believing it improved their English news-reading skills.

The studies and research progressed, this time in Turkey, where taking into consideration the many benefits to using mobile phones in educational settings, Basoglu and Akdemir (2010) examined the use of mobile phone applications for vocabulary learning with 60 participants on the Undergraduate Compulsory Preparatory Programme. Half of the group held mobile smartphones that were compatible with the requirements of the project learning programme (the experimental group), whilst the remainder of the sample (the control group) used traditional vocabulary acquisition methods via the teacher and textbooks. The mobile phone app designed for the programme (ECTACO Flash Cards) was found to produce improved learning outcomes when compared to traditional

methods, and indeed was considered more positively by the students as a learning tool than the textbooks.

In a central American university, five class projects were created by Kim et al. (2013) for a group of 53 masters-level teaching English to speakers of other languages (TESOL) students from a range of linguistic backgrounds, designed to aid the students in practising their language learning through the use of mobile devices. Data on the perspectives of the students in the pre- and post-study surveys revealed considerable positivity towards the technology, providing new learning experiences for the students and the opportunity to participate in learning activities at a time and place of their choosing. Ultimately, the participants had not appreciated the value of their devices for language learning prior to the projects. In Iraq, Muhammed's (2014) study at the Sulaimani University provided impressive findings from the perspectives of 20 student participants, with the vast majority considering that the use of their mobile device facilities considerably improved their EFL language learning and confidence.

The perspectives of teachers in the UK towards the use of mobile multimedia as part of a language education programme were examined by van Praag and Sanchez (2015) at a private language school through qualitative data collected from interviews and observations. The teachers' attitudes towards the value and disadvantages of mobile technology in language classrooms were predicated on contextual influences such as the school policy of prohibiting smartphone use in class due to their ubiquity and the apparent dependence of students. In the controlled-use experiment in classroom learning, some teacher resistance to their utility for language acquisition emerged, which was grounded in the perceptions of student loss of attention and failure to strictly follow the class rules of use. The teachers were more inclined to consider such devices as irritants and diversions, and would not utilise them in their pedagogy.

It is clear from the evidence of research throughout the world, in the contexts of diverse national educational frameworks, that when students are introduced to the multi-faceted capabilities of mobile multimedia, they find the activities and their general use and access to knowledge to be valuable to their language learning. Harrison (2010, p.67) underscores that "*there is substantial evidence that, in the right hands and used appropriately for specific purposes in specific contexts, technology can be an effective tool in supporting learning and teaching*".

The findings presented above point towards the need for a strong set of requirements for plans to develop a teaching framework capable of effectively incorporating mobile technology into the national context and principles of education, while challenging the default perception that if students think there is benefit, it must be implemented. Even the generally positive global perspectives must be supported by a specific theoretical programme to justify the inclusion of a relatively new pedagogical practice into the pantheon of language learning, as 'one-size' will not necessarily 'fit-all.' After exploring the use of mobile learning to support language learning worldwide, the next section considers its use specifically in the Kingdom of Saudi Arabia.

## 2.9 Mobile Learning in the Kingdom of Saudi Arabia

Mobile learning is new to the Kingdom of Saudi Arabia, whilst proving to be somewhat sporadically popular in other national frameworks, although the Saudi youth population has the essential possession of and familiarity with such devices as tools in the organisation of their lives (Al Harthi, 2018). Fahad (2009), for example, examined the perspectives on mobile learning of 186 female undergraduates at the prestigious King Saud University, and its effect on student retention in the Art and Medicine programmes. The results revealed that 53.8% of students believed mobile learning aided progress due to the immediacy of feedback, with 78.4% citing the enhanced flexibility of learning, and 64% suggesting that mobile learning improved student–teacher communication, and thus learning. Al-Husain and Hammo (2015) also conducted a questionnaire survey on the views of 317 male and female King Saud undergraduate students in terms of the ownership, use and perspectives of ICT and mobile technologies in the 2011–12 academic year, finding high levels of laptop ownership (96%) and that all the respondents possessed mobile phones, with nearly 90% of the owners of such mobile technology expressing the opinion that they improved access to learning.

Alasmari and Zhang (2019) investigated college students' mobile learning technology acceptance in the Kingdom of Saudi Arabia, and also validated their extended framework with empirical data, where they conducted a questionnaire survey of 1,203 college students (591 male and 612 female), with 15 of them also participating in individual interviews. The findings revealed that most students showed high intentions of using mobile learning technology.

It is this level of positivity that must be harnessed by instructors to improve learning outcomes and the value of the young graduates to the Saudi workforce envisioned by

government initiatives. One should not overlook the merit of the more traditional SMS facility used primarily by students to communicate with their teachers and university administration (Al-Husain and Hammo, 2015). Deans of colleges or heads of department may be notified of pertinent administrative issues through bulk messages, as well as staff and students about events and emergencies.

Technology has become synonymous with socio-economic progress in the Kingdom of Saudi Arabia, as highlighted in its Tenth Development Plan (2015–2019) and its integral role in the Vision 2030 programme of modernisation. Since technology is an established and effective means of learning for the young adults who will lead the economic development, it represents the foundation of a knowledge and research-based economy. The context of mobile learning in the future of the development of education and national economies from a global perspective thus appears to be an essential component to formal learning that complements subject guidance. In the creation of a framework for its introduction into the Saudi university system, it is of particular value to be able to examine the application of technology in other domains. This does not imply the transplantation of foreign practices into the Saudi cultural education structure, but rather to gain an understanding of how the value of change may have an exponential effect on Saudi learning outcomes.

### 2.9.1 Mobile learning and EFL in the Kingdom of Saudi Arabia

The Kingdom of Saudi Arabia is a proud Arabic nation that is traditional in its socio-economic conservativism, while appreciating that English is vital to its national and global economic development, which is evidenced through its incorporation of EFL into compulsory learning, as discussed in section 1.6. Technological advancement and competence are key to the future of the nation, as the economy is diversified from its dependence on oil. The proliferation of types of technologies offering English language learning, particularly via mobile devices, is well noted in the MALL adoption of other nations, and will arguably promote student learning and outcomes in the nation (Bahrani, 2011). The increased global necessity for language learning has prompted the development of mobile technology, which would appear vital in the Kingdom of Saudi Arabia to draw English learning out of the classroom and into the context of its use, albeit virtually. Saudi students generally encounter considerable challenges in the learning of English through the medium of the classroom presentation, resulting in poor outcomes as well as inadequate communication and understanding (Javid et al., 2012; Liton, 2012, Al-

Khairy, 2013; Alrabai, 2016, Suvorova et al., 2019).

Saudi students achieved only 'very low proficiency' levels in the Education First English Proficiency Index Report (2014), placed 59th amongst the 63 countries reviewed. This reflects a disappointing status for a wealthy nation that has made huge investments in education, especially when it is noted that the English skills of 750,000 adults across the world, including the poorest of nations, were assessed in the preparation of the report.

Al-Shehri (2012) applied the Facebook social media platform to learning as a result of the high level of usage amongst students, adopting a design-based research method of practices for the purpose of a mobile language learning framework to identify the principles for its introduction into learning practice. The findings were based on the feedback of 33 Saudi EFL students at King Khalid University in Abha studying for a Bachelor of Education degree. They were required, upon instruction, to use their mobile phones to post authentic photos and videos and then comment, in English, on the content or initiate conversational interaction with class members of the group. Social or cultural events were to be uploaded and discussed, connecting the linguistic activities undertaken in class, as well as the related materials posted on the group. Qualitative data were collected by staged interviews and student recall at various stages of the programme, which indicated high motivation levels amongst students to make their contributions interesting and worthy of comment, stimulating collaborative exchange and critical discourse and analysis, with the latter developing more sophisticated thought processes not available through textbook study. The student-centred learning environment assisted free interaction and the provision of peer learning, correction and feedback, contextualising their knowledge in a more relevant virtual reality. The results were indicative of considerable positivity from the students in terms of the value of mobile multimedia learning.

Other studies reported less positive perceptions of the ease of mobile learning, with Stockwell (2007), for example, finding that learners needed more time to complete tasks than they would on a classroom desktop computer. Those who used the desktop devices also scored higher marks than those in the mobile phone group. These results were unexpected, given the attachment of the learners to their mobile phones, and Stockwell's inclination was to consider his study inaccurate and lacking in veracity.

Jaradat's (2014) research involved 36 female undergraduate students from Princess

Norah University in Riyadh who were studying French, in order to ascertain their perspectives on the use of their mobile devices for reading practice, grammar and vocabulary learning, both in and outside of the formal language learning environment of the university. Mobile technology was accepted as a method of language learning by nearly all the students, although 43% stated they believed it changed the way they carried out tasks, and 18% were not familiar or comfortable with the use of technology for learning in general. Furthermore, mobile devices were preferred as a learning tool by 39% of the participants, although more than one-third favoured their laptops. Interaction with classroom peers and their teacher increased exponentially. The opinion of the Saudi female students was generally positive, given mobile access to the internet for knowledge accumulation and the improvement of grammar and communication, although the students were less inclined to use the facilities of their devices for learning purposes outside of the classroom, preferring social interaction on media platforms.

A study by Allam et al. (2017) investigated Saudi EFL students' adoption of Twitter and utilising it as an English language learning tool by surveying 50 foundation year Saudi female students studying at the English Language Institute at King Abdul Aziz University, as well as 50 male and female Saudi students studying English at English language institutes abroad. Based on their findings, the researchers concluded that the rate of adoption was not high, reaching only approximately 43%, and involving those who were innovators, early adopters and early majority. More than half of the participants (57%), including those who were laggards and late majority, were uncertain of using Twitter as an English learning tool. However, those students who reported a neutral opinion were either still not sure how to use Twitter as a learning tool, or were likely to use it only under certain conditions. In general, the students indicated a positive perception towards Twitter, and thus the platform was found to be an acceptable English learning tool that promotes English language learning among Saudi EFL learners. Alshabeb and Almaqrn (2018) surveyed 102 Saudi students and interviewed five Saudi students to explore their attitudes towards integrating social media applications through mobile devices inside and outside EFL classes. The study found that Saudi EFL students showed positive attitudes toward the usage of social media applications through mobile devices in EFL classes.

The mobile-based language teaching and learning of EFL is still in its infancy, particularly in the traditional context of the Kingdom of Saudi Arabia, which is still coming to terms with ICT-based learning a decade after its introduction. The attitude of

the authorities and higher educational institutions must change to meet the Vision 2030 initiative's demands. Mobile technology itself is a rapidly evolving entity in a highly competitive market, with Kukulska-Hulme (2019) recognising that the number of learning methods and activities based on MALL continues to increase at speed. MALL has developed from a teacher-directed to a learner-centred text-based model, while adding capacity to incorporate multimedia activities and a system incorporating collaborative speaking and listening exercises as students construct and manage their own knowledge. The aforementioned studies (Stockwell, 2007; Al-Shehri, 2012; Jaradat, 2014; Allam et al, 2017; Alshabeb and Almaqrn, 2018) suggest that detailed profiles of learners can be developed by their teachers to assist in the focused investment of time and money in MALL programmes. Therefore, mobile technology will provide opportunities for educational innovation, with its success almost entirely reliant on human factors and the widespread adoption and acceptance of new mobile and wireless technology.

Through the positivity reflected in the studies examined herein, the popularity of mobile technology use amongst students provides evidence of the value of the technology to learning (Venkatesh et al., 2006; Al-Fahad, 2009; Wang et al., 2009; Rogers et al., 2010). There remains, however, challenges to the introduction of MALL into classrooms, not least in the Kingdom of Saudi Arabia due to the cultural and conservative resistance to change. Students in all age groups, from primary school to postgraduate, are effectively attached to and dependent upon their mobile devices and social media apps.

Tadros (2011) reported that some teachers have reservations about the use of social media in particular, and its use in the classroom, coupled with a somewhat technophobic unwillingness to learn new pedagogical methods and techniques. As teachers, one of the major challenges being faced is how to attempt to bridge the gap between traditional and contemporary learning methods, integrating informal learning outside the classroom and formal learning within it. The educational use of mobile technology, given the students' integration into their learning development and knowledge management, makes its introduction essential to the creation of a virtual reality of language use, improving communication and the collaborative skills so important to the modern workplace, which will be fostered as competence grows. The use of the English language is given a context, not simply as words taught on a textbook page. This is a rather simplistic statement of fact, and therefore addressing the concerns of teachers and instructors is an important next step to ensure that the technology meets the pedagogical needs and standards. In 2012, for example, Viberg and Gronlund (2012) asserted that mobile devices would soon be

accepted and incorporated into the academic world in a manner similar to their seamless integration into all aspects of modern living.

The previous research studies outlined above, which were conducted over more than a decade, reveal that in terms of the Saudi higher education context, it would be pertinent to explore the behavioural intention and the use of mobile technology among EFL lecturers at Saudi universities, with the Extended Unified Theory of Acceptance and Use of Technology (UTAUT2) the most suitable model. To achieve the research objectives, a theoretical framework based on the UTAUT2 will be employed. The next sections provide an overview of the model, with an explanation of its components and a justification for its selection in the current study.

## 2.10 Mobile Technology and the Theoretical Models of Teaching and Learning

The exponential growth of mobile technology is not simply a reaction to consumer demand for greater sophistication in facilities, but rather the creation of new software is a drive for the development of the market apposite to the evolution of mass educational needs (UNCTAD, 2019). The studies noted herein examined factors relating to teacher and learner perceptions, attitudes, readiness, and acceptance towards mobile learning and teaching. The broad findings are indicative of the development of behaviourism towards a more sophisticated critical and evaluative knowledge management model of constructivism, cognitivism and connectivism. Teaching and learning necessarily changes where the range of potential mobile devices is adopted, giving rise to the need for "*verified instructional strategies, tactics, and techniques*", and a reasoned strategy selection based on research and its integration into the education context (Ertmer and Newby, 2013, p.44).

### 2.10.1 The Unified Theory of Acceptance and Use of Technology Model (2003)

The development of models of best practice, ensuring teachers' acceptance of ICT introduction into the classroom-based curriculum, and the promotion of extra-institutional learning, commence with the goals of teaching. Models such as reasoned action, the creation of motivation and the planning of teacher and student behaviour lead to the construction of a learning environment, often founded on cultural and institutional principles through which education is delivered. The goals of the construction of a new teaching framework are stipulated by Wilson (2020) as:

(i) the development of highly tuned and more varied professional repertoires and skills, allowing them
(ii) to reach larger numbers of students more effectively, and
(iii) create either more uniform, or varied effective instructional events, guided by targeted subjects, content, or processes to
(iv) enable better understanding of the focus of the curriculum,
(v) matching different models of teaching to both learning outcomes and/or targeted learning populations,
(vi) gaining necessary insights into why some methods work with some learners, while others do not, in order to
(vii) radically modify or redesign existing methods of teaching and instructional delivery so that the emerging or altered instructional techniques may better meet the needs of today's students.

In the context of ICT introduction in its various forms, Venkatesh et al. (2003) tested the constructs of established models of technology acceptance and the conveyance of knowledge by examining user acceptance studies, and then observing and comparing the same. The result was the UTAUT Model 2003, based on the premise that technology must be used to ascertain the achievement of improvement outcomes before it can be accepted by users as a predictor of planned behaviour (Venkatesh et al., 2013). Venkatesh et al. (2003) synthesised eight common ICT acceptance models into the UTAUT, predicated on the factors of performance expectancy, effort expectancy, social influence, and facilitating conditions, which are measured using the four qualitative moderating variables of age, gender, experience and voluntariness of ICT users. This theory aims to assess the degree of collaborative use of technology in knowledge-intensive environments (Brown et al., 2010).

This synthesised agglomeration of integrated models proved more comprehensive and sophisticated in its findings than the use of any single model in determining the prospect of successful implementation and the value of ICT as a predictive tool for managers, accounting for 69% of the variance in user intention compared to the 17–53% accounted for by the eight models. UTAUT was tested again, and subsequently confirmed, through the two new data sets, accounting for 70% of the variance in these cases. The model could therefore be more effective in facilitating the understanding of the drivers of acceptance, aiding in the strategic development of proactive design interventions such as training and marketing directed at groups of more recalcitrant users. Figure 2.3 illustrates how the

model works.

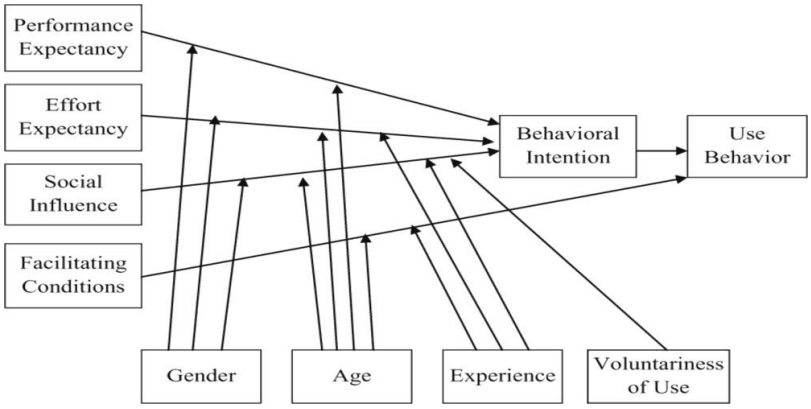



**Figure 2.3: The Unified Theory of Acceptance and Use of Technology Model (Venkatesh et al., 2003, p.447)**

The diagram in Figure 2.3 presents a representation of the four key constructs of performance expectancy, effort expectancy, social influence and facilitating conditions as direct determinants of usage intention and behaviour, mediated by the effects of gender, age, experience, and voluntariness of use in terms of behavioural intention (Venkatesh et al., 2003). Venkatesh et al. (2012) later stated that in the years since its original development, UTAUT had become a baseline model applied to the study of a wide range of technologies in organisational and non-organisational environments. Therefore, the model forms a basis for the assessment of the introduction of mobile technology in higher education language teaching and learning. This model was developed further in 2012, making if more apposite to the aim and objectives of this research.

### 2.10.2 The Extended Unified Theory of Acceptance and Use Technology Model (2012)

In their successful applications of the 2003 model of assessment in diverse environments, Venkatesh et al. (2012) modified the model further based on a systematic evaluation and theory incorporating the development of multimedia features relevant to consumer technology usage. UTAUT2 saw the addition to the original key constructs of three further core factors of 'hedonic motivation', 'price value', and 'habit', with the removal of the 'voluntariness of use' moderating factor, given that behaviours are generally voluntary and entered into as a result of the key and core factors. Figure 2.4 presents the revised model.

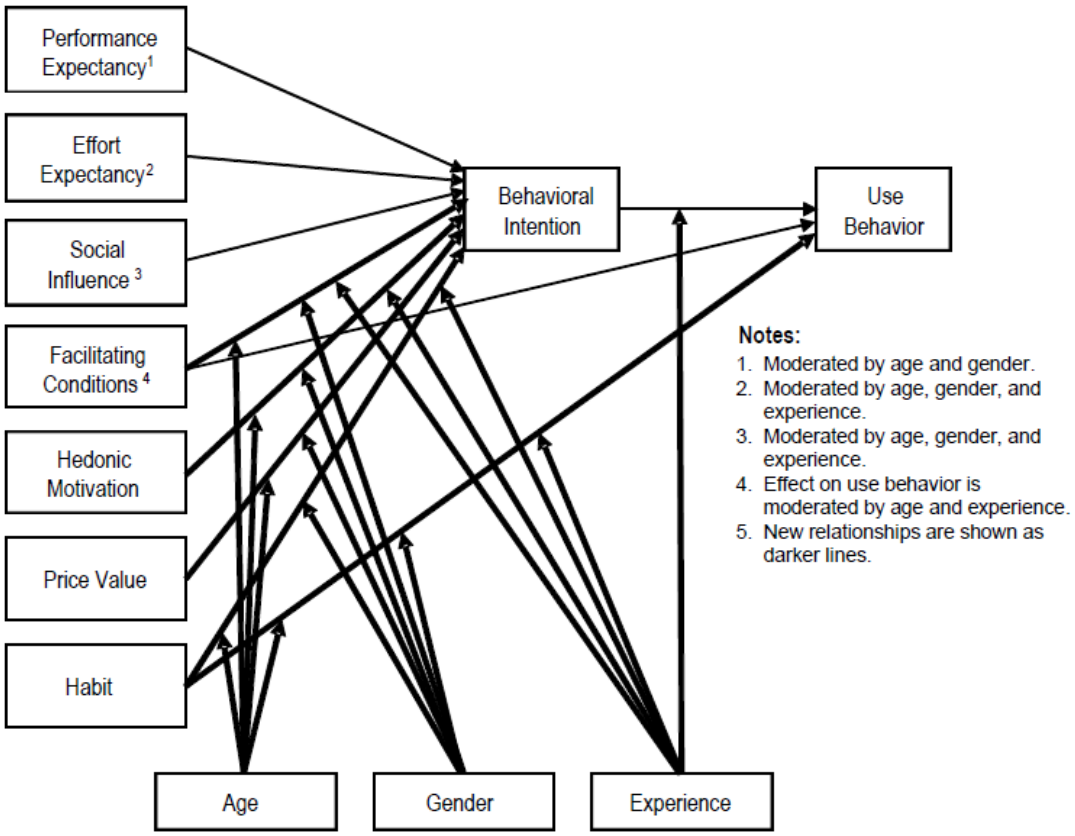



**Figure 2.4: The Extended Unified Theory of Acceptance and Use of Technology Model (Venkatesh et al., 2012, p.160)**

The acceptance and adoption of both new and existing classroom technology by members of the business faculty at the US-based South-Eastern University was investigated by Lewis et al. (2013) using the UTAUT2 model, with the sample of 46 participants representing 51% of the lecturer population. The data collected using an online survey indicated that effort and performance expectancy, habit and social influences were the most significant factors affecting the lecturers' overall acceptance and utilisation of technology in their classrooms.

Raman and Don's (2013) study at University Utara, Malaysia, examined pre-service lecturers' approval and use of a Learning Management System (LMS) as part of their training. Furthermore, the study investigated the effects of effort and performance expectancy, hedonic motivation, social influences, habit and facilitating conditions on both use behaviour and behavioural intention through the UTAUT2 model. Given that the university provided the Moodle LMS free of charge, the researchers removed the 'price value' construct from their proposed model. Online surveys were employed to collect data from 288 students, which revealed that the most significant predictors of behavioural intention were facilitating conditions and hedonic motivation, while habit did

not have any notable effect. The students were more inclined to use technology where it was easily accessible and provided outcomes that made them feel they were progressing and succeeding in their studies, reflecting 29.5% of the variance in the participants' intentions to use the Moodle LMS.

Yang (2013) removed both the moderating factors and the 'facilitating conditions' construct from their study on the UTAUT2 model, aiming to explore which factors were likely to determine undergraduate students' intention to adopt mobile learning. The most positive determinants of the students' adoption of mobile learning intentions were price value, social influence, hedonic motivation and performance expectancy, while self-management of learning, an add-on construct, appeared to have a negative effect on the intention to adopt and use mobile learning. Such factors accounted for 33.5% of the variance in student intent, although actual use behaviour was not examined.

Using the UTAUT2 model as a base, Kang et al. (2015) explored the determination and adoption intentions of 325 students from four universities in Seoul by survey. After removing incomplete questionnaires and missing data, the remaining 305 responses revealed that facilitating conditions, performance expectancy, hedonic motivation, habit and social influences were all notable predictors of the behavioural intention to use mobile learning, and accounted for 45% of the variance in such intentions.

Considering the results of the aforementioned studies, it is concluded that internet-enabled mobile devices are no longer luxury items in developed nations, but rather represent basic commodities (Liu and Li, 2010), although further research needs to be considered to determine whether the same conclusions can be drawn in the context of developing countries. Jawad and Hassan (2015), for example, examined the adoption intentions of mobile learning in Iraq based on the UTAUT2 model, adding the supplementary factors of self-management of learning and perceived playfulness to seek an explanation for the varying levels of acceptance of such technology. This was an inspired inclusion, given that the qualitative data collection methods indicated effort and performance expectancy combined with self-managed learning, social influence and perceived playfulness (essentially 'fun' use) were all found to be the main indicators of behavioural intentions. The most prominent indicators of usage behaviour were behavioural intention and facilitating conditions, accounting for 39% of the usage behaviour variance. The authors did not differentiate between the results from the 122 students and 27 lecturers, despite collecting demographic data, which may have proved

useful in determining lecturer motivation. In the Kingdom of Saudi Arabia, Alwahaishi and Snasel (2013) found that the behavioural intention to use mobile devices was most strongly affected by the perceived playfulness and performance expectancy.

Alkhunaizan and Love (2013) investigated which factors were most likely to predict the consumer's intent to use mobile commerce by expanding the existing Technology Acceptance Model, a constituent of the UTAUT predictive agglomeration. The most influential factors in this scenario were found to be the perceived ease of use, as well as the functionality, financial cost and gender. Then, Seliaman and Al-Turki (2012) examined how mobile technology was employed by students to access course materials and other related academic information, as well as for the acquisition and sharing of knowledge and other related learning activities at the College of Computer Science and Information Technology at King Faisal University in the Kingdom of Saudi Arabia. Fifty-five responses were evaluated using Pearson correlation analysis of the use/non-use variables, and found that perceived innovativeness was the only factor that positively related to the behavioural intention to use mobile learning. However, the study was limited in terms of the generalisability due to the survey only including male students from one small college in the university, which only provided education in ICT, and the use of a single, simple correlation analysis of the collected data.

Regarding the relationship of the UTAUT2 model to teacher cognition, in Burns's (1992) study on the influence of ESL teachers' beliefs on their classroom practice, the moderating factor of experience appears to have imposed a strong influence in terms of the teachers' perceptions of the language classroom and their role within it, as well as their understanding of the learners' ability to learn in general, and to learn English in particular. This emphasis on experience is echoed by Freeman's (2002) review of the impact of learning and knowledge on English language teaching in North America, where he highlights that teacher education must focus on the skill of reflexivity to enable teachers to exploit their rich narratives of previous and current experience, in order to make sense of and enrich their work. In Borg's (2006) study exploring the distinctive nature of language teachers as perceived by over 200 pre-service and practising participants, the moderating factor of experience was again pertinent, with the respondents citing the dynamic nature of language teaching that has greater relevance to daily life, as well as the influence of culture that must be factored into teaching practice. Li (2020) cites the importance of teacher cognition in terms of their perceptions and behaviours in teaching, the teacher/learner roles, pedagogy, and professional

development, which can be said to be impacted by the constructs of performance expectancy (e.g. Will the approach or activity aid learning?), effort expectancy (e.g. Is this an efficient use of the teacher's time and resources?) and social influence (e.g. Have other peers or trainers encouraged this approach or activity?).

Moving on specifically to the relationship between the UTAUT2 model and teacher cognition in the CALL domain, the moderating factor of experience was not prominent in Blume's (2017) research, where 150 German questionnaire respondents as pre-service EFL teachers were receptive to the use of digital games as a medium for learning, despite their lack of experience in utilising such technologies for learning, with 63% never having played English computer games in the classroom. This finding implies that the lack of direct learning experiences did not have a strong negative moderating influence on the participants' behavioural intention to use technology to aid language learning in the classroom, although perhaps their indirect experience as passive game players influenced their positive perceptions through the construct of performance expectancy. In Hedayati et al.'s (2018) study on Iranian EFL teachers' use of CALL technologies, the lack of formal training was a significant negative influence on their intention to use behaviour, highlighting the importance of the social influence and effort expectancy constructs through peers and trainers providing teachers with the belief, confidence and skills to utilise CALL effectively in the classroom.

In terms of second language learners, Hoi (2020) employed survey data from 293 higher-education Vietnamese language learners to explore the acceptance and use of MALL in a developing country context, reporting the important roles of performance expectancy and attitude in the learners' behavioural intention and use behaviour of MALL. Interesting, facilitating conditions was not reported to have a direct positive influence on use behaviour due to the limited accessibility to high-speed networks and the lack of an IT assistant, despite the learners' perceptions of facilitating conditions as an important construct, thus highlighting the challenges of implementing CALL and MALL in developing nations with limited resources. In the China context, Huang (2018) investigated the use of social media by university undergraduates and lecturers through the theoretical lenses of constructivism, connectivism and UTAUT2, finding that performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, and habit all had a significantly positive impact on the participants' intention to use social media.

In their Turkish study measuring university lecturers' acceptance of technology adoption and use in their foreign language classrooms, Gümüşoğlu and Akay (2017) found the majority of the lecturers believed that in terms of facilitating conditions they had the required training and resources to use technology in the classroom, with technical support available if required. Nevertheless, some doubts were expressed regarding performance and effort expectancy, in terms of whether the technology use would increase their productivity and fall within their skill set, thus highlighting the importance of ongoing training and support to ensure all lecturers enjoy the full support of their peers and institutions, regardless of their technological background or age. In the Saudi Arabian higher-education context, Almarwani (2021) explored the acceptance and use of mobile technologies in EFL learning and teaching, using the UTAUT2 framework as the model for the study. In terms of their behavioural intention to use the technology, the main driver for the students was the facilitating conditions construct through appropriate support and guidance, while for the lecturers effort expectancy was the main factor, again underscoring the need to ensure that staff are sufficiently trained in the skills necessary to ensure effective end-delivery of CALL in the classroom. In her earlier doctorate thesis exploring CALL in Saudi universities also through the lens of UTAUT2, Almarwani (2016) analysed 65 completed questionnaires from 65 mixed-nationality EFL lecturers, finding that the key variables of behavioural intention and use behaviour were essential components in terms of implementing CALL in the classroom, with behavioural intention significantly predicted by effort expectancy and habit, and use behaviour significantly predicted by habit and price.

It is evident that the ownership and use of mobile devices by university students and teachers for multifarious purposes is ubiquitous, and that technological evolution is continuous in terms of social activities and teaching, regardless of the economic development level of the examined nations (West and Paine, 2012). In the teaching model and frameworks, teachers are arguably the most influential contributors to the acceptance of mobile learning among students, and so their proficiency in navigating and managing mobile technology will affect the rate of its adoption (Yusofa et al., 2012; Cruz et al., 2015; Lam, 2015). The aforementioned studies have revealed a high level of acceptance of mobile learning amongst students, but there are indications that teachers may be reluctant to adopt the technology as part of their pedagogical planning.

Examination of the Saudi context is the focus of this study, through the lens of EFL lecturers at Saudi universities. Nassuora (2012) previously conducted a qualitative study

at Prince Sultan College for Tourism & Business, based on the UTAUT assessment model, in order to examine those factors affecting students' intentions to utilise mobile learning technology. His results showed performance expectancy to be the major positive influence in the significant level of motivation to adopt. Moreover, Alasmari and Zhang (2019) found that Saudi public university students' intention to use mobile learning technology was high. Therefore, the lecturers need to follow this lead.

Certainly, proprietary technology developers are evolving their software at a rapid rate, which is supported by the burgeoning global education market, instructional designers and policymakers. The use of mobile technology depends upon the perceptions of value of the teachers in their particular institutions, and indeed individual classrooms, as well as their ability to keep pace with the rapid evolution of its capabilities and facilities. This has the potential to impact lesson plans on several occasions during the same academic year, as improvements are made and adopted by faculty members and the student body in the context of prevailing societal and cultural issues. The past is not necessarily a predictor of the future, and collaborative monitoring of change and development under the auspices of distributive leadership, which values the pedagogical input of teachers, will enable the quality of education to improve through change. Therefore, a theoretical framework is selected for this study, and indeed teaching practice, which is capable of application to the cultural and institutional beliefs of the Kingdom of Saudi Arabia.

### 2.10.3 Theoretical framework for the study

The theoretical framework for a study provides a structure and vision for the research, that is, a blueprint for examining apposite theories and inquiries on the subject of interest (Grant and Osanloo, 2014). In this study, the aim is to investigate the experiences of lecturers using mobile technology to teach English at Saudi universities. The readiness and acceptance amongst teachers are the key factors for investigation into user behaviours and intentions (Venkatesh et al., 2003; Venkatesh et al., 2012). The models that form the basis of the theoretical model include those theories that constitute Venkatesh et al.'s (2003) UTAUT:

(i) Theory of Reasoned Action
(ii) Technology Acceptance Model
(iii) Motivational Model
(iv) Theory of Planned Behaviour
(v) Technology Acceptance Model and the Theory of Planned Behaviour

(vi) Model of PC Utilisation

(vii) Innovation Diffusion Theory

(viii) Social Cognitive Theory

(Venkatesh et al., 2003)

The incorporation of the different models served to address a common issue faced by researchers in terms of the need to justify the choice of model for their study. In 2012, Venkatesh and colleagues considered the replications, extensions and applications of the model, and consolidated these into the extended UTAUT2 model. Table 2.1 presents the eight original theories and models of the acceptance of ICT in order to provide a more comprehensive understanding of the origin and development of UTAUT and UTAUT2.

**Table 2.1: The prominent theories and models of acceptance of ICT**

| Authors | Model or Theory | Elements |
|---|---|---|
| Fishbein and Ajzen (1975) | Theory of Reasoned Action | - Attitude<br>- Subjective norm |
| Venkatesh and Davis (2000) | Extended Technology Acceptance Model: Technology Acceptance Model 2 | - Perceived usefulness<br>- Perceived ease of use<br>- Subjective norm<br>- Experience<br>- Voluntariness<br>- Image<br>- Job relevance<br>- Output quality<br>- Result demonstrability |
| Davis et al. (1992) | Motivational Model: to define the behaviour of technological adoption and use | - Extrinsic and intrinsic factors |
| Ajzen (1991) | Theory of Planned Behaviour: to determine behaviour and intention | - Attitude<br>- Subjective norm<br>- Perceived behaviour<br>- Control |
| Taylor and Todd (1995) | Combining the Technology Acceptance Model and the Theory of Planned Behaviour | - Perceived usefulness<br>- Perceived ease of use<br>- Attitude |

| | | |
|---|---|---|
| | | - Subjective norm<br>- Perceived behaviour<br>- Control |
| Thompson et al. (1991) | Model of PC Utilisation: to determine the behaviour of computer usage | - Social factors<br>- Affect<br>- Perceived consequences<br>- Facilitating conditions<br>- Habits |
| Rogers (1962) | Innovation Diffusion Theory | - Relative advantage<br>- Compatibility<br>- Complexity<br>- Observability<br>- Trialability<br>- Image<br>- Voluntariness of use |
| Bandura (1986) | Social Cognitive Theory: to determine the usage of information systems | - Encouragement of others<br>- Use of others<br>- Support<br>- Self-efficacy<br>- Performance outcome<br>- Expectations<br>- Personal outcome<br>- Affect |

### 2.10.4 Research framework

In order to promote the use of technology innovation, the awareness and acceptance of potential users must initially be achieved. Understanding the various factors that affect the acceptance of technology is central to technology adoption research, and assists in informing the relevant stakeholders' decision-making processes (Teo et al., 2019). As mentioned above (see section 2.10.3), numerous explanatory frameworks have been proposed and utilised to model the relationship between technology acceptance and its determinants. These include, but are not limited to, the Theory of Reasoned Action ([TRA]; Ajzen & Fishbein, 1980), the Theory of Planned Behavior ([TPB]; Ajzen, 1991), the Technology Acceptance Model ([TAM]; Davis, 1989), the Decomposed Theory of Planned Behavior ([DTPB]; Taylor & Todd, 1995b), the combined TAM and TPB model

([C-TAM-TPB]; Taylor & Todd, 1995a), the Motivational Model ([MM]; Davis, Bagozzi, & Warshaw, 1992) the Model of Personal Computer Utilization ([MPCU]; Triandis, 1977), the Innovation Diffusion Theory ([IDT]; Rogers, 1995), and the Social Cognitive Theory ([SCT]; Bandura, 1986).

Despite the broad range of models offering researchers flexibility in terms of the selection to address a specific context or research problem, the important constructs unique to each model may be ignored, thus attenuating the explanatory power of each parsimonious model (Clement, & Williams, 2019). Therefore, Venkatesh et al. (2003) conducted a thorough review and integrated the eight different acceptance models of TRA, TPB, TAM, MM, MPCU, C-TAM-TPB, SCT, and IDT into the UTAUT. Generally, UTAUT2 posits that the behavioural intention to utilise a specific technology and the use behaviour can be directly determined by the core constructs of performance expectancy, effort expectancy, social influence and facilitating conditions, which are in turn moderated by age, gender, and experience. Since its inception, the UTAUT and UTAUT2 models have been widely employed to examine technology acceptance in education across different learning platforms, such as the use of websites (Tan, 2013), wikis and blogs (Yueh, Huang, & Chang, 2015), podcasts (Lin, Zimmer, & Lee, 2013), interactive whiteboards (Šumak & Šorgo, 2016; Tosuntaş, Karadağ, & Orhan, 2015), mobile learning (Abu-Al-Aish & Love, 2013; Thomas, Singh, & Gaffar, 2013), and MALL (Botero, Questier, Cincinnato, He, & Zhu, 2019). In the current study, UTAUT2 is deemed an appropriate model for examining MALL acceptance, including the improvement of technical and organisational support, as well as the need for more instructional approaches that foster the application of MALL, particularly in the context of a developing country such as the Kingdom of Saudi Arabia. Below, each of the constructs and the hypothesised relationships thereof are delineated in the context of MALL in order to examine the acceptance of mobile learning and its relation to second language teaching by Saudi lecturers in the present study:

- *Performance expectancy* refers to language lecturers' belief that mobile devices promote and provide benefits in language teaching.
- *Effort expectancy* for MALL lecturers is associated with their belief of the ease and convenience of utilising mobile devices for language teaching.
- *Social influence* concerns lecturers' intention to use mobile devices for language teaching that may be influenced by other important individuals, such as peers and

teachers.

- *Facilitating conditions* is transferred to the MALL environment as the technical and organisational support available for lecturers' use of mobile devices to facilitate language teaching, such as access to wireless networks, the provision of mobile devices and the availability of technical assistance when required.
- *Hedonic motivation* refers to language lecturers' belief that they experience enjoyment or pleasure from utilising mobile technologies in teaching and learning EFL.
- *Price* implies language lecturers' perception that the benefits of using mobile technologies in teaching and learning EFL represent greater value than the monetary cost of implementation.
- *Habit* refers to language lecturers' tendency to use mobile technologies in teaching and learning EFL by default.

A research framework is designed to illustrate the structure of the research plan (Mills et al., 2010), and herein has been used to formulate the research objectives noted at the beginning of this chapter. In considering the key concepts, theories and their interconnectedness that guide this research, account has been taken of the study methodologies conducted in the literature and noted above, in order to inform the development of a framework for examining the experiences of ELF lecturers using mobile technologies in Saudi universities. This provides justification for the use of the comprehensive UTAUT2 model to answer the research questions, while adding robustness and accuracy to the analysis method. Venkatesh et al. (2012) argue that the UTAUT2 model is the most accurate method of measuring the acceptance and intention to use ICT, through its analysis of different perspectives and outlooks in the evaluation of technology in modern consumer contexts, as opposed to a simple organisational setting. Moreover, the model takes into account a series of independent variables and key constructs, as noted above in section 2.10.2 and below in Table 2.2, as well as personal dependant variables of intention to use technology and its actual use (use behaviour).

**Table 2.2: The key constructs of the UTAUT2 model (Venkatesh et al., 2012)**

| Construct | Definition |
|---|---|
| Performance Expectancy | The degree to which using mobile technologies will provide benefit in teaching and learning EFL. |
| Effort Expectancy | The extent of ease associated with using mobile technologies in teaching and learning EFL. |
| Social Influence | The degree that instructors perceive that important others (i.e. family, friends, society) believe they should or should not use mobile technologies in teaching and learning EFL. |
| Facilitating Conditions | The extent to which instructors believe that resources and support are available to use mobile technologies in teaching and learning EFL. |
| Hedonic Motivation | The degree that instructors experience enjoyment or pleasure from using mobile technologies in teaching and learning EFL. |
| Price | The extent to which instructors perceive the benefits of using mobile technologies in teaching and learning EFL as being of greater value than the monetary cost of implementation. |
| Habit | The extent that instructors tend to use mobile technologies in teaching and learning EFL by default. |

The variables of this model serve the objectives and research questions established for this study, while the economic, consumer perspective of the sampled teachers facilitates the analysis of the price independent variable. The extended UTAUT2 model enhances its illustrative power with regards to the intention of technology use, given that Venkatesh et al. (2012) claim the model focuses on a particular context and recognises appropriate predictors. Moreover, the model was more specifically designed to examine the use of the internet than UTAUT (2003), and thus research into mobile learning.

## 2.11 Conclusion

Research into the mobile learning phenomenon across national education frameworks is diverse in its aims and methodologies, but each study has broadly shown a high level of positivity to the use of mobile phones in learning. However, the findings are not necessarily generalisable into other cultures of teaching and learning. Therefore, the Kingdom of Saudi Arabia requires further examination, in the light of government initiatives and the profoundly conservative traditionalism, in order to determine how users, located in such an environment, are prepared to engage with new methods of learning. The onus of responsibility shifts from the teacher to the student in their language learning, and teachers must develop new skills, which can only be achieved through institutional leadership (Timperley et al., 2007). At the tertiary level of their education, students are studying complex academic subjects such as medicine, law, and the sciences. Saudi universities employ a blend of Arabic and English in their teaching, while EFL has generally been inadequately learned in school education through traditional pedagogical, teacher-led practices (see Table 1.1).

Beetham and Sharpe (2007) assert that technology has a significant impact on how people learn new information, and has the potential to cultivate effective teaching and learning environments. In order for mobile technologies to expand opportunities to learn effectively and collaboratively, the perceptions of Saudi lecturers must be statistically understood in the national context, in terms of mobile technology as a valued tool rather than merely a component of the ICT drive by government policy. In past initiatives, social and cultural traditions have proved to be somewhat stronger than plans for educational reform, and therefore the support of teachers, students and institutions are imperative. However, Cruz et al. (2015) and Lam (2015) underscore that whilst there is considerable positivity towards the value of mobile learning, there is still resistance to its use and application, as discussed herein.

This study is predicated on a reflective methodology of a quantitative and qualitative examination of teacher perspectives on the introduction and use of mobile technology as a support to EFL development, as explained in Chapter 3. Meanwhile, the UTAUT2 model of assessment has been adopted to guide the study, underlying the basic concept that an individual's attitudes and reactions influence his or her intention to use a technology, and consequently their actual use of said technology.

# Chapter 3
# Research Methodology

## 3.1 Introduction

This chapter presents the issues pertaining to the choice of the methodology and methods, the research design and the process of data collection. To explore the experience of Saudi EFL lecturers in using mobile technology in their teaching and their perceptions towards this technology, both quantitative and qualitative data collection and analysis methods will be employed (i.e. a mixed-methods design), respectively. Regarding the structure of the chapter, first the philosophical and theoretical underpinnings of the study are presented, followed by the choice of methodology and its design. Then, the methods used to collect the data (survey questionnaire and interview) are presented. Subsequently, the setting and the population of the main study, the process of the survey design, the survey sampling and the interview schedule in the qualitative stage are established, as well as the approach to conducting a pilot study. Finally, the ethical considerations are considered, before the chapter concludes with a presentation of the data analysis approach.

## 3.2 Research Paradigm

Consideration of the study aim and research questions aids in the reflection on the examination of a fundamental basis of a research paradigm, which will provide a framework to enhance knowledge of the adoption practices of mobile learning in Saudi universities. A research paradigm is described by Rehman et al. (2016) as a means of understanding and studying the world, whereby "*abstract beliefs and principles ... shape how a researcher sees the world, and how s/he interprets and acts within that world*" (Kivunja and Kuyini, 2017, p.26). According to Easterby-Smith et al. (2012), the major concepts of the research philosophy comprise the ontology, epistemology, methodology and methods, which are related to each other as a unifying framework known as the research paradigm that allows responses to the research questions raised (see Table 3.1).

**Table 3.1: Research philosophy (Easterby-Smith et al., 2012, p.18)**

| | |
|---|---|
| **Ontology** | What is reality?<br>Philosophical assumptions about the nature of reality |
| **Epistemology** | What is and how can I know the reality of knowledge?<br>A general set of assumptions about ways of inquiring into the nature of the world |
| **Methodology** | What procedures can we use to acquire knowledge?<br>A combination of techniques used to inquire about a specific situation |
| **Methods** | What tools can we use to acquire knowledge?<br>Individual techniques for data collection and analysis |

These concepts of ontology, epistemology, methodology and methods correlate in several ways depending on the more general philosophical position of the research (Eriksson and Kovalainen, 2015). Therefore, the next sections will define these concepts in more detail.

### 3.2.1 Ontology

Richards (2003, p.33) refers to ontology as "*the nature of our beliefs about reality*", in terms of how knowledge exists and how it is conceptualised by the researcher in the formation of ideas and theories on the study. Herein, ontology serves to reflect upon what exists in the educational world, how it interacts in the societal reality of universities and the broader Saudi culture, and how that reality is identifiable in independent human understanding and interpretation. Succinctly explained by the SAGE Online Dictionary of Social Research Methods (Jupp, 2006), ontology is "*a concept concerned with the existence of, and relationship between, different aspects of society such as social actors, cultural norms and social structures*". Snape and Spencer (2003) describe two stances for conceptualising the existence of knowledge pertinent to consideration in the preparation of a study, namely realism and idealism.

#### *3.2.1.1 Realism*

The ontology of realism is closely related to the nature of objectivity in the natural world, involving the search for rules and behaviour that exist independently of the experience of human beings, and which are unchanging and universal in their reality in the context of social actions (Burrell and Morgan, 1979). In education management and change, the

presumption is that the structure of the organisation remains the same, while initiatives are adopted to meet that condition of stasis. Ignoring the effect of a phenomenon on the perceptions, attitudes, motivations and views of the actors, however, does not assist in comprehending whether an initiative will be successful or fail, and arguably is not an ontology, a perception of reality (Easton, 2010). Objectivity and natural reality are not conducive to investigating variable social phenomena, where understanding is only possible through the subjectivity of human perceptions and actions.

#### *3.2.1.2 Idealism*

Idealism is the philosophical perspective that reality is that which is experienced by human understanding, where the importance of a phenomenon is not the fact of its existence, but rather how it is perceived (Guyer and Horstmann, 2019). Hofweber (2017, p.126) summarises the concept with an interesting turn of phrase: "*human minds in particular have a metaphysically central place in reality*". In this study it is argued that human actors, namely lecturers and students, have considerable observable input into their environment and how it exists and functions, as well as how change and development are affected.

### 3.2.2 Epistemology

When one considers epistemology, the question asked by the researcher is what actually constitutes knowledge, its "*nature and forms, how it can be acquired and how [it can be] communicated to other human beings*" (Cohen et al., 2007, p.7), while Gall et al. (2003) add that it should explain how information is learned and validated in the context of its social reality. Therefore, the emphasis placed on the perspectives of positivism and interpretivism depend on the nature of the 'truth' ascertainable from the data and their collection, which guides the philosophical methodology of the study. Indeed, Robson (2002) identifies the constructivist perspective as being inherent in interpretivism, suggesting that reality is a socially constructed concept, and that relativism represents an absence of reality that cannot be separated from human thought and perception.

#### *3.2.2.1 Positivism*

Rehman and Alharthi (2016, p.53) assert that "*positivism assumes that reality exists independently of humans. It is not mediated by our senses and it is governed by immutable laws*". In that sense, it adopts the ontology of realism. It is by nature a search for objective truth, which is unsuited to qualitative research predicated on human perceptions regarding

the social environment in which they live and work. Nevertheless, Burns and Grove (2005) consider that the search for a positive, replicable and generalisable truth is best suited to a natural law environment with hypotheses assessment, objectivity, impartiality and abstraction, based on statistical analysis. It aims to limit, or even exclude, the subjectivity of the researcher's input, influence and analysis by essentially asserting the certainty and measurability of mathematics (Guba and Lincoln, 1989; Hatch, 2002).

The collection and analysis of numerical data are undertaken scientifically, through a characterisation of the variables and identification of how those variables interact in terms of cause and effect, with empirical data gathered that are linked to a hypothesis, which provides a basis for investigation founded on limited evidence (Burns and Grove, 2005). In this research, there is some evidence from global studies that mobile technology will improve EFL teaching, and therefore the methodology will seek quantifiable evidence that will benefit Saudi university stakeholders and decision-makers in improving the quality of education. As an objective examination, it will complement the subjectivity inherent in the interpretivist approach with a pragmatic application (Hatch, 2002). Nevertheless, in social research "*people use their perceptions to interpret what their senses tell them*", an interpretivist approach that rejects the precept of positivist certainty (Al-Saadi, 2014, p.3).

#### *3.2.2.2 Interpretivism and constructivism*

Qualitative research focuses on a phenomenon, circumstance or context underpinned by a socio-constructivist paradigm (Berger and Luckmann, 1975). Essentially, the collection of data is from individuals engaging in an environment constructed by society, culture and themselves, and so will contain a fundamentally subjective basis of truth rather than a scientific, positive truth. As such, perceived truth is interpreted by the participants and researcher who gather the information. Berger and Luckmann (1975) observed that qualitative research is focused on shedding light on the significance of meanings and achieving in-depth insight into the mechanisms of social and cultural interplay, and generalised human behaviours. Socially based phenomena and groups must be investigated in their natural cultural contexts in order to gain a comprehensive understanding, based on the collection and analysis of the diverse subjective, personal perceptions of the participants involved in the subject of investigation (Denzin and Lincoln, 2000; Schwandt, 2007).

The beliefs and perceptions of the researcher play an integral part in the data collection,

arising from the intimate interactions with the data sources, namely, the actors in the context of the social phenomenon (Guba and Lincoln, 1994). The direct interaction with the subjects may be considered a major limitation of the constructivist approach, with Snape and Spencer (2003) asserting that research objectivity is impossible, and thus some degree of subjective interpretation is inevitable. Therefore, the researcher has to remain conscious of this threat and minimise its impact on the findings.

Blaikie (2010) argues that researchers must be aware of their personal responsibilities for reflection through a structured approach to the interaction of the elements of the methodology, strategy and design, which in this study context represent those adopted by the researcher in consideration of the study paradigm and its appropriateness. Theory and practice must coalesce to direct the research and enhance credibility, especially in this research that involves a relatively novel inquiry into mobile technology education in the traditional framework of the Kingdom of Saudi Arabia. The results will provide a foundation for government reflection on the progress of its Vision 2030 initiative, insofar as it applies to education and the development of a native workforce capable of competing in the world markets. The mixed-methods approach, with its emphasis on cross-referencing the veracity of the findings emerging from the data, is expected to be more persuasive than the adoption of a single qualitative methodology. Therefore, positivism is primarily described as a quantitative philosophy, while interpretivism is more related to qualitative research, whereas pragmatism is used in mixed-methods research. The following section will explain the research philosophy in more detail.

#### *3.2.2.3 The pragmatic paradigm*

The pragmatic approach to research arises as a result of the conflict between truth and reality, adopting the perspective that there may be multiple realities impacting on a phenomenon, and its context, which can only be understood through socially constructed human experience (Creswell and Clark, 2011). Essentially, reality is what exists in the culture, upbringing and values of the actor. The integration of quantitative and qualitative methods in the same research supports the comparison of data in order to enhance the veracity of the findings and gain detailed insight into the phenomenon under examination.

Tashakkori and Teddlie (2010, p.5) argue that pragmatism "*advocates for the use of mixed methods in research, and acknowledges that the values of the researcher play a large role in the interpretation of results*". Moreover, pragmatism addresses the dogmatism and limitations of each research method in order to promote the complementarity, inclusivity

and pluralism of differing research approaches (Brewer and Hunter, 1989; Onwuegbuzie and Leech, 2004). The knowledge emerging from data collected through quantitative and qualitative methods is then correlated to provide persuasive and realistic research outcomes (deWaal, 2001). The pragmatic paradigm enables the adoption of the principles of qualitative and quantitative truths and findings, in a manner that leads to improved understanding of the contextual nature of the examined phenomenon. Thus, the mixed-methods study will benefit from quantitative methods of data collection that prioritise deduction, theoretical evaluation and standardisation, and qualitative practices that emphasise induction, discovery, exploration and the formulation of theories.

The mixed-methods study, with its emphasis on cross-referencing the veracity of the findings emerging from the data, is expected to be more persuasive than the adoption of a single qualitative methodology. This research utilises a quantitative method to answer the research questions and test the hypotheses using a questionnaire survey. The choice of the quantitative method enables the discovery and investigation of the relationships between variables, and to test hypotheses (Gall et al., 2007). It also has the ability to translate the collected data on a phenomenon (e.g. the attitudes of Saudi EFL lecturers in using mobile technology in their teaching) into quantifiable numbers to facilitate statistical analysis (Muijs, 2004). Moreover, the research model, and the hypotheses generated from it, require data to be gathered from a large population, which justifies the use of a quantitative method. Therefore, the survey will be used to collect data, as this represents the most widely employed technique in educational research that can effectively work with large samples in order to enable generalisability from the sample to a wider population (Creswell, 2009). Furthermore, a review of the related literature of technology acceptance by Venkatesh et al. (2003) and Venkatesh et al. (2012) indicates the use of surveys to collect data to test various technology acceptance models.

A positivistic stance, however, is incompatible with the researcher and context of this study, as to answer the research questions it is important to explore the participants' thoughts in order to achieve a 'deep description' of their behaviour, with many social science researchers such as Hammersley (1992) and Stake (2010) arguing that certain research positions are selected to fit the research question being posed by the study. As a result, the researcher will also adopt a qualitative method to address the relevant research questions, which will help to describe and interpret the participants' behaviour and reach an understanding of their perceptions about using mobile technology in their teaching. The collection of the participants' (i.e. Saudi EFL lecturers) views and ideas about a social

phenomenon (i.e. teaching using mobile technology) would appear to be a valuable means of generating credibility and gain further insight to explore the challenges and barriers, and how these could affect adoption. In addition, the researcher believes that there is no one single reality, and that interaction in the research process is vital, while human beings have intellectual minds to help them construct their reality. Furthermore, as the aim of this study is to seek the EFL lecturers' perceptions about teaching using mobile technology, this thus requires the elicitation of stories regarding their experiences of this issue. A similar view was highlighted by Auerbach and Silverstein (2003), who stated that "*people almost always talk about their experience in a storied form*".

Therefore, the adoption of the pragmatism research paradigm would seem to run parallel with the researcher's own ontological and epistemological assumptions, as positivism is mainly described as a quantitative philosophy, while interpretivism is more related to qualitative research, whereas pragmatism is used in mixed-methods research.

### 3.2.3 Methodology of data collection

Introducing mobile technology into the higher education framework as a method of teaching EFL may appear to represent an essential measure to be undertaken in the improvement of the pedagogical process in the modern era, but it must be proven to be suitable for the traditional and cultural nature of the Saudi context and its norms. In effecting change in a system that meets resistance from traditional values, its "*evolution must be systemic, consistent, and scalable*", and involve all stakeholders, especially teachers and students (Serdyukov, 2017, p.5). With this in mind, attention must turn to the paradigm that most effectively aids the examination of the research questions, where the traditional approaches of data collection and analysis are quantitative, qualitative and mixed methods.

(i) Quantitative

Rasinger (2013) describes quantitative research as the numerical representation of data and observations, whereby the phenomenon that is the subject of the research through a process of management and analysis can be replicated in a range of study subjects. Seeking statistical correlations through the measurement of the range of cultural, behavioural and socio-environmental variables experienced by university lecturers will assist in explaining the attitudes to the use of mobile technology in pedagogical practice (Newman et al., 1998). Herein, it meets the purpose of examining the variables inherent

in the UTAUT2 model (see Figure 2.4**)** of expected performance, effort expectancy, social influence and facilitating conditions, as well as hedonic motivation, price value and habit in the use of mobile technology.

(ii) Qualitative

Qualitative research involves the collection of a broad range of data on the nature of perceptions, opinions and impressions of human subjects in the context of the study's aim, objectives and research questions, seeking to acquire an understanding of a phenomenon based on the subjective 'truth' of those involved in its context (Guest et al., 2013). However, the variables that arise from the data collection methods are not capable of measurement in application to a context or phenomenon, given that they are personal to the respondent (Bryman and Bell, 2015).

(iii) Mixed methods

Mixed-methods research is an integration of the quantitative and qualitative methodological paradigms and methods, and is apposite to the "*critical enquiry aimed at informing educational judgements and decisions in order to improve action*" (Foreman-Peck and Winch, 2010, p.8). The mixed-methods approach complements the research process by correlating and comparing the findings to achieve an enhanced level of veracity to the results of the various data collection methods (Almalki, 2016). In order to explore the experience and perceptions of Saudi EFL lecturers in using mobile technology in their teaching, a mixed-methods design is considered appropriate, and the methods employed for data gathering and analysis will be discussed in section 3.2.4. It is borne in mind that the methodology should be distinguished from the methods and instruments of the data collection, which describe how the theory is put into practice (Achari, 2014). McGregor and Murnane (2010) express particular concern that theory and practice should remain distinct from each other in order to avoid any confusion of terms. Methodology is understood to be the study of how research is carried out scientifically, whereas research methods are all those methods and techniques that are employed to conduct research, which are guided by the methodology (McGregor and Murnane, 2010).

The methodological framework presented in this chapter focuses on a theoretical understanding of the traditional approach to language study, intended to facilitate the investigation of the practical application of mobile technology in the teaching and learning context. The research questions require in-depth knowledge of the experiences

and perceptions of the English language lecturers on the use of mobile technology in the Kingdom of Saudi Arabia, in order to acquire a contextual understanding of the benefits and the challenges of its use. Utilising the complementary nature of the quantitative and qualitative methodologies as a means of cross-referencing data (triangulation) will enhance knowledge of the intrinsic and extrinsic challenges that teachers face in the introduction of this new tool.

The philosophical principles discussed, underpin the selected mixed-methods research approach (Bryman, 1992), providing theoretical justification for the decisions made regarding the use of this particular research strategy and the interpretation of the results (Cohen et al., 2000). As explained by Clark (1995), the framework afforded by the research paradigm enables consideration of the stance adopted by the researcher, ensuring the systematic and methodical nature of the process. Qualitative research is highly effective in generating personal, subjective and versatile data that are potentially lost through the strict application of quantitative principles. Furthermore, the extraction of well-defined factors from detailed quantitative data leads to positivist and narrower interpretations, owing to the greater durability and singularity of quantitative coding, as opposed to the multi-faceted qualitative coding (Driscoll et al., 2007). Onwuegbuzie and Johnson (2004), however, describe the mixed-methods approach as time-consuming and cost-intensive, and therefore advocate of separate methods tend to justify their chosen individual process due to these constraints. This was a concern upon which the current researcher reflected on, given that the study would be undertaken over two continents, with the principle locus of learning being in the UK, while data collection would take place in the Kingdom of Saudi Arabia. However, it was decided that a mixed-methods approach would be most apposite to the nature of this examination.

The implementation of a mixed-methods approach is legitimised by the fact that when carefully planned and undertaken, it can yield improved results and insight when compared to the individual quantitative and qualitative philosophies and methods, where the comparative process of analysing the results and identifying the data correlations achieves a broader comprehension (Onwuegbuzie and Leech, 2004). In the implementation of a mixed-methods approach, a decision must be taken of whether one method provides the foundation of the research, while the other represents a supplementary methodology, as well as whether the methods will be conducted simultaneously or sequentially (Onwuegbuzie and Leech, 2004). Mixed-methods designs are similar in form to two small-scale studies that are respectively quantitative and

qualitative, but which are integrated to yield a single complete study. The major factor in reflection is not the primacy of one methodology over another, or the sequence in which they are undertaken, but rather the ultimate integration of the findings (Johnson and Qnwuegbuzie, 2004). A mixed-methods approach for the collection of data may unfold in an unexpected manner, and thus the pragmatic adaptation of the methodologies and methods must provide a significant element of flexibility to the analysis process. Mertens (2014) indeed argues that the application of mixed-method approaches can enable a researcher to identify any inconsistencies, anomalies and contradictions within the collected data.

The choice of the mixed-methods philosophy to examine the use and perceptions of Saudi EFL lecturers in the use and implementation of mobile technology in universities enables the comparison of data. This, it is suggested, enhances the legitimacy and veracity of the findings (Miles and Huberman, 1994).

#### *3.2.3.1 Mixed-methods design*

The research design was defined by Kumar (2014, p.381) as "*a procedural plan that is adopted by the researcher to answer questions validly, objectively, accurately and economically*". Therefore, the research design addresses the questions that determine the path the researcher is planning to take for the research journey, including the choice of study design, how the respondents will be selected, how the information will be collected from the respondents, and how the data will be analysed and linked together as study findings (Creswell, 2013; Kumar, 2014). However, the selection of a study design and all its components needs to be properly assessed, because it affects all the outcomes of the research.

The mixed-methods design will be employed for the entire research, for reasons presented in this section. This design will determine how the data and information are collected and analysed. Moreover, if the approach is effectively managed and described, then the academic acceptance of the research methodology will not be compromised. In brief, Leech and Onwuegbuzie (2009) explain that this approach requires a mix of different methodological approaches to address different aspects of the research. The philosophies and practices of conventional processes will be employed, and the only questions will concern the veracity of their use and researcher bias. This avoids seeking new ways to understand social, personal and technological phenomena.

This research sets three objectives relating to (i) the investigation of the usage of mobile learning among English language lecturers in state universities in the Kingdom of Saudi Arabia; (ii) identifying the traditional, cultural and practical obstacles associated to the Saudi university lecturers' perceptions on the adoption of mobile technology in the research context; and (iii), gaining a deeper understanding of the perceived benefits and the challenges of using mobile technology to teach the English language.

For this reason, different approaches are required to measure and analyse the different variables. This thus determines the methods selected for the research. When attempting to conduct a multi-level analysis of complicated phenomena, a mixed-methods approach involving conventional data collection techniques is required, with this approach the most suitable for analysing the objectives of the present research. Mixed-method approaches have been increasingly applied to investigate topics related to applied linguistics and education over the past thirty years, with such approaches drawing together different but complementary data collection techniques (Dörnyei, 2007). For instance, Mertens (2014) argues that the application of mixed-method approaches can enable a researcher to identify any inconsistencies, anomalies and contradictions within the collected data. Consequently, the reader can evaluate the data in their preferred manner, which could even serve as a basis upon which future research could be developed.

The nature of research questions seeks answers obtained through qualitative and quantitative methods. In the quantitative domain, this study employs the survey method through a questionnaire as a data collection instrument in order to explore the experiences and usage of mobile technology among English language lecturers in state universities in the Kingdom of Saudi Arabia, by utilising the UTAUT2 model to guide the exploration. Meanwhile, in the qualitative domain, this study employs the interview as a data collection tool to deepen the exploration of the challenges that the target English language lecturers encounter in using mobile technology, and how these challenges might impact on their usage of mobile technology in their teaching. In this sense, this study employs a mixed-method design in order to respond to the research questions. According to Creswell (2014), the mixed-method design combines quantitative and qualitative methods in a study, where the quantitative data tend to result from closed-ended questions, while qualitative data tends to be drawn from open-ended questions, as per the case in this study.

When investigating topics such those involved in the present research, scholars have

recommended that researchers employ a methodology that facilitates in the collection of both qualitative and quantitative data from individuals within a wider societal context. By doing so, a more complete and profound insight into the phenomenon can be obtained, while evidence from complementary sources can be introduced to strengthen the research findings and improve the overall value of the research (Onwuegbuzie and Johnson, 2006). Moreover, several problems can occur during any data collection process, based on the nature of the investigation and potential bias that can be generated by the researcher who has his or her own motivations and stakes in the research outcome. The present researcher is a university TESOL lecturer, who will make no financial, emotional or cultural gains by exploring the experience of Saudi lecturers in using mobile technology to teach English. The motivation of the present research is to determine why lecturers may be resistant to employing mobile technology in their teaching practices. When selecting a mixed-methods approach, a pragmatic perspective can eliminate the limitations associated with each singular approach. The researcher must reflect upon the planning and assessment of the findings when using a mixed-methods approach to ensure that personal choices and motivations have no impact on the research, particularly in terms of ordering the stages involved in collecting the quantitative and qualitative data (Johnson and Onwuegbuzie, 2004).

In order to acquire a complete picture of Saudi EFL lecturers' use of mobile technology in their university teaching contexts, a mixed-methods approach was therefore chosen. Essentially, quantitative and qualitative methods should be viewed as complementing one another, rather than being completely distinct, by working as a continuum and on occasion echoing one another. Consequently, researchers must take measures to ensure that these methods are employed equally by adopting immediate approaches to compel their integration. Results can be made more legitimate and reliable by integrating quantitative and qualitative methods in a number of modalities (Miles and Huberman, 1994; Hammersley, 1996). For all these reasons, the mixed-methods approach is considered suitable for the present study.

Among the many designs of mixed methods, this study employs a sequential explanatory mixed method, where the quantitative method is initially employed, and then the qualitative method is used to explain the findings emerging from the quantitative method in more detail (Creswell, 2014).

*3.2.3.1.1 The sequential explanatory mixed-method design*

The sequential explanatory mixed-method process simply means that the methods of data collection follow each other sequentially, with the collection and analysis of quantitative data followed by the collection and analysis of qualitative data, where the qualitative data function to help explain and interpret the findings of a primarily quantitative study (Robson and McCartan, 2016). Tashakkori and Teddlie (1998) suggest that this type of sequential design would be beneficial, for example, in order to collect qualitative data that might facilitate in explaining why certain participants achieved particularly high or low scores in the analysis of their quantitative data. In terms of mixed-method research, Saunders et al. (2016) describe the sequential explanatory design as featuring an initial phase of quantitative data collection, followed by a second phase where qualitative data are gathered. The plan for this study is to collect quantitative data using a closed-question questionnaire, with the goal of this first phase to meet the requirements of the first and second objectives, namely to understand the Saudi lecturers' use of mobile technology for teaching English and the obstacles to such usage. Such a design will enable the researcher to elaborate and extend the findings that initially arise from the quantitative data in the first phase, through the analysis of the qualitative data emerging from the second phase of the sequential explanatory design (Saunders et al., 2016).

The second phase is qualitatively based, in order to substantiate, investigate and explain the statistical outcomes of the quantitative section. In the qualitative method, this study employs the interview as a data collection tool in order to deepen the exploration of the challenges that English language lecturers at the state universities in the Kingdom of Saudi Arabia might face in using mobile technology, and how these challenges might affect their usage of mobile technology in their teaching

Herein, the sequential practices of the methodologies are effected, first by employing the quantitative method, a questionnaire to provide broad insight into the phenomenon and its context, followed by in-depth qualitative interviews with participants to expand upon the subjective perceptions of the actors (Tashakkori and Teddlie, 1998). Ary et al. (2010) assert that the data collected from one phase in sequential mixed-method design informs the data collected in subsequent phases, and since the analysis commences prior to all the data being collected, later phases may change or be influenced by the results emerging from the initial stage. Moreover, Cohen et al. (2018) claim that the analysis of data gathered from an initial sample may have an influence on how the researcher approaches

the next stage that features a different group of participants. In this study, the fact that the researcher analysed the quantitative questionnaire data prior to conducting the qualitative interviews indeed led to the interviews being nuanced by the researcher's awareness of the preliminary insights and results, where she sought to further explore, confirm or refute these initial results in order to ensure an effective response to the research questions. Essentially, through the initial results from the quantitative phase, the interview questions were developed and modified to ensure that confirmation or rejection could be determined, while providing a space for new qualitative insights to be collected. Moreover, the researcher's engagement while conducting the semi-structured interviews was influenced by her prior awareness of the results from the quantitative data-collection phase. Different aims of the research are therefore addressed by different philosophies and methods (Leech and Onwuegbuzie, 2009). This study examines the use of mobile learning by English language lecturers in state universities in the Kingdom of Saudi Arabia, which is amenable to quantitative assessment. Meanwhile, identifying the personal factors affecting Saudi university lecturers' perceptions on the adoption of mobile technology will provide enhanced understanding of the benefits and the challenges of using mobile technology to teach the English language in the target context as a qualitative exercise. The sequential explanatory process is shown below in Figure 3.1.

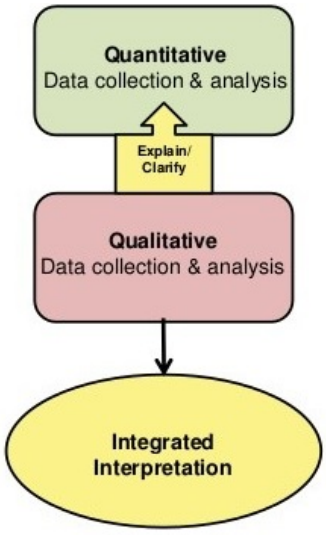



**Figure 3.1: The sequential explanatory process (Roller, 2017)**

The present research adopts a sequential explanatory mixed-methods approach. Initially, the quantitative method is employed, after which a qualitative method is applied to further support the findings revealed from the quantitative part of the research (Creswell, 2014).

To enable the reader to visually comprehend the functioning of the sequential explanatory model, the development of the reflective planning of the methods process moves beyond the simplicity of Roller's (2017) illustration and is adapted in Figure 3.2 from the flowchart designed by Ivankova et al. (2006). The flow has been modified to suit the process of the present research, including the practical methods employed to collect the data, and is based on the reflective application of the mixed-method approach and the pragmatic paradigms discussed in section 3.2.2.3 of this chapter. The development of the practices utilised within the philosophical methodologies is considered, which enables decisions to be made in order, thus enhancing the objectivity of the research and reducing the potential for researcher bias. This ensures that the value of the research is not compromised.

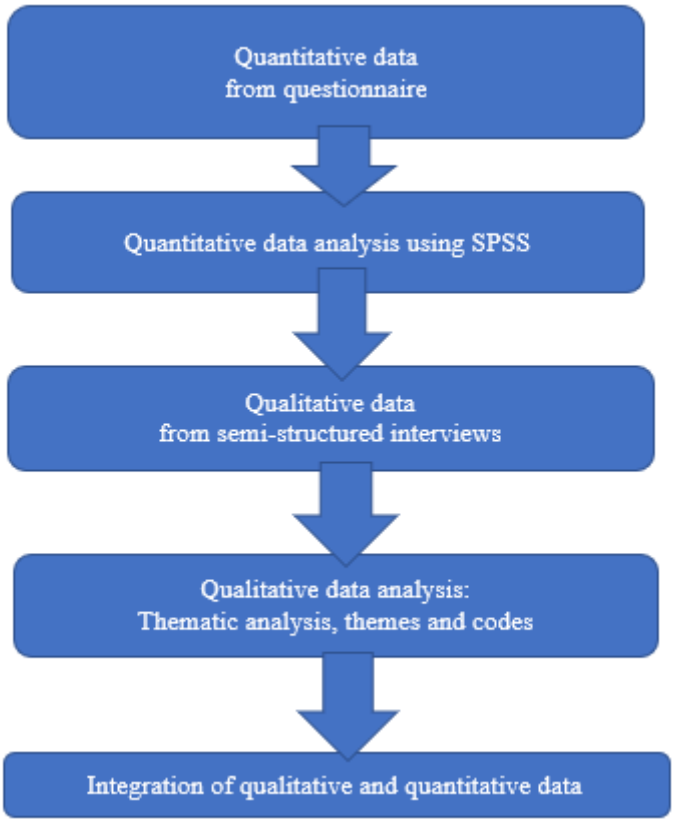



**Figure 3.2: Visual model of the sequential explanatory mixed-methods design procedures (Ivankova et al., 2006)**

### *3.2.3.2 Data collection methods*

The practical data collection methods reflect the methodological, theoretical basis of the research, where the survey questionnaire was deemed the most apposite for the quantitative examination of how mobile learning is utilised among English language

lecturers in state universities in the Kingdom of Saudi Arabia, and the obstacles that may arise. Then, qualitative interviews are conducted with lecturers to determine their perceptions and attitudes to mobile technology learning and pedagogy. It is believed that these methods will produce satisfactory responses to the research questions.

*3.2.3.2.1 Quantitative survey questionnaire*

Wray and Bloomer (2006) define a questionnaire as a document that must be completed in written or electronic form by the participant, while Wilson and Sapsford (2006) suggest that such instruments have the benefit of being self-reported and offering structured data-collection methods, which help to quantify and enable understanding on the basis of the attitudes and perceptions of a phenomenon. A commonly used data collection method, questionnaires are an effective means of obtaining large volumes of data in order to generate a broader perspective of the topic under investigation. Since they can be delivered electronically to the participants, questionnaires are inexpensive, standardised and aid in the maintenance of privacy through anonymity.

Reflection on this method of data collection was therefore relatively simple and persuasive in a study with limited time and the logistical challenges of working between two continents. Van Vaerenbergh and Thomas (2012) note that questionnaire surveys are quicker and easier to conduct than interviews, saving time and cost. Furthermore, Dörnyei (2007) states that the key objective of scientific research is to respond to the research questions in a systematic and disciplined manner, which is thus aided by a considered and well-directed questionnaire. However, concerns may arise that the questionnaire will provide rather cursory or potentially inaccurate data, and indeed the interpretation of what is being sought may be problematic (Nayak, 2019). A small pilot study was therefore carried out in order to address any issues of clarity, with the questions adapted where necessary to limit such distortion.

The questionnaire survey is an effective means of seeking insight into the thoughts, beliefs and opinions of the target lecturers. The behavioural factors of an individual may be pertinent to the subject of study, but otherwise are experiences not amenable to direct mathematical quantification (Wray and Bloomer, 2006). The questionnaire in this study was designed to obtain perspectives on the integration of use and lecturer experience of mobile technology in EFL teaching, and the obstacles faced in implementation. The instrument featured 53 questions, and was completed by 270 lecturers who teach English at Saudi universities. The research sample was the proportion of the target population

chosen by the researcher to be involved in the study's data collection process (Kamar, 2011).

The Likert scale can be utilised to measure the strength of opinion and perceptions more effectively than binary yes/no answers, and indeed requires greater consideration and reflection on the subject (Madu and Madu, 2002). This method provided a basis for the development of the interview questions and informed the manner in which the interviews would be conducted in order to complement the ascertained perceptions.

*3.2.3.2.2 Qualitative interviews*

Interviews were then employed to gather qualitative data directly from the selected participants, since more detailed descriptive results would enable the comprehensive analysis of the perspectives from those with direct involvement in the implementation of mobile technology for EFL learning within and outside of the classroom. This enabled the study to obtain culturally specific data, with the researcher asking open-ended questions to which respondents could provide detailed responses (Mack et al., 2005), while allowing themes to emerge through their responses that would facilitate a more comprehensive process of understanding.

The data on the personal perceived benefits and obstructions to the use of mobile technology in Saudi tertiary education in the qualitative interviews was gathered in response to questions designed to answer the research questions and to complement the data drawn from the quantitative questionnaire. This complementarity was expected to generate an enhanced level of understanding through alternative analytical processes to generate theoretical models of the phenomenon under examination (Brewer and Hunter, 1989; Creswell, 1995). Interviews are thus an effective means of revealing detailed information about an individual's thoughts, perspectives, experiences and behaviours when investigating a relatively new topic such as the use of mobile technology in Saudi teaching. Moreover, interviews allow the researcher to understand the phenomenon examined through the eyes of the participants (Wimmer and Dominic, 1997).

*3.2.3.2.2.1 Semi-structured interviews*

There are different formats of interviews—structured, unstructured and semi-structured—each of which brings benefits and drawbacks. Structured interviews are generally more suited to quantitative data collection, and are often based on binary yes/no questions or a prepared list of answers to a list of closed questions (Patton, 2002; Gray,

2009). This generally removes any sense of control or contribution from the respondents, who could arguably have simply provided their answers by questionnaire, and thus risks a higher probability of interviewer bias (Fox, 2009). The value of the data drawn from structured interviews is thus limited in a study that is based on perceptions and perspectives.

In the unstructured interview, there are generally no pre-set questions, with the researcher relying on ideas and notes regarding the proposed topic of discussion, leaving the respondents to control the flow of the interview with a view to collecting data from discursive interaction (Berg and Lune, 2012). This adds considerable flexibility to the process and enables a rapport to be built between those involved, but the lack of standardisation of approach creates a loss of direction for the data analysis, given interviewees are likely to be asked different questions and address myriad themes (Dana et al., 2013). Unstructured interviews are also very time-consuming and as a conversational-based method, produce considerable volumes of data.

The disadvantages inherent in the restrictive structured interview and the somewhat directionless unstructured process, logically lead to preference being given to the semi-structured method of qualitative data collection, which is a combination of the advantages of the structured and unstructured approaches (Gray, 2009). Through the semi-structured approach, the researcher retains control over the direction of the interview and the collection of data necessary to fulfil the demands of the research questions, while retaining the flexibility to examine points of particular interest raised by the interviewees. The questions are pre-planned, open-ended and designed to give the respondents the opportunity to discuss and expand on their opinions and perceptions, with the interviewer making notes and/or audio recordings to facilitate recall and further enquiry (Denscombe, 2001). Semi-structured interviews are certainly more easily managed than their unstructured counterparts when there are research questions to respond to (Hammond and Wellington, 2013), while they allow flexibility in the respondent's replies to questions related to the research purpose, are used herein to obtain clear insight into the participants' opinions (O'Leary, 2010). Moreover, semi-structured interviews allow the researcher to understand the phenomenon examined through the eyes of the participants (Wimmer and Dominic, 1997). In the present research, semi-structured interviews are harnessed to provide the respondents with the flexibility and freedom to elaborate on topics they wish to discuss further regarding the use of mobile technology and the challenges and benefits they might encounter while using this technology.

### *3.2.3.3 Variables, hypotheses and the research framework*

It has been noted in section 2.10.4 regarding the use of the UTAUT2 model that the independent variables of this study are performance expectancy, effort expectancy, social influence, facilitating conditions, habit, hedonic motivation and price value, while the dependent variables are behavioural intention to use mobile technology and the use behaviour of mobile technology. In addition, gender, age, teaching experience and qualifications are potential moderators in the relationships between the independent and dependent variables.

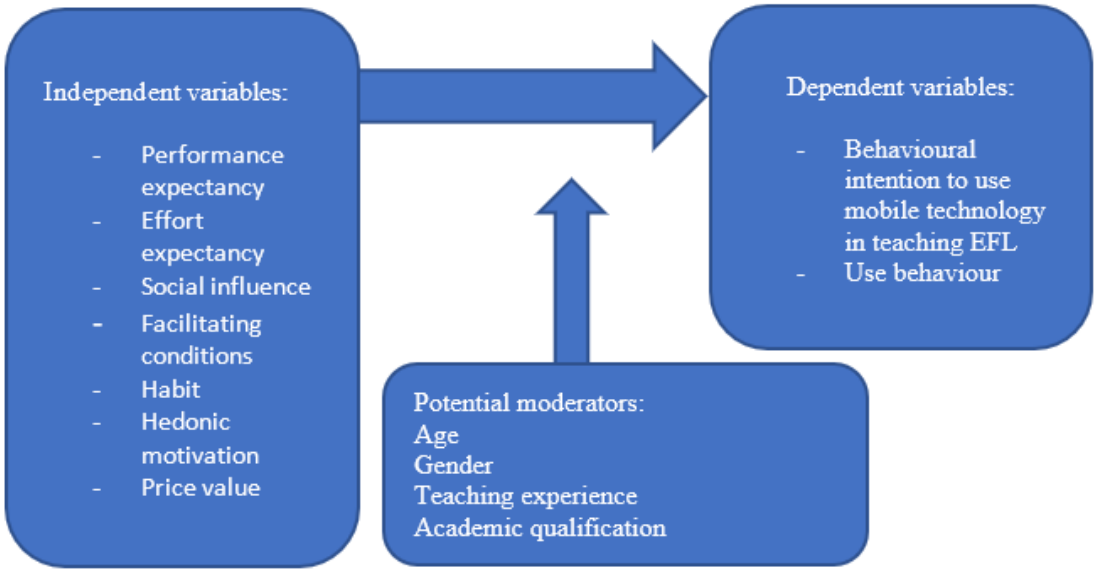



**Figure 3.3: Initial research model for the higher education acceptance of mobile technologies in teaching EFL**

Based on the research model, the following hypotheses are presented:

*H 1.1- Performance expectancy influences lecturers' behavioural intention to use mobile technology*

*H 1.2- Performance expectancy influences lecturers' use behaviour*

*H 2.1- Effort expectancy influences lecturers' behavioural intention to use mobile technology*

*H 2.2- Effort expectancy influences lecturers' use behaviour*

*H 3.1- Social influence influences lecturers' behavioural intention to use mobile technology*

*H 3.2- Social influence influences lecturers' use behaviour*

*H 4.1- Facilitating conditions influence lecturers' behavioural intention to use mobile technology*

*H 4.2- Facilitating conditions influence lecturers' use behaviour*

*H 5.1- Habit influences lecturers' behavioural intention to use mobile technology*

*H 5.2- Habit influences use behaviour*

*H 6.1- Hedonic motivation influences lecturers' behavioural intention to use mobile technology*

*H 6.2- Hedonic motivation influences lecturers' use behaviour*

*H 7.1- Price influences lecturers' behavioural intention to use mobile technology*

*H 7.2- Price influences lecturers' use behaviour*

**Moderation hypothesis:**

*H 8.1- At least one personal characteristic (gender, age, education and experience) moderates the relationship between the independent variables and lecturers' behavioural intention to use mobile technology*

*H 8.2- At least one personal characteristic (gender, age, education and experience) moderates the relationship between the independent variables and lecturers' use behaviour.*

### 3.2.4 Research methods

#### *3.2.4.1 The setting and population of the main study*

All those targeted with the questionnaire and invited to interview were EFL lecturers at Saudi universities, of diverse demographic backgrounds and attitudes to the utility of mobile technology in teaching practice. The sampling process will be now examined for both the larger questionnaire population, and the interview participants. Thereafter, the data collection, collation and assessment processes are explained.

##### *3.2.4.1.1 Questionnaire sampling*

The participants were EFL lecturers at Saudi state universities, who were both male and female, and formed part of the EFL teaching population. They were sampled through the probability proportional-to-size sampling method from the 25 Saudi state universities

registered in the Ministry of Education. Any selection process is profoundly time-consuming, while according to the Ministry of Higher Education (2015), the population comprised 2,000 EFL lecturers. Yamane's (1967) formula was employed to target a sample of 333 lecturers with no other inclusion criteria than they teach tertiary-level English, and in the context of the Vision 2030 initiative are required to use technology in their pedagogy.

Upon receipt of permission to collect the data from the Head of Higher Education, contact was made with the deans of all the departments of English tuition at the 25 state universities in the Kingdom of Saudi Arabia in order to request consent to contact the EFL lecturers. Lists of teachers in the English departments of these 25 universities were obtained, with each dean agreeing to distribute a link to the questionnaire to each of their EFL lecturers by email, social media or the university network. Thanks to the support and cooperation of these deans, the researcher received 300 questionnaires, of which 270 were fully completed, with 30 questionnaires excluded due to missing data.

*3.2.4.1.2 Design and distribution of the survey*

The questionnaire survey did not require the respondents to provide their name, since it was believed that anonymity would encourage forthright responses, while the instrument was sent in both English and Arabic forms (Lodico et al., 2010) in order to provide the participants with the freedom to answer in their preferred language. To ensure the accuracy of the translation, the researcher first reviewed the related literature in the Arabic language, and then worked with a translator to address all the terminologies and technical words in appropriate forms. Further validation of the Arabic version (see Appendix 2) was effected by a Saudi assistant professor with considerable expertise in information technology, which facilitated clarity in the technical enquiries through the rephrasing and changing of terminology. It was timed at 10–15 minutes to complete, and this was shown to be sufficient in the pilot exercise. The survey was based on the survey components of the UTAUT2 key variables developed by Venkatesh et al. (2003) and Venkatesh et al. (2012), which were modified to make the questions suitable to the context of mobile learning and the target population. Considerable reflection was undertaken on the layout, nature of questions, appearance, language and length of the questionnaire, essentially to make it an attractive document for completion. Closed questions were used in this survey, including multiple-choice questions, and Likert scale questions where the participants rated their level of agreement with a statement from strongly agree to strongly disagree.

The questionnaire consisted of four sections (see Appendix 1). The first section collected the personal profile of each participant including their gender, age, academic qualification and teaching experience, with these demographic variables reflected in the moderating features of the research model.

Section two consisted of questions to capture the lecturers' experience and use of tablets and smartphones in order to obtain a general overview of their ownership and experience of mobile technology, in particular the duration of owning a smartphone and tablet, the number of times the participants used their smartphone and tablets, how often they accessed the internet using a smartphone, and two questions regarding the participants' opinions on the price of mobile devices and internet services. This section concluded with a list of potential uses that were provided to the participants such as downloading apps and accessing social media, and asked them to indicate how frequently particular services were used.

The third section aimed to capture the participants' opinions regarding the use of mobile technologies for teaching, in order to gauge the degree of positive experience of the lecturers in using mobile technology to teach English at Saudi universities. A list of statements was provided to gather data based on the UTAUT/UTAUT2 constructs: (i) performance expectancy, (ii) effort expectancy, (iii) social influence, (iv) facilitating conditions, (v) hedonic motivation, (vi) price, (vii) habit, and (viii) behavioural intentions. The participants were asked to indicate their level of agreement with a statement given under each construct. The statements of each construct are presented in Table 3.2 below.

The fourth section comprised statements intended to determine how often mobile technologies were used to teach EFL or to support language learning, that is, the behavioural use of mobile technologies in EFL teaching and learning.

**Table 3.2: The statements of each construct based on the UTAUT/UTAUT2 constructs**

| **Items** | **Code** |
|---|---|
| **Performance Expectancy** | (PE) |
| 1- I find mobile technology useful in teaching EFL.<br>2- Using mobile technology helps me accomplish things more quickly. | |

| | |
|---|---|
| 3- Using mobile technology increases my productivity.<br>4- If I use mobile technology in my EFL teaching, it will contribute to my career development. | |
| **Effort Expectancy** | (EE) |
| 5- Learning how to use mobile technology is easy for me.<br>6- I find it easy to use mobile technology to support my teaching of EFL.<br>7- It is easy for me to become skilful at using mobile technology.<br>8- I am always thinking about how I can teach EFL through mobile technology. | |
| **Social Influence** | (SI) |
| 9- People who are important to me think that I should use mobile technology to teach EFL.<br>10- The EFL programme leaders in my university think that I should use mobile technology in my teaching.<br>11- The EFL programme leaders in my university do not encourage me to use mobile technology in my teaching.<br>12- Some people who are close to me, such as family, think that there is no role for mobile technology in teaching EFL. | |
| **Facilitating Conditions** | (FC) |
| 13- I have the resources necessary to use mobile technology in teaching EFL.<br>14- I have the knowledge necessary to use mobile technology in teaching EFL.<br>15- Mobile technology is compatible with other technologies I use.<br>16- I can get help from others (family, faculty and friends) when I have difficulties using mobile technology.<br>17- The use of mobile technology is supported by my university.<br>18- The Wi-Fi connectivity provided on the university campus is reliable. | |
| **Hedonic Motivation** | (HM) |
| 19- Using mobile technology is fun.<br>20- I enjoy using mobile technology to teach EFL. | |

| | |
|---|---|
| **Price** | (P) |
| 21- Mobile technology is reasonably priced. | |
| **Habit** | (H) |
| 22- Using mobile technology in EFL teaching has become a habit for me.<br>23- I automatically use mobile technology to teach English. | |
| **Behavioural Intentions** | (BI) |
| 24- I intend to continue using mobile technology in the future to teach EFL.<br>25- I am always trying to teach EFL through mobile technology. | |
| **Use Behaviour** | (UB) |
| 26- Commercial applications for teaching English<br>27- Applications developed by the faculty, department or university<br>28- Websites for accessing materials or information for the class<br>29- Short message services (SMS)<br>30- Multi Media services (MMS)<br>31- E-mail and social media (Twitter, Facebook, etc.) | |

*3.2.4.1.3 Interview sample*

The participants in the qualitative interviews were selected according to their expressed desire in the questionnaire to participate in the second stage of the data collection process. They were asked at the end of the questionnaire if they would be willing to participate in the interview phase, and those who indicated they would were asked to confirm their e-mail addresses, after which they were contacted with a participant information form describing the nature of the interviews (see Appendix 3), as well as a consent form to sign and return (see Appendix 4).

This resulted in an interview sample size of 12 EFL teachers who agreed to participate in the study. The sample size for the interviews was small, but sufficient to fulfil the aim and objectives of the study (Patton, 2002), since the interview participants were able to provide a deeper understanding of the survey findings to build a more complete picture of the phenomenon.

*3.2.4.1.4 Interview schedule*

The interview schedule (see Appendix 5) was similarly based on the variable constructs of Venkatesh et al.'s (2013) UTAUT2 model, a guide to predicating teachers' behavioural intention and use of mobile learning technology, with an examination of the barriers perceived. The interview schedule therefore consisted of three stages.

Section one focused on gaining demographic information about the participants and insight regarding the lecturers' use of mobile devices for teaching in general, in order to respond to research question 1: What is the Saudi university lecturers' experience of using mobile technology? It commenced with straightforward questions to ease the participants into the interview: (i) How long have you been teaching? (ii) Do you own a mobile phone or other mobile device with email capabilities, internet connection and/or the ability to add applications to it? (iii) Do you use mobile devices, such as a smartphone or tablet? If so, in what ways do you use them, and why? If not, why not?

Section two focused on gaining insight into the use and perceptions of using mobile devices based on the findings from the component in the conceptual framework (UTAUT2) of the quantitative phase, in order to respond to research question 2: What are the factors that are associated to the Saudi university lecturers' perceptions on the adoption of mobile technology to teach the English language in state universities? The key interview and follow-up questions involved were as follows:

- Performance expectancy: (PE1) How do you maintain and improve your own professional skills using mobile technologies? (PE2) What are some other situations where you might use your mobile phone or device to help support your academic teaching? (PE3) Has the use of mobile technology helped you significantly in improving your professional skills in teaching English? (PE4) Tell me about an instance when you tried to use your mobile phone or device to help you teach something.

- Effort expectancy: (EE1) How easy or difficult would you find using a mobile device for information seeking or teaching? (EE2) Does teaching by using mobile learning technology help you to manage your teaching time effectively. Why and how? Why not?

- Social influence: (SI1) Who encouraged you to use mobile learning technology in your teaching? Why? (SI2) How supportive have your friends or those close to you been in your use of a mobile device for teaching?

- Facilitating conditions: (FC1) Do you think you have efficient support to use mobile learning technology in your teaching? Why? Why not? (FC2) What do you think about your university's responsibilities regarding the integration of mobile learning in teaching English as global language? For example, should there be incentives? Should the university provide mobile technology to instructors and students to enhance the process of language learning?

- Hedonic motivation: (HM1) What do you enjoy in using mobile technology in your teaching? Why?

- Habit: (H1) How frequently do you use mobile technology in your teaching?

- Price value: (PV1) What do you think about the cost of mobile devices and internet connections? Do you think that this cost impacts your use of technology in your teaching? In what way?

- Behavioural intention: (BI1) Do you intend to use mobile learning in your teaching? Why?

- Use behaviour: (UB1) Do you use any applications or social media in your teaching? Why?

Section three focused on mobile devices and barriers to using them for learning. To identify barriers to using mobile devices for teaching, the researcher asked the participants: (i) Is there anything that makes you reluctant or unwilling to use your device in your academic teaching? What holds you back? (ii) Do you have any concerns about using mobile technologies in your teaching, regarding the content delivery, or your students? (iii) Is there any factor in your experience in this college/university that you think influences your teaching that we have not yet had a chance to discuss?

*3.2.4.1.5 Interview settings*

The interviews were conducted and recorded through Skype and by telephone, as the most convenient methods given the logistical difficulties of distance. They were then transcribed as Arabic was the primary language used to facilitate communication and

understanding. Each interviewee was provided with an information sheet regarding the purpose of the research and the nature of the interviews, which aimed to answer the research questions (see Appendix 3). Consent forms had already been sent and electronically signed, with each participant asked to confirm that this was the case (see Appendix 4).

With the consent of the interviewees, the sessions were recorded via Skype and the audio through an iPhone voice recording app. It was explained that these recordings would be stored in electronic format, with the identity only noted by an alphanumerical reference, and then zipped in a secure folder on an LJMU password-protected computer. Moreover, once the data were transferred to the computer they were deleted from the researcher's smartphone. In their guide on the conducting of interviews, Edwards and Talbot (2014) suggest a duration of 20–60 minutes in order to avoid overburdening either the interviewee or the interviewer, with the participants given sufficient time to answer the questions without interruption. The interviews were transcribed for ease of reference.

*3.2.4.1.6 Demographic of the interview participants*

The demographic variables of the interview participants are presented in Table 3.3.

**Table 3.3: Demographic details of the interview participants**

| Interviewee | Mode | Recording method | Age | Gender | Highest qualification |
|---|---|---|---|---|---|
| 1 | Skype | Notes | 35 | male | Master's |
| 2 | Phone | Audio-recording | 39 | female | PhD |
| 3 | Skype | Audio-recording | 30 | female | Master's |
| 4 | Skype | Audio-recording | 29 | female | Master's |
| 5 | Skype | Audio-recording | 40 | female | PhD |
| 6 | Skype | Audio-recording | 35 | female | Master's |
| 7 | Phone | Audio-recording | 49 | male | PhD |
| 8 | Phone | Audio-recording | 33 | female | Master's |
| 9 | Phone | Audio-recording | 40 | female | PhD |
| 10 | Phone | Notes | 39 | male | Master's |

| | | | | | |
|---|---|---|---|---|---|
| 11 | Phone | Notes | 44 | male | PhD |
| 12 | Skype | Notes | 33 | female | Master's |

#### *3.2.4.2 The pilot study*

Teijlingen and Hundley (2001) explain that a pilot study facilitates small-scale testing, moderation and the revision of the research tools planned for the principal research project. It allows the weaknesses of the research plan to be identified, with Dörnyei (2007) suggesting that piloting is a dress rehearsal for the main data-gathering activities. The purpose of the pilot study in this research for both the survey and interviews was to help identify issues in the close-ended questions in the questionnaire and the open-ended questions in the interviews, to ensure there was no ambiguity in the questions in either process, and to ensure that the format and length of the questionnaire did not alienate the target participants (Hassan et al., 2006).

A pilot study enables continued reflection on the nature, substance and clarity of the questionnaire objectives, and tests the efficacy of the interviewer's interview technique (Gall et al., 2003). The aim is to ensure the feasibility of application of the data collection techniques, identifying problems before they arise and improving the instruments accordingly (Bryman, 2001). These factors represent the drivers for undertaking the pilot process, with a view to improving the data collected in the main research project. The results led to revisions to the questionnaire and interview questions, as well as the manner in which the interview would be conducted.

##### *3.2.4.2.1 The questionnaire survey*

The pilot study of the survey was conducted in 2017. After obtaining permission from the Dean of the English Department in a Saudi university, the Head of the English Department distributed 30 questionnaires to the English lecturers as part of the pilot study, with 22 instruments completed, returned and deemed valid for use in the pilot study. The resulting data were inputted into the SPSS (v.24) software and the Cronbach's alpha coefficient reliability test was used to measure the overall reliability of the research apparatus by assigning a correlation value (Cohen et al., 2000). The Cronbach's alpha of the questionnaire used in this research was found to be .945, which equates to excellent in terms of performance expectancy, behavioural intentions and effort expectancy. In terms of hedonic motivation and habit the Cronbach's alpha was very good, and it was

good for facilitating conditions. In terms of social influence, it was only acceptable. Overall, the results indicated that the questionnaire was reliable and there was good internal consistency within the scale.

*3.2.4.2.1.1 The feedback*

The participants reported that they found the questionnaire design and questions to be relatively clear to understand, although there were some minor issues with regard to the terms adopted from Venkatesh et al. (2012). Some problems arose regarding expressions that were unfamiliar to some of the participants due to their rather scholarly nature, and thus amendments were made to the questionnaire. Malmqvist (2019, p.1) offered insight for this researcher's purposes with his assertion that using a pilot study process will enable the researcher to "*be better informed and prepared to face the challenges that are likely to arise in the substantive study and more confident in the instruments to be used for data collection*". The questionnaire was modified with the assistance of more experienced advisors and simply required certain adjustment to the format and operation. The input from the pilot participants assisted in the instrument's adaptation, based on the comments on clarity.

*3.2.4.2.2 The interview*

In the pilot study, the researcher conducted interviews for the first time, and as a novice to the process, the three participants provided opportunities for expansion and clarification, which aided the listening and understanding process of academic exchange. The pilot interviews also improved the interpersonal skills of the researcher, who learned how to keep the interview focused on the research questions, whilst facilitating the free expression of the participants. It was essentially good practice, and a source of considerable reflection for the main study.

*3.2.4.2.3 Implications for the main study*

Several issues arose in the conducting of the pilot study, which benefited the clarity and veracity of the main study and can be summarised as follows:

(i) the terminology of the questionnaire was amended to achieve greater clarity, in response to the respondents' feedback;
(ii) gaps were highlighted in the literature review, and stimulated further research into the particular practices that are examined in the global education frameworks, in order to aid in the critical discussion and application;

(iii) important direction was provided to reassess the methodology chapter, its philosophy and the methods of data gathering;

(iv) reflection on the approach to potential participants, and indeed the size of the sample for both the questionnaire and interview processes, in order to develop a productive relationship based on effective intercommunication;

(v) opportunities to develop the researcher's interviewing skills in order to focus on data collection pertinent to the research questions and respectfully avoid discursive diversions;

(vi) reflect upon the interview process and its conduct, ensuring leading questions were avoided.

#### *3.2.4.3 Ethical considerations*

Neuman (2007) asserts that social science researchers are advised to conduct research in an ethical manner, even where the participants express little concern. Applying the Liverpool John Moores University's Research Ethics Requirements for studies involving human subjects, the primary issues for reflection were obtaining official permission to approach the universities and lecturers, since only then could informed consent be sought from the participants, who were guaranteed anonymity and confidentiality.

#### *3.2.4.4 Requesting official permission*

The application to conduct the study was sent for consideration to the Liverpool John Moores University Research Ethics Committee. Within the application, the research aim and research questions were outlined, as well as the plan of action regarding dealing with human subjects insofar as issues of confidentiality, informed consent and anonymity were concerned. The description of the research design included a risk assessment for the participants, and was developed under the professional supervision of the researcher's instructor and mentor. In February 2017, the Ethics Committee approved the application.

The researcher sought permission to collect the data from the Head of Higher Education in her university (see Appendix 6). Upon receipt, contact was made with the deans of all the departments at the 25 state universities in the Kingdom of Saudi Arabia in order to request consent to contact their EFL lecturers. The consent form was returned by email without any issue, and indeed each dean agreed to distribute a link to the questionnaire to each of their EFL lecturers by email, social media or the university network. The researcher received 300 questionnaires, with 270 fully completed, whilst 30

questionnaires were excluded due to missing data.

#### *3.2.4.5 Informed consent*

Participation in the research programme and data collection methods is entirely voluntary, and no inducements or other methods of persuasion were used to effect cooperation in this study (Neuman, 2017). In the interviews, each potential volunteer was fully informed of the nature of the research and its purpose via a participant information sheet sent by email in the invitation to interview (see Appendix 3). This included details of the measures taken to preserve anonymity and confidentiality, as well as the risk assessment (Berg and Lune, 2012). In the survey, the participants were first asked to sign if they agreed to take part in the questionnaire via the information sheet, acknowledging that they understood what had been explained, and with the opportunity offered to clarify any points of concern (Wellington and Szczerbinski, 2007).

#### *3.2.4.6 Maintaining confidentiality and anonymity*

The real names of the participants are not used anywhere in the research, and only the researcher is aware of them in the case of the interviewees (Flick, 2006). Indeed, given the nature of the study, the institutions are not identified due to the cultural and traditional inhibitions on the potential criticism of authority. The participants were allocated codes to facilitate analysis of their responses, and they were advised of the data storage arrangements, with only the researcher having access (Gray, 2009).

Each participant was informed in writing that his or her data would only be available to the supervisors and examiners, with the audio recordings deleted five years after the study's completion. This enabled trust to be established between the researcher and participants, with further emphasis placed on the nature of the inquiry as scientific and non-political. Much reflection was given to the nature of the introductions and relationship-building, albeit brief and research-related, and this included reiteration of the anonymity and confidentiality principles (De Laine, 1997).

#### *3.2.4.7 Analysis of the main study data*

##### *3.2.4.7.1 Survey questionnaire: data analysis procedures*

The quantitative data collected through the questionnaire were entered into SPSS (v.24) to aid in the development of descriptive analysis and inferential tests, as well as to identify predictive factors valuable to the findings of the study. SPSS is arguably the most

commonly used software to manage and organise data, and is relatively straightforward to use (Dörnyei, 2007).

*3.2.4.7.1.1 Instruments' validity and reliability*

To ensure the internal reliability of the questionnaires, Cronbach's alpha tests were carried out using SPSS (v.24) in order to check for internal reliability. The Cronbach's alpha values for the internal consistency of the scale and the items ranged from acceptable to good. According to Hair et al. (2014), Cronbach's alpha is a reliability measurement ranging from 0 to 1, and the lower limit of acceptability is from .60 to .70. In general, the participants reported positive attitudes on the statements that belong to different constructs on the use of mobile technology. Overall, the results indicated that the questionnaire was reliable and there was good internal consistency within the scale (see Table 3.4).

**Table 3.4: Internal consistency of the scale using Cronbach's alpha**

| Scale | No. of items | Cronbach's alpha |
|---|---|---|
| Performance expectancy | 4 | .887 |
| Effort expectancy | 4 | .804 |
| Social influence | 4 | .677 |
| Facilitating conditions | 6 | .722 |
| Hedonic motivation | 2 | .816 |
| Habit | 2 | .762 |
| Behavioural intention | 2 | .820 |
| Use behaviour | 6 | .601 |

Data content and face validity were utilised in confirming the accuracy and correlation of the questionnaire and the interview. In the face validity, ten criteria were met based on expert review: (i) clarity, (ii) wordiness, (iii) negative wording, (iv) overlapping responses, (v) balance, (vi) use of jargon, (vii) appropriateness for responses listed, (viii) use of technical language, (ix) application to praxis, and (x) relationship to the problem (White and Simon, n.d.). The questionnaire was revised in accordance with the reviews of those who supervised the questionnaire's face validity analysis, and who suggested

clarifying the facilitating conditions construct by adding the intended context (e.g. universities) to make items under this construct clearer for the participants.

In the content validity, an expert review panel of those who advised and assisted the researcher revealed that most of the items exceeded the expectations and no modifications were required, although they recommended rephrasing some items to ensure the consistency between items under each factor.

*3.2.4.7.1.2 Questionnaire descriptive statistics*

Demographic information was classified as categorical data (e.g. nominal such as gender, ordinal such as academic qualification, and numerical such as age and teaching experience), whereby descriptive statistics were employed to obtain the frequency and percentages of demographic information provided by the participants. Some Likert scale questions that featured multiple-choice answers were analysed quantitatively using mean and standard deviation (SD) to define the degree of relative importance (Phakiti, 2015), namely, the items of each construct were ordered from high to low using the mean and standard deviation. A Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used to determine the range of the lecturers' attitudes and opinions towards the use of mobile technology in teaching. This enabled the lecturers to indicate their degree of agreement towards smartphone and tablet use for teaching English, based on the statement of the seven constructs of the UTAUT2 model.

*3.2.4.7.1.3 Simple correlation*

In this study, the relationships between the independent UTAUT2 variables and the dependent variables (behavioural intention and use behaviour) were calculated using correlation in order to achieve a clear understanding of the relationship. By using a simple correlation matrix, the strength of relationship can be classified into small (r=.10 to .29), medium (r=.30 to .49) and large (r=.50 to 1.0) (Cohen, 1988).

*3.2.4.7.1.4 Linear regression*

A linear regression model (Pedhazur, 1997; Chatterjee, 2000) was employed to determine whether the lecturers' intention to use and use behaviour of mobile technology for teaching could be predicted by the UTAUT2 factors. Bryman and Cramer (2001) assert that linear regression is a widely utilised analysis process that is useful in not only studying how single independent variables affect a dependent variable, but also to enable the study of the influence of multiple independent variables and interaction affects

involving combinations of those variables. Using the linear regression model, the hypotheses mainly focused on testing the relationship of behavioural intention (BI), and use behaviour (UB) with performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), hedonic motivation (HM), habit (H) and price value (PV). In other words, the interest was to determine how the variation in behavioural intention and use behaviour could be reliant on the other variables.

In the linear regression model, the risks of collinearity among predictors must be low, to avoid any artificial enhancement of importance of one when associated with others. The variance inflation factor (VIF) should be less than 10 to ensure there is no collinearity among the predictors. The regression model assumes normality and the homogeneity of residuals.

For normality, a p-p plot is used, and so that observation needs to be on or close to the fitted line. For homogeneity, there should be no trend between the fitted dependent variable and residuals. In the results, the R and adjusted R-squared explaining the variation in behavioural intention and use behaviour due to independent variables in the model are reported. The quality of the regression model is evaluated using the total of variation ($R^2$%), which ranges from 0% (zero quality) to 100% (perfect quality). The F-test for ANOVA testing the model fit and significant change in model fitting are also reported. The significant effect of each variable in the model was examined by *t* test.

*3.2.4.7.1.5 Moderation regression*

Moderation regression (Andrew, 2018), the identification of a third factor from the correlation of two others, was used to examine how, for example, the educational level (moderator) will determine the conditions under a given performance expectancy (independent variable), and the relationship with the behavioural intention (dependent variable). In other words, the moderating variable is defined as an interaction effect that explains the directional changes of the relationship between two variables.

To conduct moderation regression, hierarchical multiple regression is employed to assess the effects of the moderating variables on the dependent and independent variables (Cohen, 1983). The moderating effect is statistically determined by multiplying the independent variable by the moderator to produce an interaction term. The independent variables and moderators need to be centred to avoid the collinearity issue that may arise

due to using the interaction variable. The change in the variation in, for example, behavioural intention, due to adding interaction terms is reported.

*3.2.4.7.2 Qualitative thematic data analysis*

The study was designed as a mixed-method process for two types of data collection in order to explore the experiences of Saudi EFL lecturers in using mobile technology in their teaching, as well as their perceptions towards this technology. Thematic analysis was employed to manually analyse the 12 semi-structured interviews with EFL teachers in the Saudi universities.

Braun and Clarke (2006) and Schwandt (2007) assert that thematic analysis is an exploratory approach in which the research analysis seeks to identify patterns or themes within the texts. Bryman (2012) further suggests that these themes relate to the central premise of the study, and should also be present within the interview questions, aiding in the response to the research questions that underpin the research. The thematic analysis was carried out manually, given the manageable number of interviewees that were conducted and transcribed. Braun and Clarke (2006) propose six steps for thematic analysis, which were adapted by the researcher to guide the analysis process: (i) familiarise yourself with your data, (ii) generate initial codes, (iii) search for themes, (iv) review the themes, (v) define and name the themes, and (vi) produce the report.

Initially, the data analysis was approached with an open mind, with the transcripts examined iteratively through several stages of splicing, linking, deleting and reassigning codes. A total of, twenty themes emerged from the qualitative interview data. Of these, seventeen valid themes were confirmed, with three themes eliminated due to their lack of representation in the interview data. Next, consideration was given to how these seventeen themes could be classified, where it became clear that they fitted and related to the UTAUT2 model. Therefore, the UTAUT2 model was used to create seven main themes, and the seventeen themes derived from the data were recategorised as sub-themes. This thus represents a combination of the approaches of data-derived and concept-derived themes (Gibbs, 2007).

Table 4.35 presents the sub-themes that emerged through the qualitative analysis, and the themes they fitted from the UTAUT2 model, while the codes used in the qualitative analysis can be seen in Appendix 7.

## 3.3 Summary and Conclusion

In this chapter, the research design and methodology underscore the intense reflection of the researcher in considering the most apposite philosophy and methods to investigate the use of mobile technology in EFL teaching in tertiary Saudi institutions. The ontological and epistemological theories guided towards a realist interpretive approach using a mixed method of qualitative and quantitative data collection to respond to the research questions. Evidently the UTAUT2 has proved to be an invaluable structure through which to frame the research and analyse the findings, which are explained in the next chapter.

This chapter has sought to comprehensively examine the ethical demands of the researcher's university in the UK, as well as those in the Kingdom of Saudi Arabia, and as is common in research of this kind, especially in the Kingdom of Saudi Arabia, anonymity, confidentiality and informed consent form the foundation for the data collection of the human subjects in this study. The next chapter presents the quantitative and qualitative data findings.

# Chapter 4
# Data Analysis Results

## 4.1 Introduction

This chapter presents the analysis and results of the quantitative and qualitative data collected from the questionnaire and interviews, respectively. In accordance with the sequential explanatory mixed-method employed in this study, the analysis of the quantitative data from the questionnaire is introduced first, followed by the qualitative analysis of the interview data. The analysis of the quantitative data was conducted using SPSS (v.26) and includes three main parts:

(i) descriptive analysis to explore data about the general experiences of the lecturers in terms of mobile technology, including their demographic information and general tablet and smartphone usage;
(ii) ascertaining the collapsed means, standard deviation scores and colouration of the questionnaire variables reported, to explain and to measure the respondents' attitudes in using mobile technology to teach English at Saudi universities; and
(iii) presenting the findings of the inferential statistics concerning the study hypotheses (using parametric tests) relating to the factors associated to the Saudi university lecturers' perceptions on the adoption of mobile technology to teach the English language at the state universities in the Kingdom of Saudi Arabia.

Each of the UTAUT2 constructs are examined in terms of the responses from the survey. Then, this chapter reports the findings of the analysis of the qualitative data from the semi-structured interviews using thematic analysis, before proceeding to consider both the quantitative and qualitative findings through triangulation.

To reiterate, the nature of analysis is intended to meet the objectives of the study, namely:

1) To determine the usage of mobile learning among English language lecturers in state universities in the Kingdom of Saudi Arabia.
2) To consider the traditional, cultural and practical obstacles to the use of mobile technology among the English language lecturers in the research context.

3) To gain a deeper understanding of the perceived benefits and the challenges of using mobile technology to teach the English language.

The UTAUT2 guides the exploration in this study and facilitates deeper understanding of the benefits and the challenges of using mobile technology to teach the English language at the state universities in the Kingdom of Saudi Arabia.

## 4.2 Quantitative Data Analysis

This part of the study is based on data collected from a questionnaire survey of 270 lecturers of EFL in 25 Saudi state universities.

As explained in Chapter 3, a number of descriptive statistical methods, including frequency distribution, mean and standard deviation, and correlation are used in this study to analyse the quantitative data. To test the research hypotheses, several statistical techniques (inferential tests) are employed including linear regression analysis and moderation regression. Based on the initial research model, the following hypotheses are proposed:

*H 1.1- Performance expectancy influences lecturers' behavioural intention to use mobile technology*

*H 1.2- Performance expectancy influences lecturers' use behaviour*

*H 2.1- Effort expectancy influences lecturers' behavioural intention to use mobile technology*

*H 2.2- Effort expectancy influences lecturers' use behaviour*

*H 3.1- Social influence influences lecturers' behavioural intention to use mobile technology*

*H 3.2- Social influence influences lecturers' use behaviour*

*H 4.1- Facilitating conditions influence lecturers' behavioural intention to use mobile technology*

*H 4.2- Facilitating conditions influence lecturers' use behaviour*

*H 5.1- Habit influences lecturers' behavioural intention to use mobile technology*

*H 5.2- Habit influences use behaviour*

*H 6.1- Hedonic motivation influences lecturers' behavioural intention to use mobile technology*

*H 6.2- Hedonic motivation influences lecturers' use behaviour*

*H 7.1- Price influences lecturers' behavioural intention to use mobile technology*

*H 7.2- Price influences lecturers' use behaviour*

**Moderation hypotheses:**

*H 8.1- At least one personal characteristic (gender, age, education and experience) moderates the relationship between the independent variables and lecturers' behavioural intention to use mobile technology (accepted)*

*H 8.2- At least one personal characteristic (gender, age, education and experience) moderates the relationship between the independent variables and lecturers' use behaviour (accepted)*

### 4.2.1 Demographics

This section summarises the gender, age, years of teaching experience and education level for all 270 of the questionnaire participant lecturers from Saudi universities, with descriptive statistical analysis used to describe their characteristics, as shown in Table 4.1.

**Table 4.1: Frequency distribution of personal information**

| | Gender | | Age (years) | | | | | | | | Education level | | | | Teaching experience (years) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Male | Female | 24-29 | 30-34 | 35-39 | 40-44 | 45-49 | 50 -54 | 55-59 | 60 or more | Diploma | Bachelor | Master | PhD | None | Less than 5 | 5-14 | 15 or more |
| **Frequency** | 98 | 172 | 47 | 79 | 88 | 31 | 15 | 7 | 1 | 2 | 3 | 24 | 160 | 83 | 10 | 84 | 143 | 33 |
| **%** | 36.3 | 63.7 | 17.4 | 29.3 | 32.6 | 11.5 | 5.6 | 2.6 | 0.4 | 0.7 | 8.9 | 1.1 | 59.3 | 30.7 | 3.7 | 31.1 | 53.0 | 12.2 |

The data presented in Table 4.1 indicate that the majority of the respondents (n=172, 63.7%) to the questionnaire were female, while 36.3% (n=98) were male.

The respondents' age was divided into eight groups, with the largest corresponding to those aged 35 to 39 years, accounting for 32.6% of the entire sample. The lowest number of respondents belonged to the four groups aged over 45 years, which collectively represented 8.3% of the entire sample that responded to the questionnaire. With regards to the academic level, the largest group of the respondents held a Master's degree (n=160, 59.3%).

In this part, the respondents were also asked about the number of years of teaching experience in university, with the largest group of respondents having 5–14 years of teaching experience (n=143, 53.0%), followed by those with under five years' experience (n=84, 31.1%).

The fact that 79.3% of the participants were aged under 40 years underscores the nature of Saudi society as youth-dominated, in which young people represent 65% of the total population according to Index Mundi in 2019.[1] Meanwhile, 89.7% of the participants held a postgraduate degree (Master or PhD), a necessity since it is conditional for lecturers holding a Bachelor degree to complete their higher studies in order to obtain a permanent university lecturer position in Saudi universities, while 53.0% of the participants were well experienced in the field of university teaching through having between 5 and 15+ years of service.

### 4.2.2 Analysis of the general usage of smartphones and tablets

This section reports the general usage (i.e. not specific to language teaching) of mobile technology among the English language lecturer respondents.

Table 4.2 reports the respondents' ownership of smartphones and tablets.

**Table 4.2: Frequency distribution of owning a smartphone and tablet**

| | | Frequency | % |
|---|---|---|---|
| Do you have a smartphone? | Yes | 267 | 98.9 |
| | No | 3 | 1.1 |
| Smartphone | Myself | 258 | 95.6 |
| | The university | 1 | 0.4 |
| | A gift from parents | 7 | 2.6 |

[1] Index Mundi (2019). Saudi Arabia Age Structure. Available at: https://www.indexmundi.com/saudi_arabia/age_structure.html (Accessed: 29 October 2020).

| | | | |
|---|---|---|---|
| | Family | 4 | 1.4 |
| Do you have a tablet? | Yes | 129 | 47.78 |
| | No | 141 | 52.22 |
| Tablet | Myself | 121 | 93.8 |
| | The university | 6 | 4.7 |
| | Other | 2 | 1.6 |

Then, the respondents were asked about the duration of ownership of these devices, as presented in Table 4.3.

**Table 4.3: Frequency distribution of duration of owning a smartphone and tablet**

| | | **Frequency** | **%** |
|---|---|---|---|
| Smartphone | 1 year or less | 4 | 1.5 |
| | 2-5 years | 19 | 7.1 |
| | 6-10 years | 153 | 57.3 |
| | Over 10 years | 91 | 34.1 |
| Tablet | 1 year or less | 6 | 4.7 |
| | 2-5 years | 41 | 31.8 |
| | 6-10 years | 66 | 51.2 |
| | Over 10 years | 16 | 12.4 |

Next, the respondents were asked about their frequency of use of these devices, as presented in Table 4.4.

**Table 4.4: Frequency distribution of the number of times the participants used their smartphone and tablet**

| | | **Frequency** | **%** |
|---|---|---|---|
| Smartphone | Not at all | 1 | 0.4 |
| | 2-3 times a month | 1 | 0.4 |
| | Once a week | 1 | 0.4 |
| | 2-3 times a week | 1 | 0.4 |
| | 4-6 times a week | 1 | 0.4 |
| | Once a day | 2 | 0.8 |
| | 2-5 times a day | 27 | 10.0 |
| | >5 times a day | 233 | 86.3 |
| Tablet | Not at all | 12 | 9.3 |
| | Once a month | 11 | 8.5 |

| | | | |
|---|---|---|---|
| | 2-3 times a month | 11 | 8.5 |
| | Once a week | 9 | 7.0 |
| | 2-3 times a week | 20 | 15.5 |
| | 4-6 times a week | 12 | 9.3 |
| | Once a day | 19 | 14.7 |
| | 2-5 times a day | 21 | 16.3 |
| | >5 times a day | 14 | 10.9 |

Then, the respondents were asked about the frequency of internet access via these devices, with their responses shown in Table 4.5.

**Table 4.5: Frequency distribution of the number of times the participants accessed the internet using a smartphone or tablet**

| | | **Frequency** | **%** |
|---|---|---|---|
| Smartphone | Not at all | 2 | 0.7 |
| | 2-3 times a week | 2 | 0.7 |
| | 4-6 times a week | 3 | 1.1 |
| | Once a day | 3 | 1.1 |
| | 2-5 times a day | 32 | 11.9 |
| | >5 times a day | 225 | 83.3 |
| | | **Frequency** | **%** |
| Tablets | Not at all | 10 | 7.8 |
| | Once a month | 14 | 10.9 |
| | 2-3 times a month | 15 | 11.6 |
| | Once a week | 9 | 7.9 |
| | 2-3 times a week | 12 | 9.3 |
| | 4-6 times a week | 12 | 9.3 |
| | Once a day | 19 | 14.7 |
| | 2-5 times a day | 20 | 15.5 |
| | >5 times a day | 18 | 14.0 |

After that, the respondents were asked about their views regarding the cost of smartphones and tablets, as presented in Table 4.6.

**Table 4.6: Frequency distribution of views regarding the purchasing cost of smartphones and tablets**

| | | Frequency | % |
|---|---|---|---|
| Smartphone | Cheap | 1 | 0.4 |
| | Good value | 71 | 26.3 |
| | Expensive | 190 | 70.4 |
| | I do not know | 5 | 1.9 |
| Tablet | Cheap | 3 | 2.3 |
| | Good value | 43 | 33.3 |
| | Expensive | 80 | 62.0 |
| | I do not know | 3 | 2.3 |

This was followed by a question on the respondents' perceptions of the cost of a mobile internet connection, as seen in Table 4.7.

**Table 4.7: Frequency distribution of the cost of the internet connection of smartphones and tablets**

| | | Frequency | % |
|---|---|---|---|
| Smartphone | Cheap | 2 | 0.7 |
| | Good value | 102 | 37.8 |
| | Expensive | 156 | 57.8 |
| | I do not know | 7 | 2.6 |
| Tablet | Cheap | 3 | 2.3 |
| | Good value | 43 | 33.3 |
| | Expensive | 80 | 62.0 |
| | I do not know | 3 | 2.3 |

The findings presented in Table 4.2 indicate that the majority of the respondents had a smartphone (n=267, 98.9%), and in Table 4.3 that they had been using it for a period ranging from 6 to 10 years (n=153, 57.3%). With respect to daily smartphone usage in Table 4.4, the largest portion (n=233, 86.3%) correspond to the usage five times or more per day. While this represents a good starting point for potentially extensive use for the purpose of this research, it is also indicative of frequent utility.

The findings in this section reveal that almost half of the respondents to the questionnaire (n=129, 47.78%) had a personal tablet (Table 4.2), where the majority (n=51.2%) had

used it for between 6 to 10 years (Table 4.3). Most of the lecturers believed the purchase cost of smartphones and tablets to be expensive (Table 4.6), as well as the cost of the internet connection (Table 4.7).

### 4.2.3 The use of a smartphone or tablet to conduct video conversations, text messaging, schedule appointments, and edit or read documents

This section presents the findings regarding the use of smartphones and tablets to conduct video conversations, text messaging, schedule appointments, and edit or read documents, with the data presented in Table 4.8. The scale descriptors in the questionnaire employ degrees of frequencies: never, rarely, sometimes, often, always. This analysis revealed that a high proportion of the lecturers often or always used their smartphones to receive and send text messages and schedule appointments, while over half used them to edit and read documents, and hold video conversations. This reported usage was considerably higher than that reported for the same often or always usage of their personal tablets, with only editing and reading documents being carried out by over half the tablet users, while scheduling appointments, holding video conversations, and receiving and sending text messages often or always was only carried out by less than one-quarter of the tablet users. The preference was evidently for the use of the smartphone over tablets, as indicated by the findings presented in Table 4.8.

**Table 4.8: Frequency distribution of the respondents' use of a smartphone and tablet for different purposes**

| **Smartphone** | **Have video conversations** | **Receive and send text messages** | **Scheduling appointments** | **Editing or reading documents** |
|---|---|---|---|---|
| Never | 17.6% | 1.1% | 5.6% | 8.6% |
| Rarely | 27.0% | 8.2% | 14.6% | 23.6% |
| Sometimes | 4.9% | 3.7% | 4.1% | 2.6% |
| Often | 36.0% | 15.4% | 28.8% | 37.8% |
| Always | 14.6% | 71.5% | 46.8% | 27.3% |
| Mean | 2.60 | 3.63 | 3.19 | 2.85 |
| SD | 0.975 | 0.689 | 0.926 | 0.928 |
| **Tablets** | | | | |
| Never | 57.4% | 61.2% | 53.5% | 13.2% |
| Rarely | 24.8% | 20.2% | 22.5% | 18.6% |
| Sometimes | 1.6% | 3.1% | 2.3% | 3.9% |
| Often | 11.6% | 9.3% | 14.7% | 30.2% |

| | | | | |
|---|---|---|---|---|
| Always | 4.7% | 6.2% | 7.0% | 34.1% |
| Mean | 1.62 | 1.60 | 1.74 | 2.89 |
| SD | 0.868 | 0.922 | 0.948 | 1.048 |

### 4.2.4 Summary

The findings from this section indicate that the majority of the respondents had a smartphone that they had been using for a period ranging from six to ten years, with the majority using their devices five or more times per day. This is despite the fact that most of the respondents believed the cost of smartphone to be expensive, as well as the internet connection. Similar responses were found on the ownership and use of tablets, with about half of the respondents owning one, and the majority having used it for a period ranging from six to ten years, and half using it five times or more per day. Most thought the purchase cost and internet connection were expensive. The findings reveal that more lecturers owned and used a smartphone than a tablet for text messages, scheduling appointments, editing files and video conversations.

## 4.3 The Experience of Lecturers in Using Mobile Technology to Teach English at Saudi Universities

Collapsed mean and standard deviation scores of the questionnaire variables are used to explain and to measure the respondents' attitudes to using mobile technology to teach English at Saudi universities. Then, simple correlation is employed to find the possible relationships between the dependent variables (i.e. performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, habit and price value), and the independent variables (i.e. behavioural intentions and use behaviour). First, it is intended to investigate the questionnaire data to examine the internal consistency using Cronbach's alpha for the items of using mobile technologies for teaching English.

### 4.3.1 Internal reliability

To ensure the internal reliability of the questionnaire, Cronbach's alpha tests were carried out using SPSS (v.24) in order to check for internal reliability. The Cronbach's alpha values for the internal consistency of the scale and the items ranged from acceptable to good (Jones and Popkin, 2010), assessing results above 0.6 as acceptable to very consistent, and any lower making the results of questionable consistency. The results are presented in Table 4.9.

**Table 4.9: Internal consistency of the scale using Cronbach's alpha**

| Scale | No. of items | Cronbach's alpha |
|---|---|---|
| Performance expectancy | 4 | .887 |
| Effort expectancy | 4 | .804 |
| Social influence | 4 | .677 |
| Facilitating conditions | 6 | .722 |
| Hedonic motivation | 2 | .816 |
| Habit | 2 | .762 |
| Behavioural intention | 2 | .820 |
| Use behaviour | 6 | .600 |

#### *4.3.1.1 Descriptive statistics of the lecturers' experience in using mobile technology to teach English at Saudi universities*

Collapsed mean and standard deviation score were used to explain respondent's attitudes by asking the extent to which they agreed or disagreed with statements regarding the variables of performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, habit, behavioural intentions and use behaviour. A typical scale was used in this analysis (strongly disagree=1, disagree=2, neutral=3, agree=4, and strongly agree=5).

Descriptive tests were employed to identify the collapsed mean score and standard deviation of each statement of the variables. A score below 3 determined the participant's disagreement with the statements, while any score above 3 indicated agreement with the statements. Table 4.10 presents the statistical findings through percentages, mean and standard deviation, of the lecturers' experience of using mobile technology to teach English at Saudi universities

**Table 4.10: Descriptive statistics of the lecturers' experience in using mobile technology to teach English at Saudi universities**

| Statements | Strongly disagree | Disagree | Neutral | Agree | Strongly agree | Average | SD |
|---|---|---|---|---|---|---|---|
| **Performance Expectancy** | | | | | | | |
| I find mobile technology useful in teaching EFL | 1.1% | 1.5% | 15.9% | 29.6% | 51.9% | 4.30 | 0.867 |
| Using mobile technology helps me accomplish things more quickly | 1.1% | 0.7% | 13.0% | 25.9% | 59.3% | 4.41 | 0.826 |
| Using mobile technology increases my productivity | 1.9% | 3.0% | 16.7% | 33.3% | 45.2% | 4.17 | 0.937 |
| If I use mobile technology in my EFL teaching, it will contribute to my career development | 1.5% | 3.0% | 23.0% | 34.1% | 38.5% | 4.04 | 0.931 |
| **Overall** | | | | | | **4.23** | **.771** |
| **Effort Expectancy** | | | | | | | |
| Learning how to use mobile technology is easy for me | 0.4% | 1.1% | 10.4% | 30.4% | 57.8% | 4.44 | 0.754 |
| I find it easy to use mobile technology to support my teaching of EFL | 1.1% | 3.0% | 15.6% | 37.4% | 43.0% | 4.19 | 0.881 |
| It is easy for me to become skilful at using mobile technology | 1.1% | 2.2% | 11.5% | 37.4% | 47.8% | 4.29 | 0.840 |
| I am always thinking about how I can teach EFL through mobile technology | 3.3% | 9.3% | 21.5% | 30.4% | 35.6% | 3.86 | 1.109 |
| **Overall** | | | | | | **4.19** | **.717** |
| **Social Influence** | | | | | | | |
| People who are important to me think that I should use mobile technology to teach EFL | 4.8% | 10.4% | 43.3% | 23.0% | 18.5% | 3.40 | 1.086 |
| The EFL programme leaders in my university think that I should use mobile technology in my teaching | 4.8% | 17.4% | 41.9% | 23.3% | 12.6% | 3.21 | 1.066 |
| The EFL programme leaders in my university do not encourage me to use mobile in my teaching | 3.0% | 16.7% | 46.7% | 24.1% | 9.6% | 2.82 | 1.151 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Some people who are close to me think that there is no role for mobile technology in teaching EFL | 6.3% | 18.1% | 47.8% | 21.1% | 6.7% | 2.64 | 1.093 |
| **Overall** | | | | | | **3.21** | **.708** |
| **Facilitating Conditions** | | | | | | | |
| I have the resources necessary to use mobile technology in teaching EFL | 3.0% | 11.5% | 25.9% | 38.5% | 21.1% | 3.64 | 1.034 |
| I have the knowledge necessary to use mobile technology in teaching EFL | 1.1% | 5.2% | 18.1% | 45.2% | 30.4% | 3.99 | 0.891 |
| Mobile technology is compatible with other technologies I use | 2.2% | 1.9% | 20.7% | 49.3% | 25.9% | 3.95 | 0.862 |
| I can get help from others when I have difficulties using mobile technology | 3.0% | 8.9% | 15.6% | 44.1% | 28.5% | 3.86 | 1.023 |
| The use of mobile technology is supported by my university | 17.0% | 18.1% | 32.6% | 18.1% | 14.1% | 2.96 | 1.266 |
| The Wi-Fi connectivity provided on the university campus is reliable | 26.7% | 16.3% | 22.2% | 20.4% | 14.4% | 2.80 | 1.409 |
| **Overall** | | | | | | **3.53** | **.711** |
| **Hedonic Motivation** | | | | | | | |
| Using mobile technology is fun | 1.5% | 3.3% | 15.9% | 37.4% | 41.9% | 4.16 | 0.901 |
| I enjoy using mobile technology to teach EFL | 1.9% | 4.8% | 20.7% | 34.1% | 38.5% | 4.04 | 0.971 |
| **Overall** | | | | | | **4.08** | **.884** |
| **Price Value** | | | | | | | |
| Mobile technology is reasonably priced | 8.5% | 19.3% | 29.3% | 32.2% | 10.7% | **3.19** | **1.122** |
| **Habit** | | | | | | | |
| Using mobile technology in EFL teaching has become a habit for me | 1.5% | 3.3% | 15.9% | 37.4% | 41.9% | 3.40 | 1.173 |
| I automatically use mobile technology to teach English | 1.9% | 4.8% | 20.7% | 34.1% | 38.5% | 4.03 | 0.956 |
| **Overall** | | | | | | **3.39** | **1.17** |
| **Behavioural Intentions** | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| I intend to continue using mobile technology in the future to teach EFL | 2.6% | 3.7% | 18.5% | 39.6% | 35.6% | 3.69 | 1.110 |
| I am always trying to teach EFL through mobile technology | 4.4% | 11.1% | 24.1% | 33.3% | 27.0% | 2.28 | 1.032 |
| **Overall** | | | | | | **3.85** | **.961** |
| | | | **Use Behaviour** | | | | |
| | Never | Rarely | Sometimes | Often | | | |
| I use commercial applications for teaching English | 32.2% | 24.4% | 28.5% | 14.8% | | 2.27 | 1.076 |
| I use applications developed by the faculty, department or university for teaching English | 1.1% | 11.9% | 35.2% | 51.9% | | 3.39 | 0.742 |
| I use websites for accessing materials for the class for teaching English | 27.4% | 21.1% | 23.7% | 27.8% | | 2.53 | 1.174 |
| I use short message services for teaching English | 48.1% | 22.6% | 16.3% | 13.0% | | 1.96 | 1.088 |
| I use multimedia services for teaching English | 2.6% | 4.8% | 16.3% | 76.3% | | 3.67 | 0.695 |
| I use e-mail and social media for teaching English | 15.6% | 14.4% | 24.4% | 45.6% | | 3.01 | 1.113 |
| **Overall** | | | | | | **2.71** | **.525** |

The highest level of agreement placed by the respondents was on performance expectancy and effort expectancy at 4.23 and 4.19, respectively, revealing that the Saudi higher education lecturers believed in the usefulness and the ease of use of mobile technology in performing their teaching tasks. This was followed by hedonic motivation (4.08), which is indicative of the intention of the lecturers to use mobile devices for learning if the utility is intrinsically enjoyable or interesting. Other variables, including behavioural intentions (3.85), facilitating conditions (3.53), habit (3.39), social influence (3.21) and price value (3.19) indicate moderate agreement in the views of the lecturers in Saudi universities about the use of mobile technologies to teach English. For the use behaviour of mobile technologies to teach English, the mean was 2.71 (closer to 'sometimes' on the scale), thus indicting that the views of lecturers are moderate.

### 4.3.2 Simple correlation between the dependent and independent variables

Simple correlation was utilised to ascertain possible relationships between the dependent variables (performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value and habit), and the independent variables (behavioural intentions and use behaviour). The direction of correlation is identified if one variable increases or decreases, which can be related to an increase or decrease in the other variable. The most common method is Pearson's correlation that is often denoted as r, which ranges from +1 through to 0 and –1. If the sign of the correlation is negative, then there is a negative relationship, meaning that when one variable increases, the other will decrease. The relationship is said to be very weak if the correlation is close to zero. The rule of thumb suggested by Cohen (1988) for the values of correlation is a strong relationship where r = ±.5, a moderate relationship where r = ±.3, and weak relationship where r = ±.1

The results of correlation indicate that some variables have a positive strong relationship with the lecturer's behavioural intention and habit (r=.725), hedonic motivation (r=.671), effort expectancy (r=.640) and performance expectancy (r=.607), while the other variables show moderate correlation, with r ranging from .256 (price value) to .450 (facilitating condition) with behavioural intention (Table 4.11). All the independent variables show a positive moderate relationship with lecturer's use behaviour, with r ranging from .266 (hedonic motivation and price value) to .392 (facilitating conditions).

**Table 4.11: Simple correlation between dependent and independent variables**

| | | BI | UB | PE | EE | SI | FC | HM | PV | H |
|---|---|---|---|---|---|---|---|---|---|---|
| BI | Correlation | 1 | .369** | .607** | .640** | .386** | .450** | .671** | .256** | .725** |
| | p-value | | <.001 | <.001 | <.001 | <.001 | <.001 | <.001 | <.001 | <.001 |
| UB | Correlation | | 1 | .283** | .282** | .284** | .392** | .266** | .266** | .375** |
| | p-value | | | <.001 | <.001 | <.001 | <.001 | <.001 | <.001 | <.001 |
| PE | Correlation | | | 1 | .680** | .391** | .393** | .594** | .234** | .462** |
| | p-value | | | | <.001 | <.001 | <.001 | <.001 | <.001 | <.001 |
| EE | Correlation | | | | 1 | .349** | .460** | .591** | .236** | .546** |
| | p-value | | | | | <.001 | <.001 | <.001 | <.001 | <.001 |
| SI | Correlation | | | | | 1 | .402** | .257** | .174** | .449** |
| | p-value | | | | | | <.001 | <.001 | <.001 | <.001 |
| FC | Correlation | | | | | | 1 | .480** | .340** | .475** |
| | p-value | | | | | | | <.001 | <.001 | <.001 |
| HM | Correlation | | | | | | | 1 | .305** | .529** |
| | p-value | | | | | | | | <.001 | <.001 |
| PV | Correlation | | | | | | | | 1 | .267** |
| | p-value | | | | | | | | | <.001 |
| H | Correlation | | | | | | | | | 1 |
| | p-value | | | | | | | | | |

** Correlation is significant at the 0.01 level (2-tailed).

### 4.3.3 Regression analysis with moderation

Based on the initial research model for the acceptance of mobile technologies in teaching EFL (Figure 3.4), and to test the hypotheses of the study, two linear regression models were conducted. Bryman and Cramer (2001) assert that linear regression is a widely utilised analysis process that is useful in not only studying how single independent variables affect a dependent variable, but also to enable the study of the influence of multiple independent variables and interaction affects involving combinations of those variables. Furthermore, Pallant (2010) assumes that this technique can demonstrate how a set of variables can predict a specific outcome, providing information about the model as a whole, as well as the contribution of each variable included within that model.

The effect of each variable is measured by the regression coefficient (B). It is then proposed to identify if the independent variable has a significant effect on the dependent variable through using the *t* test, where if the sign of coefficient is positive, there is a positive effect, otherwise the effect is negative (Maddala, 2001). A standardised coefficient is used to determine the importance of the independent variables for the dependent variable (Draper and Smith, 1998).

After fitting the regression model, it is important to check if three model assumptions are satisfied: normality, constant variance and no multicollinearity. The assumption of residual normality was assessed using a P-P plot (see Appendix 8), while the constant variance of residuals was assessed using a scatter plot between the fitted values of the dependent variable and residuals. To detect the presence of multicollinearity between the variable, the variance inflation factor (VIF) was used. If any variable showed VIF >10 (Maddala, 2001), then it would be dropped from the model in order to remove the harmful effect of multicollinearity caused by this variable, but the issue did not manifest so no variables were dropped.

There are two dependent variables: behavioural intention and use behaviour. For each variable, independent variables were used to assess the performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, habit and price value.

### 4.3.4 Behavioural intention regression model

Regressing the independent variables on behavioural intention, the two assumptions of regression analysis, normality and homogeneity of residuals, were valid. Moreover, the

issue of collinearity among the independent variables was not present, since VIF<10 for all the variables (Table 4.12). The fitted model of behavioural intention was statistically significant (F=79.06, p-value<.001), and the independent variables were able to explain 67.9% of the variation in behavioural intention. Habit showed the highest significant effect on behavioural intention (B=0.358, β=0.436, p-value<.001). Hedonic motivation showed a positive significant effect (B=0.300, β=0.276, p-value<.001) on the behavioural intention, with a positive significant effect also seen for performance expectancy (B=0.182, β=0.146, p-value=.005) and effort expectancy (B=0.191, β=0.143, p-value=.007).

The findings revealed that habit and hedonic motivation have the most significant influence on behavioural intention to use mobile technology, followed by performance expectancy and effort expectancy, while social influence, facilitating conditions and price value do not influence the behavioural intention to use mobile technology.

**Table 4.12: Result of the regression model for behavioural intention**

| | **Unstandardised Coefficients** | | **Standardised Coefficients** | ***t*** | ***p-value*** | ***VIF*** |
|---|---|---|---|---|---|---|
| | ***B*** | **SE** | **β** | | | |
| (Constant) | -.145 | .244 | | -.594 | .553 | |
| PE | .182 | .065 | .146 | 2.824 | .005 | 2.183 |
| EE | .191 | .071 | .143 | 2.698 | .007 | 2.279 |
| SI | .029 | .056 | .021 | .508 | .612 | 1.409 |
| FC | -.024 | .060 | -.018 | -.404 | .687 | 1.605 |
| HM | .300 | .054 | .276 | 5.560 | <.001 | 2.006 |
| PV | -.009 | .032 | -.010 | -.266 | .790 | 1.171 |
| H | .358 | .039 | .436 | 9.257 | <.001 | 1.807 |

Dependent Variable: BI

$R^2$=0.679

ANOVA: F(6,263)=79.06, p-value<0.001

### 4.3.5 Use behaviour regression model

Regressing the independent variables on use behaviour, the assumptions of normality and homogeneity of residuals were checked and found to be valid. Since VIF<10 for all the variables, no collinearity was present among the independent variables (Table 4.13). The

fitted model of use behaviour was statistically significant (F=10.58, p-value<.001), and the independent variables were able to explain 22% of the variation in use behaviour. Facilitating conditions showed the highest significant positive effect on use behaviour (B=0.165, β=0.223, p-value=.001), while use behaviour was positively affected by habit (B=0.088, β=0.196, p-value=.008) and price value (B=0.057, β=0.122, p-value=.040). To summarise, the findings revealed that facilitating conditions have the most significant influence on the use behaviour to use mobile technology, followed by habit and price value, while performance expectancy, effort expectancy, social influence and hedonic motivation do not influence the behaviour to use mobile technology.

**Table 4.13: Result of the regression model for use behaviour**

| | **Unstandardised Coefficients** | | **Standardised Coefficients** | ***t*** | ***p-value*** | ***VIF*** |
|---|---|---|---|---|---|---|
| | ***B*** | ***SE*** | ***B*** | | | |
| (Constant) | 1.392 | .208 | | 6.702 | .000 | |
| PE | .056 | .055 | .082 | 1.016 | .310 | 2.183 |
| EE | -.008 | .060 | -.011 | -.132 | .895 | 2.279 |
| SI | .050 | .048 | .067 | 1.039 | .300 | 1.409 |
| FC | .165 | .051 | .223 | 3.230 | .001 | 1.605 |
| HM | -.024 | .046 | -.041 | -.527 | .599 | 2.006 |
| PV | .057 | .028 | .122 | 2.066 | .040 | 1.171 |
| H | .088 | .033 | .196 | 2.668 | .008 | 1.807 |

Dependent Variable: UB

$R^2$=0.22

ANOVA: F(6,263)=10.69, p-value<0.001

### 4.3.6 Moderation effect

As reflected in the diagram of the research model in Figure 3.4, there are intervening variables that have a moderating effect on the impact of the independent variables on the dependent variables. The intervening variables that can produce such moderating interactions include age, gender, educational level and experience. Moderation analysis is therefore conducted when the relationship between the independent and dependent variable is assumed to be influenced by a particular intervening variable (Gall et al., 2007). Furthermore, Hayes (2013, p.8) indicates that "*when the goal is to uncover the*

*boundary conditions for an association between two variables, moderation analysis is used*".

Frazier et al. (2004) assert that researchers either use multiple regression or compare the correlations between groups to test the effect of moderators. However, Baron and Kenny (1986) claim that the use of correlation to test the moderating effects of intervening variables might reflect the variances between groups, rather than the effect of the moderating interaction. The apparent problems inherent in relying on correlation are such that regression can be viewed as a more appropriate method. Hence, hierarchical multiple regression was employed to detect the significant effect of the moderators on the relationship between the independent and dependent variables, through which the researcher could control the entry sequence of the main effect and the interaction term.

Hierarchal regression analyses were conducted to test the hypotheses of the moderation effect of personal information on the relationship between the dependent variables (behavioural intention and use behaviour) and independent variables (performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, habit and price value). In this hierarchal regression, the predictors and personal information were centred in the first step and entered into the model. Then, the interactions between the centred predictors and personal information were added to the model in the second step to assess the moderation effect. When the regression results indicate a potentially significant moderating effect by the intervening variables, then conditional effect is used for further examination of the significant moderating effects of the intervening variables.

#### *4.3.6.1 Performance expectancy moderation*

The results presented in Table 4.14 indicate that all the interaction between the demographic and individual background information and performance expectancy in step 2 was insignificant (p-value>0.05). Consequently, such descriptive data for each lecturer did not moderate the relationship between the performance expectancy and behavioural intention.

**Table 4.14: Hierarchal regression investigating the effect of performance expectancy with personal information on the behavioural intention model**

| | | Unstandardised Coefficients | Standardised Coefficients | | | $R^2$ | Adj $R^2$ | $\Delta f$ | *p-value* |
|---|---|---|---|---|---|---|---|---|---|
| Model | | **B** | **Beta** | **p-value** | **VIF** | | | | |
| Step 1 | (Constant) | 3.844 | | .000 | | .389 | .377 | 33.594 | <.001 |
| | PE | .758 | .608 | .000 | 1.004 | | | | |
| | Gender | -.071 | -.036 | .468 | 1.049 | | | | |
| | Age | -.103 | -.140 | .036 | 1.914 | | | | |
| | Experience | -.026 | -.019 | .769 | 1.879 | | | | |
| | Education | .107 | .091 | .094 | 1.264 | | | | |
| Step 2 | (Constant) | 3.841 | | .000 | | .393 | .372 | 18.730 | <.001 |
| | PE | .764 | .613 | .000 | 1.032 | | | | |
| | Gender | -.072 | -.036 | .470 | 1.057 | | | | |
| | Age | -.098 | -.135 | .055 | 2.093 | | | | |
| | Experience | -.042 | -.031 | .654 | 2.067 | | | | |
| | Education | .102 | .086 | .115 | 1.272 | | | | |
| | PE X Gender | -.068 | -.025 | .611 | 1.067 | | | | |
| | PE X Age | -.043 | -.046 | .544 | 2.431 | | | | |
| | PE X Experience | .038 | .024 | .754 | 2.484 | | | | |
| | PE X Education | -.074 | -.052 | .362 | 1.367 | | | | |

Dependent variable: BI

As per behavioural intention, the results for use behaviour given in Table 4.15 show no significant effect (p-value>0.05) for all the interactions of personal information with performance expectancy. Consequently, the personal information did not moderate the relationship between the performance expectancy and use behaviour.

**Table 4.15: The hierarchal regression investigating the effect of performance expectancy with personal information on the use behaviour model**

| | | **Unstandardised Coefficients** | **Standardised Coefficients** | | | ***$R^2$*** | **Adj *$R^2$*** | ***Δf*** | ***p-value*** |
|---|---|---|---|---|---|---|---|---|---|
| Model | | **B** | **Beta** | **p-value** | **VIF** | | | | |
| Step 1 | (Constant) | 2.718 | | .000 | | .089 | .071 | 5.139 | <.001 |
| | PE | .195 | .286 | .000 | 1.004 | | | | |
| | Gender | .067 | .062 | .306 | 1.049 | | | | |
| | Age | .039 | .097 | .232 | 1.914 | | | | |
| | Experience | -.028 | -.038 | .638 | 1.879 | | | | |
| | Education | .001 | .002 | .979 | 1.264 | | | | |
| Step 2 | (Constant) | 2.722 | | .000 | | .103 | .072 | 3.312 | .001 |
| | PE | .184 | .270 | .000 | 1.032 | | | | |
| | Gender | .068 | .062 | .304 | 1.057 | | | | |
| | Age | .027 | .068 | .424 | 2.093 | | | | |
| | Experience | -.017 | -.023 | .783 | 2.067 | | | | |
| | Education | .004 | .007 | .921 | 1.272 | | | | |
| | PE X Gender | .149 | .102 | .095 | 1.067 | | | | |
| | PE X Age | .041 | .079 | .392 | 2.431 | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | PE X Experience | -.093 | -.105 | .256 | 2.484 |
| | PE X Education | .008 | .011 | .878 | 1.367 |
| Dependent variable: UB | | | | | |

### *4.3.6.2 Effort expectancy moderation*

Based on the results of hierarchal regression presented in Table 4.16, there was significant interaction between the effort expectancy and education level (B=-.189, β=-0.116, p-value=.031), and hence it can be concluded that education moderated the relationship between effort expectancy and behavioural intention.

**Table 4.16: The hierarchal regression investigating the effect of effort expectancy with personal information on the behavioural intention model**

| | | **Unstandardised Coefficients** | **Standardised Coefficients** | | | ***$R^2$*** | ***Adj $R^2$*** | ***F*** | ***p-value*** |
|---|---|---|---|---|---|---|---|---|---|
| Model | | ***B*** | ***β*** | **p-value** | ***VIF*** | | | | |
| Step 1 | (Constant) | 3.846 | | .000 | | .423 | .412 | 38.769. | <.001 |
| | EE | .853 | .637 | .000 | 1.008 | | | | |
| | Gender | -.019 | -.009 | .846 | 1.052 | | | | |
| | Age | -.083 | -.114 | .080 | 1.919 | | | | |
| | Experience | -.035 | -.026 | .687 | 1.880 | | | | |
| | Education | .081 | .068 | .194 | 1.262 | | | | |
| Step 2 | (Constant) | 3.854 | | .000 | | .443 | .423 | 22.953 | <.001 |

| | | | | |
|---|---|---|---|---|
| EE | .855 | .639 | .000 | 1.051 |
| Gender | -.039 | -.019 | .685 | 1.067 |
| Age | -.097 | -.133 | .046 | 2.049 |
| Experience | -.023 | -.017 | .798 | 1.999 |
| Education | .098 | .083 | .115 | 1.277 |
| EE X Gender | .245 | .085 | .074 | 1.060 |
| EE X Age | .071 | .075 | .291 | 2.324 |
| EE X Experience | -.063 | -.038 | .597 | 2.346 |
| EE X Education | -.189 | -.116 | .031 | 1.332 |

Dependent variable: BI

Checking the conditional effect of the independent variable, effort expectancy, on the dependent variable of behavioural intention to use mobile technologies among instructors indicated a significant positive relationship between effort expectancy and behavioural intention at all levels of education (except for Diploma), where the effect became higher (in the direction of agreement) as the level of education decreased (Table 4.17).

**Table 4.17: Conditional effects of the effort expectancy on behavioural intention at values of the moderator (education)**

| Education | *B* | t | p-value |
|---|---|---|---|
| Bachelor | 1.410 | 6.616 | <.001 |
| Diploma | 1.43 | .851 | .395 |
| Master | .786 | 9.430 | <.001 |
| PhD | .833 | 8.04 | <.001 |

The hierarchal regression given in Table 4.18 indicated that there was significant interaction between the effort expectancy and age (B=0.095, β=0.183, p-value=.041). Hence, it is found that age moderated the relationship between effort expectancy and use behaviour.

**Table 4.18: The hierarchal regression investigating the effect of effort expectancy with personal information on the use behaviour model**

| Model | | Unstandardised Coefficients B | Standardised Coefficients β | p-value | VIF | $R^2$ | Adj $R^2$ | *F* | *p-value* |
|---|---|---|---|---|---|---|---|---|---|
| Step 1 | (Constant) | 2.719 | | .000 | | .091 | .073 | 5.257 | <.001 |
| | EE | .213 | .290 | .000 | 1.008 | | | | |
| | Gender | .080 | .074 | .223 | 1.052 | | | | |
| | Age | .044 | .109 | .180 | 1.919 | | | | |
| | Experience | -.029 | -.040 | .618 | 1.880 | | | | |
| | Education | -.006 | -.009 | .893 | 1.262 | | | | |
| Step 2 | (Constant) | 2.727 | | .000 | | .116 | .085 | 3.970 | <.001 |
| | EE | .206 | .281 | .000 | 1.051 | | | | |
| | Gender | .081 | .074 | .218 | 1.067 | | | | |
| | Age | .032 | .081 | .334 | 2.049 | | | | |
| | Experience | -.004 | -.005 | .949 | 1.999 | | | | |
| | Education | .006 | .009 | .889 | 1.277 | | | | |
| | EE X Gender | .179 | .114 | .059 | 1.060 | | | | |
| | EE X Age | .095 | .183 | .041 | 2.324 | | | | |
| | EE X Experience | -.132 | -.145 | .107 | 2.346 | | | | |
| | EE X Education | -.034 | -.038 | .573 | 1.332 | | | | |

Dependent variable: UB

Examining the conditional effect of the independent variable, effort expectancy, on the dependent variable, use behaviour to use mobile technologies, among the instructors at all age groups indicated a significant positive relationship between effort expectancy and use behaviour at different ages, where the effect became higher (in the direction of agreement) as the age increased (>45 years) (Table 4.19).

**Table 4.19: Conditional effects of the effort expectancy on use behaviour at values of the moderator (age)**

| Age | *B* | t | p-value |
|---|---|---|---|
| 25-29 | .212 | 2.52 | .012 |
| 30-34 | .290 | 3.46 | <.001 |
| 35-39 | .103 | 1.23 | .218 |
| 40-44 | .065 | .565 | .575 |
| 45-49 | .763 | 3.77 | <.001 |
| 50-54 | .836 | 2.22 | .027 |

#### *4.3.6.3 Social influence moderation*

Hierarchal regression of the behavioural intention given in Table 4.20 indicated that the age significantly interacted with social influence (B=0.139, β=0.153, p-value=.043), and hence age moderated the relationship between social influence and the behavioural intention.

**Table 4.20: The hierarchal regression investigating the effect of social influence with personal information on the behavioural intention model**

| Model | | Unstandardised Coefficients B | Standardised Coefficients β | p-value | VIF | $R^2$ | Adj $R^2$ | *F* | *p-value* |
|---|---|---|---|---|---|---|---|---|---|
| Step 1 | (Constant) | 3.847 | | .000 | | .176 | .160 | 11.26 | <.001 |
| | SI | .539 | .397 | .000 | 1.016 | | | | |
| | Gender | -.136 | -.068 | .233 | 1.050 | | | | |
| | Age | -.136 | -.187 | .016 | 1.915 | | | | |
| | Experience | .067 | .050 | .513 | 1.879 | | | | |
| | Education | .119 | .101 | .109 | 1.271 | | | | |
| Step 2 | (Constant) | 3.840 | | .000 | | .191 | .163 | 6.83 | <.001 |
| | SI | .516 | .381 | .000 | 1.397 | | | | |
| | Gender | -.122 | -.061 | .289 | 1.072 | | | | |
| | Age | -.162 | -.222 | .007 | 2.144 | | | | |
| | Experience | .109 | .081 | .324 | 2.173 | | | | |
| | Education | .149 | .127 | .055 | 1.383 | | | | |
| | SI X Gender | .096 | .031 | .630 | 1.343 | | | | |
| | SI X Age | .139 | .153 | .043 | 1.812 | | | | |
| | SI X Experience | -.074 | -.046 | .564 | 2.011 | | | | |
| | SI X Education | -.112 | -.075 | .235 | 1.274 | | | | |

Dependent variable: BI

Noting the conditional effect of the independent variable, social influence, on the dependent variable, behavioural intention to use mobile technologies among instructors at all age groups, indicated a positive relationship between social influence and behavioural intention at different ages, where the effect became higher (in the direction of agreement) as the age became higher than 45 years (Table 4.21).

**Table 4.21: Conditional effects of the social influence on behavioural intention at values of the moderator (age)**

| Age | *B* | t | p-value |
|---|---|---|---|
| 25-29 | .612 | 3.062 | .004 |
| 30-34 | .382 | 2.997 | .004 |
| 35-39 | .467 | 3.404 | .001 |
| 40-44 | .658 | 2.703 | .011 |
| 45-49 | 1.031 | 1.755 | .103 |
| 50-54 | .956 | 3.015 | .030 |

Hierarchal regression of use behaviour showed that there was no significant interaction between any personal information with social influence, as shown in Table 4.22. Hence, personal information did not moderate the relationship between social influence and use behaviour.

**Table 4.22: The hierarchal regression investigating the effect of social influence with personal information on the behavioural intention model**

| Model | | Unstandardised Coefficients B | Standardised Coefficients β | p-value | VIF | $R^2$ | Adj $R^2$ | *F* | *p-value* |
|---|---|---|---|---|---|---|---|---|---|
| Step 1 | (Constant) | 2.719 | | .000 | | .087 | .070 | 5.05 | <.001 |
| | SI | .212 | .285 | .000 | 1.016 | | | | |
| | Gender | .046 | .042 | .488 | 1.050 | | | | |
| | Age | .028 | .070 | .387 | 1.915 | | | | |
| | Experience | .001 | .002 | .985 | 1.879 | | | | |
| | Education | .010 | .016 | .815 | 1.271 | | | | |
| Step 2 | (Constant) | 2.718 | | .000 | | .090 | .059 | 2.86 | .003 |
| | SI | .190 | .257 | .000 | 1.397 | | | | |
| | Gender | .052 | .048 | .438 | 1.072 | | | | |
| | Age | .024 | .059 | .496 | 2.144 | | | | |
| | Experience | .012 | .016 | .855 | 2.173 | | | | |
| | Education | .007 | .011 | .873 | 1.383 | | | | |
| | SI X Gender | .073 | .043 | .530 | 1.343 | | | | |
| | SI X Age | .025 | .049 | .536 | 1.812 | | | | |
| | SI X Experience | -.048 | -.054 | .521 | 2.011 | | | | |
| | SI X Education | .016 | .020 | .768 | 1.274 | | | | |

Dependent variable: UB

#### *4.3.6.4 Facilitating conditions moderation*

Hierarchal regression of the behavioural intention showed that facilitating conditions significantly interacted with age (B=0.160, β=0.095, p-value=.028) and education (B=-0.204, β=-0.132, p-value=.025), as seen in Table 4.23. Hence, age and education moderated the relationship between facilitating conditions and behavioural intention.

**Table 4.23: The hierarchal regression investigating the effect of facilitating conditions with personal information on the behavioural intention model**

| | | **Unstandardised Coefficients** | **Standardised Coefficients** | | | ***$R^2$*** | **Adj *$R^2$*** | ***F*** | ***p-value*** |
|---|---|---|---|---|---|---|---|---|---|
| Model | | **B** | **β** | **p-value** | **VIF** | | | | |
| Step 1 | (Constant) | 3.847 | | .000 | | .222 | .207 | 15.06 | <.001 |
| | FC | .615 | .455 | .000 | 1.027 | | | | |
| | Gender | -.145 | -.073 | .194 | 1.050 | | | | |
| | Age | -.117 | -.160 | .034 | 1.912 | | | | |
| | Experience | .112 | .083 | .265 | 1.892 | | | | |
| | Education | .082 | .070 | .255 | 1.262 | | | | |
| Step 2 | (Constant) | 3.834 | | .000 | | .225 | .229 | 9.89 | <.001 |
| | FC | .597 | .441 | .000 | 1.094 | | | | |
| | Gender | -.122 | -.061 | .269 | 1.071 | | | | |
| | Age | -.172 | -.236 | .004 | 2.236 | | | | |
| | Experience | .174 | .130 | .100 | 2.143 | | | | |
| | Education | .140 | .118 | .057 | 1.336 | | | | |

| | | | | |
|---|---|---|---|---|
| FC X Gender | .276 | .095 | .099 | 1.138 |
| FC X Age | .160 | .163 | .028 | 1.895 |
| FC X Experience | -.176 | -.104 | .156 | 1.868 |
| FC X Education | -.204 | -.132 | .025 | 1.193 |

Dependent variable: BI

Investigation of the conditional effect of the independent variable, facilitating conditions, on the dependent variable, behavioural intention to use mobile technologies among instructors at all education levels (except Diploma), indicated a positive relationship between facilitating conditions and behavioural intention at different educational levels, where the effect became higher (in the direction of agreement) as the education level decreased (Table 4.24). Examining the conditional effect of the independent variable, facilitating condition, on the dependent variable, behavioural intention to use mobile technologies among instructors at all age groups, indicated a positive relationship between facilitating conditions and behavioural intention at different ages, where the effect became higher (in the direction of agreement) as the age increased above 45 years (Table 4.24).

**Table 4.24: Conditional effects of the facilitating conditions on behavioural intention at values of the moderators (education and age)**

| **Education** | ***B*** | **t** | **p-value** |
|---|---|---|---|
| Bachelor | 1.05 | 4.69 | <.001 |
| Diploma | 1.01 | .819 | .413 |
| Master | .657 | 6.75 | <.001 |
| PhD | .383 | 2.98 | .003 |
| Age | | | |
| 25-29 | .729 | 4.372 | <.001 |
| 30-34 | .654 | 4.682 | <.001 |
| 35-39 | .430 | 2.890 | .005 |
| 40-44 | .273 | 1.423 | .166 |
| 45-49 | 1.226 | 4.179 | .001 |
| 50-54 | .913 | 1.906 | .115 |

In the hierarchal regression of use behaviour, the facilitating conditions significantly interacted with gender (B=0.061, β=0157, p-value=.009) (Table 4.25). Hence, gender moderated the relationship between facilitating conditions and use behaviour.

**Table 4.25: The hierarchal regression investigating the effect of facilitating conditions with personal information on the use behaviour model**

| | | **Unstandardised Coefficients** | **Standardised Coefficients** | | | $R^2$ | **Adj $R^2$** | ***F*** | ***p-value*** |
|---|---|---|---|---|---|---|---|---|---|
| Model | | **B** | **β** | **p-value** | **VIF** | | | | |
| Step 1 | (Constant) | 2.719 | | .000 | | | | | |
| | FC | .300 | .405 | .000 | 1.027 | | | | |
| | Gender | .038 | .035 | .542 | 1.050 | | | | |
| | Age | .036 | .091 | .244 | 1.912 | | | | |
| | Experience | .026 | .036 | .644 | 1.892 | | | | |
| | Education | -.004 | -.006 | .919 | 1.262 | | | | |
| Step 2 | (Constant) | 2.709 | | .000 | | | | | |
| | FC | .273 | .369 | .000 | 1.094 | | | | |
| | Gender | .061 | .056 | .333 | 1.071 | | | | |
| | Age | .020 | .050 | .551 | 2.236 | | | | |
| | Experience | .040 | .055 | .503 | 2.143 | | | | |
| | Education | .010 | .015 | .819 | 1.336 | | | | |
| | FC X Gender | .252 | .157 | .009 | 1.138 | | | | |
| | FC X Age | .056 | .104 | .177 | 1.895 | | | | |
| | FC X Experience | -.136 | -.147 | .055 | 1.868 | | | | |

| | | | | |
|---|---|---|---|---|
| FC X Education | .017 | .020 | .748 | 1.193 |
| Dependent variable: UB | | | | |

The conditional effect of the independent variable, facilitating condition, on the dependent variable, use behaviour in the utility of mobile technologies among instructors for males and females in teaching proved to be higher (in the direction of agreement) among females than males (Table 4.26).

**Table 4.26: Conditional effects of the facilitating conditions on use behaviour at values of the moderators (gender)**

| **Gender** | ***B*** | **t** | **p-value** |
|---|---|---|---|
| Male | .139 | 1.878 | .063 |
| Female | .355 | 7.102 | <.001 |

#### *4.3.6.5 Hedonic motivation moderation*

In the hierarchal regression of behavioural intention, the hedonic motivation did not significantly interact with any variable of personal information (Table 4.27). Hence, personal, individual background information did not moderate the relationship between hedonic motivation and behavioural intention.

**Table 4.27: The hierarchal regression investigating the effect of hedonic motivation with personal information on the use behaviour model**

| Model | | Unstandardised Coefficients B | Standardised Coefficients B | p-value | VIF | $R^2$ | Adj $R^2$ | *F* | *p-value* |
|---|---|---|---|---|---|---|---|---|---|
| Step 1 | (Constant) | 3.846 | | .000 | | .471 | .461 | 47.08 | <.001 |
| | HM | .738 | .679 | .000 | 1.023 | | | | |
| | Gender | -.252 | -.127 | .006 | 1.061 | | | | |
| | Age | -.071 | -.098 | .116 | 1.922 | | | | |
| | Experience | .021 | .016 | .797 | 1.874 | | | | |
| | Education | .053 | .045 | .373 | 1.263 | | | | |
| Step 2 | (Constant) | 3.847 | | .000 | | .474 | .456 | 26.08 | <.001 |
| | HM | .740 | .681 | .000 | 1.052 | | | | |
| | Gender | -.260 | -.130 | .006 | 1.079 | | | | |
| | Age | -.070 | -.096 | .139 | 2.056 | | | | |
| | Experience | .020 | .015 | .816 | 1.982 | | | | |
| | Education | .047 | .039 | .439 | 1.284 | | | | |
| | HM X Gender | -.042 | -.017 | .714 | 1.123 | | | | |
| | HM X Age | -.015 | -.019 | .780 | 2.204 | | | | |
| | HM X Experience | .059 | .041 | .536 | 2.175 | | | | |
| | HM X Education | -.066 | -.058 | .257 | 1.304 | | | | |

Dependent variable: BI

The hierarchal regression of use behaviour showed that hedonic motivation did not significantly interact with any variable of personal information (Table 4.28). Hence, personal background information did not moderate the relationship between hedonic motivation and use behaviour.

**Table 4.28: The hierarchal regression investigating the effect of hedonic motivation with personal information on the use behaviour model**

| | | **Unstandardised Coefficients** | **Standardised Coefficients** | | | $R^2$ | **Adj $R^2$** | ***F*** | ***p-value*** |
|---|---|---|---|---|---|---|---|---|---|
| Model | | **B** | **B** | **p-value** | **VIF** | | | | |
| Step 1 | (Constant) | 2.719 | | .000 | | .080 | .062 | 4.57 | .001 |
| | HM | .162 | .273 | .000 | 1.023 | | | | |
| | Gender | .026 | .024 | .691 | 1.061 | | | | |
| | Age | .045 | .113 | .169 | 1.922 | | | | |
| | Experience | -.015 | -.021 | .796 | 1.874 | | | | |
| | Education | -.012 | -.019 | .780 | 1.263 | | | | |
| Step 2 | (Constant) | 2.722 | | .000 | | .093 | .062 | 2.97 | .002 |
| | HM | .160 | .270 | .000 | 1.052 | | | | |
| | Gender | .034 | .031 | .609 | 1.079 | | | | |
| | Age | .034 | .085 | .318 | 2.056 | | | | |
| | Experience | .011 | .015 | .857 | 1.982 | | | | |
| | Education | -.006 | -.009 | .898 | 1.284 | | | | |
| | HM X Gender | .041 | .032 | .613 | 1.123 | | | | |
| | HM X Age | .069 | .156 | .076 | 2.204 | | | | |
| | HM X Experience | -.049 | -.062 | .478 | 2.175 | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | HM X Education | -.040 | -.065 | .334 | 1.304 | | | | |
| Dependent variable: UB | | | | | | | | | |

### *4.3.6.6 Price value moderation*

The hierarchal regression investigating the interaction effect of price value with personal information on the behavioural intention model is presented in Table 4.29. None of the personal information variables showed significant interaction with price value, and so did not moderate the relationship between price value and behavioural intention.

**Table 4.29: The hierarchal regression investigating the interaction effect of price value with personal information on the behavioural intention model**

| | | **Unstandardised Coefficients** | **Standardised Coefficients** | | | ***$R^2$*** | **Adj *$R^2$*** | ***F*** | ***p-value*** |
|---|---|---|---|---|---|---|---|---|---|
| Model | | **B** | **β** | **p-value** | **VIF** | | | | |
| Step 1 | (Constant) | 3.847 | | .000 | | .088 | .071 | 5.093 | <.001 |
| | PV | .227 | .265 | .000 | 1.037 | | | | |
| | Gender | -.061 | -.031 | .613 | 1.054 | | | | |
| | Age | -.147 | -.201 | .014 | 1.931 | | | | |
| | Experience | .117 | .087 | .286 | 1.935 | | | | |
| | Education | .070 | .059 | .369 | 1.263 | | | | |
| Step 2 | (Constant) | 3.829 | | .000 | | .111 | .080 | 3.165 | <.001 |
| | PV | .241 | .281 | .000 | 1.082 | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | Gender | -.044 | -.022 | .712 | 1.062 |
| | Age | -.181 | -.247 | .004 | 2.088 |
| | Experience | .170 | .127 | .135 | 2.092 |
| | Education | .086 | .073 | .272 | 1.284 |
| | PV X Gender | -.203 | -.109 | .081 | 1.131 |
| | PV X Age | .080 | .116 | .152 | 1.904 |
| | PV X Experience | -.118 | -.099 | .196 | 1.713 |
| | PV X Education | -.048 | -.054 | .408 | 1.240 |
| Dependent variable: BI | | | | | |

The hierarchal regression investigating the interaction effect of price value with personal background information on use behaviour model is presented in Table 4.30. Only experience showed significant interaction with price value (B=-.107, β=-0.164, p-value=.034), and so experience moderated the relationship between price value and use behaviour.

**Table 4.30: The hierarchal regression investigating the interaction effect of price value with personal information on the use behaviour model**

| | | **Unstandardised Coefficients** | **Standardised Coefficients** | | | ***$R^2$*** | **Adj *$R^2$*** | ***F*** | ***p-value*** |
|---|---|---|---|---|---|---|---|---|---|
| Model | | **B** | **B** | **p-value** | **VIF** | | | | |
| Step 1 | (Constant) | 2.719 | | .000 | | | | | |
| | PV | .130 | .277 | .000 | 1.037 | | | | |
| | Gender | .083 | .076 | .213 | 1.054 | | | | |
| | Age | .019 | .048 | .556 | 1.931 | | | | |
| | Experience | .036 | .049 | .547 | 1.935 | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | Education | -.011 | -.016 | .806 | 1.263 |
| Step 2 | (Constant) | 2.709 | | .000 | |
| | PV | .125 | .267 | .000 | 1.082 |
| | Gender | .083 | .076 | .213 | 1.062 |
| | Age | -.001 | -.003 | .974 | 2.088 |
| | Experience | .075 | .102 | .233 | 2.092 |
| | Education | -.006 | -.009 | .897 | 1.284 |
| | PV X Gender | .016 | .016 | .797 | 1.131 |
| | PV X Age | .047 | .124 | .126 | 1.904 |
| | PV X Experience | -.107 | -.164 | .034 | 1.713 |
| | PV X Education | -.028 | -.058 | .377 | 1.240 |

Dependent variable: UB

The finding of the conditional effect of the independent variable, price value, on the dependent variable, use behaviour to use mobile technologies among instructors, indicated a positive relationship between price value and use behaviour at different years of experience, where the effect was most significant in the under 5 year group, and the least significant int the 5–15 years group (Table 4.31).

**Table 4.31: Conditional effects of the price value on use behaviour at values of the moderators (gender)**

| **Experience** | ***B*** | **t** | **p-value** |
|---|---|---|---|
| Never thought | .115 | .698 | .505 |
| Less than five years | .193 | 4.125 | <.001 |
| 5-15 years | .068 | 1.840 | .068 |

| | | | |
|---|---|---|---|
| >15 years | .133 | 1.355 | .185 |

### *4.3.6.7 Habit moderation*

The hierarchal regression investigating the interaction effect of habit with personal information on the behavioural intention model is presented in Table 4.32. None of personal information variables showed significant interaction with habit, and so it is concluded that personal information did not moderate the relationship between habit and behavioural intention.

**Table 4.32: The hierarchal regression investigating the interaction effect of habit with personal information on the behavioural intention model**

| | | **Unstandardised Coefficients** | **Standardised Coefficients** | | | ***$R^2$*** | **Adj *$R^2$*** | ***F*** | ***p-value*** |
|---|---|---|---|---|---|---|---|---|---|
| Model | | **B** | **B** | **p-value** | **VIF** | | | | |
| Step 1 | (Constant) | 3.846 | | .000 | | .535 | .526 | 60.80 | <.001 |
| | H | .595 | .725 | .000 | 1.021 | | | | |
| | Gender | -.171 | -.086 | .047 | 1.050 | | | | |
| | Age | -.039 | -.054 | .357 | 1.936 | | | | |
| | Experience | .012 | .009 | .880 | 1.874 | | | | |
| | Education | .040 | .034 | .471 | 1.264 | | | | |
| Step 2 | (Constant) | 3.845 | | .000 | | .546 | .531 | 34.79 | <.001 |
| | H | .595 | .725 | .000 | 1.040 | | | | |
| | Gender | -.168 | -.084 | .052 | 1.068 | | | | |
| | Age | -.043 | -.059 | .332 | 2.141 | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | Experience | .012 | .009 | .881 | 2.059 |
| | Education | .043 | .036 | .444 | 1.277 |
| | H X Gender | .150 | .088 | .050 | 1.122 |
| | H X Age | .030 | .052 | .393 | 2.108 |
| | H X Experience | .000 | .000 | .998 | 2.139 |
| | H X Education | -.056 | -.060 | .212 | 1.314 |
| Dependent variable: BI | | | | | |

The hierarchal regression investigating the interaction effect of habit with personal information on the use behaviour model is presented in Table 3.33. None of personal information variables showed significant interaction with habit, and so the findings indicate that personal information did not moderate the relationship between habit and use behaviour.

**Table 4.33: The hierarchal regression investigating the interaction effect of habit with personal information on the use behaviour model**

| | | **Unstandardised Coefficients** | **Standardised Coefficients** | | | ***$R^2$*** | **Adj *$R^2$*** | ***F*** | ***p-value*** |
|---|---|---|---|---|---|---|---|---|---|
| Model | | **B** | **B** | **p-value** | **VIF** | | | | |
| Step 1 | (Constant) | 2.719 | | .000 | | .155 | .139 | 9.69 | <.001 |
| | H | .175 | .389 | .000 | 1.021 | | | | |
| | Gender | .039 | .036 | .537 | 1.050 | | | | |
| | Age | .058 | .146 | .066 | 1.936 | | | | |
| | Experience | -.019 | -.026 | .741 | 1.874 | | | | |
| | Education | -.017 | -.027 | .671 | 1.264 | | | | |
| Step 2 | (Constant) | 2.720 | | .000 | | .163 | .134 | 5.64 | <.001 |

| | | | | |
|---|---|---|---|---|
| H | .174 | .388 | .000 | 1.040 |
| Gender | .042 | .039 | .509 | 1.068 |
| Age | .056 | .139 | .094 | 2.141 |
| Experience | -.013 | -.017 | .833 | 2.059 |
| Education | -.014 | -.022 | .734 | 1.277 |
| H X Gender | .064 | .069 | .254 | 1.122 |
| H X Age | .027 | .085 | .300 | 2.108 |
| H X Experience | -.029 | -.047 | .570 | 2.139 |
| H X Education | .020 | .039 | .548 | 1.314 |

Dependent variable: UB

#### *4.3.6.8 Summary*

Based on the research hypotheses, the regression and moderation analysis examined the key determinants that influence the behavioural intention to use mobile technology using the UTAUT2 model. The findings revealed that habit and hedonic motivation have the most significant impact on behavioural intention to use mobile technology in teaching practice, followed by performance expectancy and effort expectancy. Meanwhile, social influence, facilitating conditions and price value do not influence the behavioural intention to use mobile technology. Secondly, the key determinants that influence the behaviour to use mobile technology were examined using the UTAUT2 model. The findings showed that facilitating conditions have the most significant influence on the use behaviour to use mobile technology in teaching practice, followed by habit and price value, while performance expectancy, effort expectancy, social influence and hedonic motivation do not influence the behaviour to use mobile technology.

The education level of the lecturers moderated the relationship between effort expectancy and behavioural intention to use mobile technologies among instructors, with the effect increasing as the level of education decreased. Age also moderated the relationship between effort expectancy and the use behaviour to use mobile technologies among the instructors, where the effect became higher as the age increased, as per the relationship between social influence and behavioural intention to use mobile technologies, where the impact was also enhanced as the age increased. Age and education also moderated the relationship between facilitating conditions and behavioural intention to use mobile technologies among the lecturers, where the effect became higher as the education level decreased and the age increased. Furthermore, gender moderated the relationship between facilitating conditions and the use behaviour to use mobile technologies among the instructors, and the impact was greater among females than males. Experience also moderated the relationship between price value and use behaviour, where the effect increased as the level of experience decreased, while the lowest effect was as the level of experience increased.

A number of findings emerged based on the constructs:

**Performance expectancy:** The Saudi higher education lecturers believed in the usefulness of mobile technology in terms of performing their teaching tasks, with a strong relationship emerging between performance expectancy and behavioural intention to use mobile technology in teaching EFL, and a moderate relationship between performance

expectancy and lecturers' use behaviour. Based on the regression findings, performance expectancy significantly influences lecturers' behavioural intention to use mobile technology in teaching EFL.

**Effort expectancy:** The findings show that the Saudi higher education lecturers believed in the ease of use of mobile technology in performing their teaching tasks, and indicate a strong relationship between effort expectancy and lecturers' behavioural intention to use such technology in teaching EFL, with a moderate relationship found between performance expectancy and lecturers' use behaviour. Based on the regression analysis findings, effort expectancy influences the lecturers' behavioural intention to use mobile technology in teaching EFL.

**Social influence:** The Saudi higher education lecturers believed their teaching and use of technology was subject to social influences, as they became familiar with applying mobile learning in their teaching tasks. There is a moderate relationship between social influence and lecturers' behavioural intention to use mobile technology in teaching EFL and use behaviour. Based on the regression analysis, the findings reveal that social influence does not influence the behavioural intention to use mobile technology, or the use behaviour.

**Facilitating conditions:** The findings reveal that the Saudi higher education lecturers believed that the organisational and technical infrastructure exists to support mobile technology teaching and knowledge sharing. There is a moderate relationship between facilitating conditions and lecturers' behavioural intention and use behaviour in utilising mobile technology in teaching EFL. Based on the regression analysis findings, facilitating conditions have the most significant influence on lecturers' use behaviour to use mobile technology in teaching EFL.

**Habit:** The Saudi higher education lecturers tend to use mobile technology and have both positive attitudes and the willingness to use it throughout their teaching. There is a strong relationship between habit and the lecturers' behavioural intention to use mobile technology in teaching EFL, with a moderate relationship between habit and lecturer use behaviour. Based on the regression analysis, habit has the most significant influence on both lecturers' behavioural intention to use mobile technology in teaching EFL and use behaviour.

**Hedonic motivation:** The findings reveal that the Saudi higher education lecturers believed that it is more likely that a lecturer will use mobile devices for teaching if he or

she finds the interaction intrinsically enjoyable or interesting, which is indicative of a strong relationship between hedonic motivation and lecturers' behavioural intention to use mobile technology in teaching EFL. The findings show a moderate relationship between hedonic motivation and lecturers' use behaviour. Based on the regression analysis, hedonic motivation has the most significant influence on lecturers' behavioural intention to use mobile technology in teaching EFL.

**Price value:** The Saudi higher education lecturers believed that the price of mobile devices influences mobile technology teaching. A moderate relationship emerged between price value and lecturers' behavioural intention to use mobile technology in teaching EFL and use behaviour. Based on the regression analysis findings, it was revealed that price value influences lecturers' use behaviour to use mobile technology in teaching EFL.

The results of the research hypothesis are presented in Table 4.34.

**Table 4.34: The results of hypotheses testing**

| Hypothesis | Result | Conclusion |
|---|---|---|
| H1.1 Performance expectancy influences lecturers' behavioural intention to use mobile technology. | **PE→BI** is significant (p .005). | (accepted) |
| H1.2 Performance expectancy influences lecturers' use behaviour. | **PE→UB** is not significant. | (not accepted) |
| H2.1 Effort expectancy influences lecturers' behavioural intention to use mobile technology. | **EE→BI** is significant (p .007). | (accepted) |
| H2.2 Effort expectancy influences lecturers' use behaviour. | **EE→UB** is not significant. | (not accepted) |
| H3.1 Social influence influences lecturers' behavioural intention to use mobile technology. | **SI→BI** is not significant. | (not accepted) |
| H3.2 Social influence influences lecturers' use behaviour. | **SI→US** is not significant. | (not accepted) |
| H4.1 Facilitating conditions influence lecturers' | **FC→BI** is not significant. | (not accepted) |

| | | |
|---|---|---|
| behavioural intention to use mobile technology.<br>H4.2 Facilitating conditions influence lecturers' use behaviour. | **FC→UB** is significant (p< .001). | (accepted) |
| H5.1 Habit influences lecturers' behavioural intention to use mobile technology.<br>H5.2 Habit influences use behaviour. | **H→BI** is significant (p< .001).<br>**H→UB** is significant (p .008). | (accepted)<br>(accepted) |
| H6.1 Hedonic motivation influences lecturers' behavioural intention to use mobile technology.<br>H6.2 Hedonic motivation influences lecturers' use behaviour. | **HM→BI** is significant (p< .001).<br>**HM→UB** is not significant. | (accepted)<br>(not accepted) |
| H7.1 Price influences lecturers' behavioural intention to use mobile technology<br>H7.2 Price influences lecturers' use behaviour | **PV→BI** is not significant.<br>**PV→UB** is significant (p.040). | (not accepted)<br>(accepted) |
| H8.1 At least one personal characteristic (gender, age, education and experience) moderates the relationship between the independent variables and lecturers' behavioural intention to use mobile technology. | **EEx Educationx→BI** is significant (p.031).<br>**SIx Agex→BI** is significant (p.043).<br>**FCx Agex→BI** is significant (p.028).<br>**FCx Educationx→BI** is significant (p.025). | (accepted) |
| H8.2 At least one personal characteristic (gender, age, education and experience) moderates the relationship between the independent variables and lecturers' use behaviour. | **EEx Age x→UB** is significant (p.041).<br>**FCx Genderx→UB** is significant (p.009).<br>**PVx Experiencex→UB** is significant (p.034). | (accepted) |

## 4.4 Qualitative Data Findings

A qualitative approach was employed in this study to deepen the understanding of the quantitative results by virtue of the study model presented in Figure 3.4. A semi-structured interview process was developed. Twelve lecturers were interviewed in order

to collect this qualitative data, with their demographic details and the type of interview summarised in Table 3.3.

### 4.4.1 Themes

The codes that emerged from the thematic analysis of the transcripts where considered by the researcher, and twenty themes were identified. These were examined and re-examined based on the available interview data, resulting in seventeen themes being retained in this empirical study, with three themes being eliminated due to their lack of representation in the interview transcriptions. These themes were then found to fit and relate to the UTAUT2 model, and thus seven themes were drawn from the model, with the data-derived themes recategorised as sub-themes. Table 4.35 presents the themes and sub-themes that emerged during the qualitative analysis, and the associated codes can be found in Appendix 7.

**Table 4.35: Themes and sub-themes emerging from the qualitative analysis**

| | **Themes** | **Sub-Themes** |
|---|---|---|
| 1 | Performance expectancy | 1- Application use<br>2- Productivity<br>3- Usefulness<br>4- Distraction |
| 2 | Effort expectancy | 5- Mobility and accessibility<br>6- Ease of use<br>7- Time management |
| 3 | Social influence | 8- Encouragement<br>9- Support |
| 4 | Hedonic motivation | 10- Enjoyment<br>11- Security and safety |
| 5 | Facilitating condition | 12- No defined plan<br>13- Internet connection<br>14- Training and knowledge<br>15- The number of students |
| 6 | Habit | 16- Willingness |
| 7 | Price value | 17- Cost |

The following section introduces the themes and sub-themes affecting mobile learning technology's acceptance among Saudi higher education lecturers, as derived from the thematic analysis of the qualitative data.

### 4.4.2 Emerging themes

#### *4.4.2.1 Performance expectancy*

The performance expectancy component in the conceptual framework is defined as "*the degree to which an individual believes that using the system will help him or her to attain gains in job performance*" (Venkatesh et al., 2003, p.447). According to the proposed study model, performance expectancy is the level of Saudi university lecturers' personal belief that using mobile technology is benefiting them in terms of performing their teaching tasks. This theme includes four sub-themes derived from the qualitative data: application use, productivity, usefulness and distraction.

**Application use**

Application use concerns how a participant found mobile learning technology to be beneficial via the adoption of different apps during the performance of their teaching activities. Through the interviews, eight participants indicated that their adopted applications positively affected their perspectives concerning mobile technology for teaching English, for example:

> "*I always urge students to use Twitter to post and share their comments in the target language*" (Interviewee 1)

> "*I use videos during my teaching, and this affects students positively. I use Telegram for them as well, to submit their homework*" (Interviewee 3)

One participant's response referred to performance expectancy in terms of how using the application may detrimentally affect the lecturers' views on mobile learning, and in the context of WhatsApp, the participant stated that:

> "*I think students feel shy to comment*" (Interviewee 2)

**Productivity**

One participant suggested that mobile learning technology decreased his productivity by proving a distraction for the students:

> "*The use of mobile technology disturbs them*" (Interviewee 5)

The remaining participants reported increased productivity through having adopted mobile learning technology, for example:

> "*students love using mobile apps in the classroom and are always eager to take part more than in traditional kinds of exercises, either desktop or textbooks*" (Interviewee 1)

Another participant indicated that the use of technology enhanced his professional development:

> "*technology enables me to learn online from others*" (Interviewee 4)

**Usefulness**

Usefulness relates to how the interview participants found mobile learning technology advantageous while conducting their teaching. All participants reported on the utility of mobile learning technology in relation to their teaching activities, identifying various reasons for why mobile learning technology is useful for their teaching, for example:

> "*Not just for us … but for our students as digital natives, it becomes part of everyday life*" (Interviewee 3)

Nevertheless, one participant indicated that mobile technology is not an effective replacement for a well-planned lesson:

> "*I don't think technology is a substitute for a well-prepared lesson, you know, and a teacher with knowledge of their subjects and who are interested in teaching*" (Interviewee 2)

**Distraction**

Four participants reported their concern over the disruptive or distracting nature of technology devices, despite their awareness of the potential benefits of mobile technology, for example:

> "*using such devices to teach is a great idea, but I believe many challenges will be met by the teacher, which may be a lack of control, how to get the students involved, and not let them become distracted*" (Interviewee 4)

#### *4.4.2.2 Effort expectancy*

The effort expectancy component in the conceptual framework is the degree of ease associated with consumers' use of technology (Venkatesh et al., 2003). According to the proposed study model, effort expectancy implies that it is more likely that Saudi higher education lecturers will use mobile technology if the mobile device is easy to use in daily

life. This theme includes three sub-themes derived from the qualitative data: ease of use, time management, mobility and accessibility.

**Ease of use**

The majority of participants reported the simplicity of teaching using mobile technology, which has positively affected their decision to adopt such technology during their daily and academic lives. For example, one participant remarked:

> "*The thing I love about these technologies is that it's easy to access specialist scholars to ask them questions on something you want to educate yourself about ... or as a way to check whether the academic said something or not*" (Interviewee 7)

Two participants reported that they required familiarity with using such technology, confirming that it is straightforward if the lecturers continue their practice with it inside the classrooms:

> "*It's too easy! You'll get used to it once you start practicing it continually*" (Interviewee 8)

Three participants expressed slightly less confidence than those mentioned above, although they still found the learning process to be relatively simple. One believed that mobile technology could be straightforward for those who are accustomed to it:

> "*Technology is simple for the practitioner who is used to using it; I faced real barriers at the beginning since there was nobody who could provide help*" (Interviewee 9)

**Time management**

Six participants reported that mobile technology supported their teaching time management, for example:

> "*I use my phone to send something to the students. Sometimes I use it when I plan the material before the lecture and need to look for information quickly*" (Interviewee 2)

This enables ease of research, the retention and recovery of information, and its transfer to students both inside and out of the classroom, which is vital given the limited time available during the teaching day. Another participant stated:

> "*I assume the use of technology is saving time and effort. I can deliver the lesson and still have time to assess students, track their work and focus on weak students. It encourages me to use technology in my teaching classes*" (Interviewee 4)

A contrasting perspective was conveyed by four participants, who believed that mobile technology did not assist with their management of study time, where they indicated that adopting mobile technology necessitates spending greater time on managing and monitoring the students. One interviewee expressed:

> "*I'd feel better if I had more time with my students*" (Interviewee 4)

Whilst another explained:

> "*I believe that mobile technology for teaching English can be useful in practising language outside of classrooms, as lecturers need additional time to monitor and guide their students using this technology*" (Interviewee 8)

It was also reported that certain lecturers adopt mobile technology as a means of reducing the required effort, as opposed to improving their teaching. For instance, one participant asserted:

> "*The profit in educational processes is minimal, and lecturers rely on the use of technology to exert less effort ... not to help improve education*" (Interviewee 5)

**Mobility and accessibility**

All participants reported that a primary advantageous characteristic of mobile technology is its mobility, indicating the significance of this quality in encouraging them to adopt mobile learning technology, with one participant relating how:

> "*I think it's very practical, affordable and useful to use mobile technology whether it's a phone or a tablet in EFL classrooms, because they're easy to bring and I sometimes run into problems with computers in classrooms. It's nice having an alternative. And when I send students an electronic quiz or activities and let them use their mobile phones, my students like that as well.*" (Interviewee 3)

Another participant reported that mobile learning technology's accessibility enables her to contact her students in a straightforward and rapid manner:

> "*It is really great quality! Mobility is one of the distinctive features of mobile learning. If I ask students to do an assignment or research, usually they have some questions and they typically contact me by email. I only contact two students via email, and the rest via WhatsApp*" (Interviewee 9)

#### *4.4.2.3 Social influence*

The social influence component in the conceptual framework is the extent to which consumers perceive that important others, such as family and friends, believe they should use a particular technology (Venkatesh et al., 2003). According to the proposed study

model, social influence is defined as the degree to which Saudi higher education lecturers perceive that important others believe they should or should not use mobile technologies in teaching EFL. The social influence theme includes two sub-themes: encouragement and support.

**Encouragement**

All of the participants reported the reasons that either encouraged or discouraged them from adopting mobile learning technology during their teaching, and when asked various questions relating to social influence, they reported diverse perspectives. Five participants mentioned self-encouragement as a principal factor informing their adoption of mobile technology, for instance:

> "*individual attempts*" (Interviewee 1)

> "*individual effort*" (Interviewee 7)

> "*To be honest with myself, I am aware of the potential of this technology for education in general*" (Interviewee 2)

The participants reported how mobile technology's characteristics are the major encouraging factors in their use of mobile technology, for example:

> "*Generally, nowadays all around me I see motivations to use this technology. We are in the technological age, and smartphones now are not only for making calls, they provide us with special things. I think that if we can make use of it, particularly in English teaching, it will help in many ways, particularly with our generation who are considered digital natives*" (Interviewee 6)

Three participants reported insufficient encouragement from their universities. For example:

> "*Most of my colleagues are aware of mobile learning, but I realised that some of them try to avoid using it in their teaching, because they may need some encouragement"* (Interviewee 2)

Another related how:

> *"Teacher competitiveness inspired me to use technology*" (Interviewee 7)

**Support**

Eight interviewees indicated they were provided with sufficient support to use mobile technology during their teaching. Nevertheless, participants mentioned that such support is:

> "*Not enough to be used by everyone*" (Interviewee 2)

With one participant explaining that:

> "*The budget alone for education is equal to the entire budget of other nations. So why do we need to pay for everything? Poor university infrastructure*" (Interviewee 7)

#### *4.4.2.4 Hedonic motivation*

The hedonic motivation component in the conceptual framework is defined as the fun or pleasure derived from using a technology (Venkatesh et al., 2012). According to the proposed study model, hedonic motivation is the extent to which Saudi higher education lecturers have fun or pleasure derived from using mobile technologies in teaching EFL. The hedonic motivation theme includes two sub-themes: enjoyment and security and safety.

**Enjoyment**

It is more likely that a lecturer will decide to adopt mobile devices for learning if they find the resulting interaction intrinsically enjoyable or interesting. The interview findings reveal that eight participants identified the enjoyment component as crucial to their use of mobile devices, with supporting statements for this finding including:

> "*it is easy and fun*" (Interviewee 1)

> "*it adds enjoyment, excitement and love of teaching*" (Interviewee 4)

> "*I think it adds some kind of amusement to move away from the traditional unexciting teaching processes*" (Interviewee 5)

One participant commented on the enthusiasm expressed by students using a mobile device for learning and communication, relating how:

> "*I appreciate my students' enthusiasm as they try to involve themselves in some tasks and do their best to learn English outside the classroom, by using their mobile phones to practice different skills*" (Interviewee 6)

One participant referred to mobile devices' ability to stimulate freedom that other technology cannot provide:

> "*Mobile technology made teaching more exciting and interesting. Changing teaching [practice] before mobile technology was still quite boring, in terms of using technology via laptops or desktops. We had to follow a particular [MoE-directed teaching] procedure, but now it's better, with more flexibility offered by mobile devices*" (Interviewee 4)

**Security and safety**

Three participants reported their concerns regarding privacy while adopting mobile learning technology for teaching, especially within the classroom environment. One participant noted it to be:

> "*My biggest concern … apart from perhaps media awareness*" (Interviewee 1)

Another participant reported her concerns over mobile device use inside classrooms:

> "*How can a teacher use a smartphone inside the classroom and overcome the challenge of students misusing them? How can she control every one of them and ensure other friends that they are not tweeting or snapping on? How can she ensure that she isn't filmed and uploaded online*?" (Interviewee 5)

Moreover, one participant reported that:

> "*Often I feel the danger when I work in a group, because some students do not engage in total confidentiality when I try to involve them in an exercise using their mobiles*" (Interviewee 9)

#### *4.4.2.5 Facilitating conditions*

The facilitating conditions component of the conceptual framework refers to consumers' perceptions of the resources and support available to perform a behaviour (Venkatesh et al., 2003). According to the proposed study model, facilitating conditions indicated that if Saudi higher education lecturers believe organisational and technical infrastructure exists to support mobile technology teaching and knowledge sharing, they will be more likely to use mobile devices for teaching. The facilitating conditions theme includes four sub-themes that derived from the qualitative data: no defined plan, internet connection, training and knowledge, and the number of students:

**No defined plan**

The majority of the participants reported that a fundamental issue hindering their use of mobile technology is the absence of a clear plan to follow, with clear objectives and

instructions regarding how to use this technology in an efficient and productive manner. One participant stated:

> "*On the other hand, I think there is no clear plan for how this technology can be used*" (Interviewee 1)

While another expressed how:

> "*The main concern, therefore, for us as language lecturers here is not whether we should be using this technology in our language teaching actual practice, but how it can be used efficiently and sufficiently, so that both lecturers and learners can benefit from it*" (Interviewee 3)

Others indicated their awareness of the potential advantages of mobile technology for language learning, but suggested that such technology's adoption in the classrooms should be optional and never obligatory:

> "*The use of technology is optional but should never be compulsory*" (Interviewee 2)

**Internet connection**

Every participant cited the poor internet connection provided by the universities as being a problem. One participant described how:

> "*The university environment was not encouraging the use of technology, as there were no readily accessible resources such as Wi-Fi in classrooms in order to use the technology*" (Interviewee 2)

Another participant reported that:

> "*the university provides internet connection but it's always a weak connection*" (Interviewee 9)

**Training and knowledge**

The participants identified that insufficient training poses a barrier to use, with one interviewee indicating that:

> "*Of course, having the ability to allow students to benefit from this technology outside the classrooms would be very helpful. However, I believe that some English language instructors require further training to be able to do so*" (Interviewee 3)

Two participants mentioned that they had undertaken training for mobile learning use, with the university offering a number of training courses, but yet these were inevitably theoretical and lacked any live application. One interviewee reported that:

> "*I participated in a distance-learning training course. It was about how to use an iPad in education, but the issue was actually the challenges of its application in the classroom*" (Interviewee 6)

Nevertheless, another interviewee related how he was able to access training independently:

> "*Technology provides the chance to learn online from others. I don't have to wait until they find a place for me in the training. I can learn autonomously*" (Interviewee 4)

Regarding the knowledge base, the interview findings established that four of the twelve participants were insufficiently knowledgeable in terms of mobile technology's application, with one participant reporting that:

> "*My main concern, besides perhaps media awareness, is about not having a sufficient knowledge base when it comes to teaching something via technology. I mean, we worked on a blog in the class, and not every student knew how to work a blog*" (Interviewee 1)

**The number of students**

Two participants reported that the substantial number of students in the classroom cohort represents a hindrance to managing their use of mobile technology within the classroom environment. They explained that:

> "*The number of students in the classes is huge*" (Interviewee 9)

> "*The number of students per class is 35 plus, which makes it difficult for the teacher to micro-manage everybody during phone-based activities*" (Interviewee 1)

#### *4.4.2.6 Habit*

In the habit section of the conceptual framework, habit is defined as the extent to which people tend to perform behaviour automatically due to prior learning (Venkatesh et al., 2012). According to the proposed study model, habit is defined as the degree to which Saudi higher education lecturers tend to use mobile technologies automatically in teaching EFL. It includes the willingness theme derived from the qualitative data.

**Willingness**

Most of the interviewed lecturers expressed their willingness to adopt mobile technology, deeming it to be an advantageous tool, irrespective of whether they applied it during their

own teaching. Nevertheless, the lecturers reported a number reasons that could discourage them from using it, for example:

> "*I do not use mobile technology for language teaching, but it's a new technique and I'm excited about using it*" (Interviewee 5)

Further, one participant stated:

> "*We would like and have a strong desire to adapt it, in order to keep up with world developments, but we don't receive enough support*" (Interviewee 8)

Another participant, when asked about his intention to adopt mobile technology for his teaching, expressed his reluctance to do so, irrespective of his beliefs regarding the advantages of mobile technology during teaching, reporting that:

> "*Indeed, I believe in the advantages and potential of mobile devices for English teaching. However, I don't think this is part of the curriculum or, to the best of my knowledge, I don't see there are special courses or anything for it. There is a little bit in the English curriculum in the form of viewing, like watching films and videos. But that is minimal, nothing is requiring technology use*" (Interviewee 6)

#### *4.4.2.7 Price value*

The price value component of the conceptual framework is defined as the potential for the cost and pricing structure to have a significant impact on consumers' technology use. According to the proposed study model, price value is defined as the degree to which Saudi higher education lecturers perceived the benefits of using mobile technologies in teaching EFL as being of greater value than the monetary cost of the purchase. Price value includes the cost theme derived from the qualitative data.

**Cost**

The majority of participants reported that the costs involved in mobile device use are affordable, with most students owning their own devices. One participant observed:

> "*It's not only available to lecturers, all my students own smartphones*" (Interviewee 2)

A further participant reported that smartphones may be:

> "*[a] little bit pricey, however they are affordable. Most of my students have the latest model of smartphones*" (Interviewee 6)

However, another participant reported that smartphones are a personal matter, and that their university is unconcerned with the cost, so they may have:

"*affordable prices, but there is no role of the universities in this. It is a personal matter*" (Interviewee 7)

### 4.4.3 Summary of the qualitative findings

Based on the above analysis, there now follows a summary of the qualitative findings of each construct.

**Performance expectancy:**

Most of the lecturers found mobile technology to be useful in their academic teaching. Increased productivity and the usefulness of the different apps were reported to be helpful by the interview participants, although three participants noted that distractions may arise due to the use of mobile technology.

**Effort expectancy:**

The qualitative responses by the majority of the interview participants indicated the ease of use, mobility and accessibility of mobile learning technology, as well and its efficiency in terms of time and effort. One participant indicated certain difficulty in that lecturers require additional time when using mobile technology inside the classrooms, which is challenging given their heavy workload. Nevertheless, this did not outweigh the reported benefits of mobile learning technology for time management, where all the participants perceived the technology as a facilitator in achieving their goals.

**Social influence:**

The qualitative analysis of the interview data provided two important themes: encouragement and support. All of the interview participants reported encouragement in using mobile learning technology, finding that enthusiasm and satisfaction resulted from self-motivated encouragement and technology use, with universities and peers having little impact on their level of encouragement to utilise mobile learning technology. Support as a social influence was also self-motivated, with the lecturers reporting a paucity of institutional impact on mobile learning technology use.

**Hedonic motivation:**

All the participants identified the enjoyment component as being crucial to their use of mobile devices, although several raised privacy concerns about using mobile learning technology in the classrooms.

**Facilitating condition:**

The qualitative findings suggest that the more lecturers perceive that there is infrastructure and mobile learning support, the more likely they are to engage in mobile learning, although they reported the lack of support in terms of Wi-Fi availability and training. The majority of the participants indicated that simply providing a resource does not ensure its use per se, and that lecturers should be informed of and offered guidance on how mobile technology can be utilised for effective teaching.

**Habit:**

All the participants tended to utilise mobile technology and have the willingness to employ it throughout their teaching, while they also acknowledged the potential benefits of its use, provided that their universities supported and encouraged this.

**Price Value:**

All of the participants considered the price of mobile devices and internet connection to be significant, but affordable to both lecturers and students.

## 4.5 Triangulation of Data

Table 4.36 presents a triangulation of both the quantitative and qualitative findings that emerged from the data analysis in this chapter.

**Table 4.36: Triangulation of the quantitative and qualitative findings**

| Quantitative findings | Qualitative findings |
|---|---|
| **Performance Expectancy** | |
| Mobile technology is useful for teaching<br>Strong relationship between performance expectancy and behavioural intention<br>Moderate relationship between performance expectancy and use behaviour | Mobile technology is useful for teaching<br>Increased productivity<br>Usefulness of different apps<br>Distraction an issue for some lecturers |

| | |
|---|---|
| Performance expectancy significantly influences behavioural intention | |
| **Effort Expectancy** | |
| Ease of mobile technology for teaching<br>Strong relationship between effort expectancy and behavioural intention<br>Moderate relationship between effort expectancy and use behaviour<br>Effort expectancy significantly influences behavioural intention | Ease of use of mobile technology for teaching<br>Mobility and accessibility<br>Efficiency in time and effort<br>The additional time required when using mobile technology inside the classroom (one lecturer) |
| **Social Influence** | |
| Social influence important in using mobile technology for teaching<br>Moderate relationship between social influence and behavioural intention<br>Moderate relationship between social influence and use behaviour<br>Social influence does not influence behavioural intention and use behaviour | Self-encouragement applied in using mobile technology for teaching<br>Universities and peers are less encouraging factors for mobile learning technology use<br>Lack of support is an issue |
| **Facilitating Conditions** | |
| Organisational and technical infrastructure exists to support mobile technology teaching<br>Moderate relationship between facilitating conditions and behavioural intention<br>Moderate relationship between facilitating conditions and use behaviour<br>Facilitating conditions significantly influence use behaviour | Lack of support such as Wi-Fi and training<br>Need for official guidance on how mobile technology can be utilised |

| **Habit** | |
|---|---|
| Widespread use of mobile technology, positive attitudes and willingness to use it throughout teaching<br>Strong relationship between habit and behavioural intention<br>Moderate relationship between habit and use behaviour<br>Habit significantly influences behavioural intention and use behaviour | Comprehensive use of mobile technology and the willingness to apply it |
| **Hedonic Motivation** | |
| Lecturer will use mobile devices for teaching if he or she finds the interaction intrinsically enjoyable or interesting<br>Strong relationship between hedonic motivation and behavioural intention<br>Moderate relationship between hedonic motivation and use behaviour<br>Hedonic motivation significantly influences behavioural intention | Enjoyment component is crucial to the use of mobile devices<br>Potential privacy issues when using mobile technology in the classroom |
| **Price Value** | |
| The price of mobile devices influences mobile technology teaching<br>Moderate relationship between price value and behavioural intention<br>Moderate relationship between price value and use behaviour<br>Price value significantly influences use behaviour | Price of mobile devices and internet connection high but affordable |

## 4.6 Chapter Summary

This chapter presented the analyses for the quantitative data resulting from the questionnaire survey, and the qualitative the data emerging from the interviews. This was then triangulated to compare the findings, which indicated a high level of agreement in the findings extracted from both data collection methods. Next, a comprehensive discussion on the findings that have emerged from the study is carried out in Chapter 5, with links back to the literature reviewed in Chapter 2.

# Chapter 5
# Findings and Discussion

## 5.1 Introduction

This chapter presents an in-depth discussion of the results emerging from the analyses conducted in Chapter 4, with links to the literature presented in Chapter 2. These results are discussed in accordance with the aim and objectives of the study, as stated in Chapter 1, in order to determine the acceptance of mobile technology among lecturers when teaching English in Saudi universities. The sections of this chapter correspond with each of the research objectives stated in section 1.8, with the discussion presented in two parts:

(i) The general usage of mobile technology among English language lecturers in state universities in the Kingdom of Saudi Arabia through exploring their general experiences and uses of mobile technology, with the lens of focus placed on the use behaviour with the technology.

(ii) A discussion of the research findings in terms of the second and third research objectives in order to consider the traditional, cultural and practical obstacles to the use of mobile technology among English language lecturers in state universities in the Kingdom of Saudi Arabia, using the UTAUT2 model to guide the exploration in this study and gain a deeper understanding of the benefits and the challenges of using mobile technology to teach the English language in the state universities' context.

As this study is principally based on one research model (i.e. UTAUT2), in order to respond to the second and third research objectives, the second objective is examined through the quantitative results emerging from the questionnaire survey, while the third objective is discussed on the basis of the qualitative findings emerging from the interviews. The qualitative and quantitative research findings that arise herein are interpreted primarily based on the research model. Finally, a summary of the chapter is presented.

## 5.2 Research Objective 1

The first research objective is to determine the general usage of mobile technology among English language lecturers in state universities in the Kingdom of Saudi Arabia, in order

to understand the practices and usage of mobile technology among those involved in the teaching process to build new experiences and develop new knowledge-building scaffolds (Godwin-Jones, 2015). Therefore, this section discusses the experiences of the lecturers regarding their general use of mobile technology rather than being specifically focused on their teaching, and uses the quantitative questionnaire data to support the discussion.

### 5.2.1 Use behaviour in general

To assess mobile device ownership in the sample, the participants were asked to specify which devices (i.e. smartphones and tablets), they currently own. The results of this study show a high proportion of ownership of mobile devices, with 98% of the instructors owning smartphones and half owning tablets. This reveals that while the lecturers were inclined to own both devices, perhaps for different purposes, smartphone ownership and use was evidently the most prevalent. In general, half of the respondents either owned or had access to both a smartphone and a tablet, while 2% who did not own smartphone already possessed a tablet.

This result indicates a high level of mobile devices' ownership among the lecturers in Saudi higher education. Therefore, the emerging individual practices and personal attempts to enhance the teaching and learning of English in Saudi higher education institutions can make a pragmatic transition from these individual practices of teaching and learning to institutional implementation as a cost-cutting strategy by calling for the lecturers to use their own devices as a broad institutional strategy.

Since a high level of acceptance is reported, there is a requirement for a stated institutional policy to regulate and govern the implementation process. Hence, Saudi universities can apply a bring your own personal handheld device (BYOPHD) policy among the teaching staff to encourage the integrated use of mobile technologies in teaching and learning. The UNESCO Mobile Learning Policy Guidelines (Kraut, 2013) highlight the convenience of owing mobile technologies, which can facilitate the implementation of a BYOPHD strategy, and identify three widely practised models for ensuring people have the hardware necessary for mobile learning: (i) governments or other institutions provide devices directly to the learners; (ii) learners supply their own devices, commonly referred to as bring your own device (BYOD); or (iii) governments and institutions share the provisioning responsibilities with the learners.

Kraut (2013) defines the BYOPHD strategy as advantageous since it is affordable and inexpensive in locations where most people have mobile devices, and therefore such strategies can be applied easily and BYOPHD projects can be quickly implemented. Based on the quantitative and qualitative research findings in this study, higher education institutions can create profiles of the faculty members to guide the BYOPHD strategy and facilitate mobile teaching inside the institution. In addition, higher education institutions also encourage mobile learning and teaching outside the institution, so that efficient and effective learning and teaching can be achieved quickly and affordably, although this may reveal challenges and barriers that could prevent or hinder the use of mobile technology in higher education. This strategy allows the integration of personal use, as described by Godwin-Jones (2015), into the learning environment via an easily accessed tool for virtual learning and knowledge building.

Problems with technology and barriers to the successful implementation of a BYOD strategy may be reduced by adequate preparation, but the lecturers felt that their institutions currently failed to provide adequate support for those who were using their own devices, as well as those who wanted to. The lecturers claimed that the use of their own devices could be best supported through online or offline training, together with additional information and resources.

A BYOD strategy would result in teaching practices evolving, while Whalley et al. (2020) suggest that broad high-level support within the institution would encourage both students and lecturers to extend their learning practices beyond classroom teaching and learning, and could facilitate greater engagement in fieldwork (Note: support and training are discussed later in the subsequent sections when discussing the second and third objectives). When practitioners are encouraged and enabled to use BYOD, this can have a positive effect on lecturers' teaching by changing the way that they teach and assess.

This study found that almost all the participant instructors (98%) owned a smartphone, but cautions that ownership does not necessarily predict familiarity with the technology, despite Fu and Hwang's (2018) belief that ownership is a critical aspect of being able to successfully implement mobile teaching and learning. Nikolopoulou (2020) highlights the important role played by professional development in achieving the successful implementation of mobile learning technology, which was also noted in the interview responses. It is thus clear that when professional development is planned by educational institutions, those with more sophisticated mobile technology skills should be considered, since Sudhaus (2013) claims that mobile technology users seek to develop their skills

further in this regard, using a process that acts as a scaffold between training and practice. Training should therefore extend beyond technical concerns to also focus on pedagogical practice. Vosloo (2012) and Kraut (2013), both researching for UNESCO, suggest that instructors should be trained on how mobile technologies can be incorporated into learning, with the former indicating that lecturers should learn how to employ these technologies in their classroom practice, as well as teaching students the basics of digital literacy and even using such technological devices to moderate disruptive behaviour. Meanwhile, Kraut (2013, p.31) suggests that government investment in teacher training should take priority over "*investment in technology itself*". Integrating this innovation into education is critical, with Nikolopoulou (2020) advising that this means considering issues such as flexible curricula, teacher education and varying practices in universities.

As the smartphone was the most popular mobile device utilised by the participants, followed by tablets, it is necessary to examine how frequently the lecturers used the device, particularly to access the internet. As seen in Table 4.4, the proportion of owners of smartphones who used their smartphones once or more each day (97%) was twice that of the tablet-using respondents. Moreover, around twice the number of lecturers used their smartphones to access the internet each day when compared to the tablet users. Hence, in essence, the respondents who owned both smartphones and tablets were more likely to use their smartphones for any purpose, and particularly to access the internet, than their tablets, thus highlighting the preference for smartphone over tablet usage in the study context. There appears to be a greater perceived convenience with the smartphone, and hence its higher frequency of use. This study is not, however, an evaluation of the devices but rather their use for learning and teaching at Saudi state universities, in order to offer Saudi higher educational institutions a guide to this specific tool for supporting EFL pedagogy in a manner that "*combines [a] multitude of communication and computing features in one compact system*" (Corbeil and Valdes-Corbeil, 2007, p.54).

The participants were also asked to indicate how frequently they used their mobile devices for a range of common purposes, where the results reveal interesting differences in uses for the smartphone and tablet devices. A high proportion of the lecturers often or always used their smartphones to receive and send text messages and schedule appointments, while over half used them to edit and read documents, and hold video conversations. This reported usage was considerably higher than that reported for the same often or always usage of their personal tablets, with only editing and reading documents being carried out by over half the tablet users, while scheduling appointments,

holding video conversations, and receiving and sending text messages often or always was only carried out by less than one-quarter of the tablet users.

The findings reveal that the Saudi lecturers frequently used mobile technology and had positive experiences regarding the technology in general. Consequently, these results show that the Saudi lecturers more experienced in using mobile technology were better able to utilise this in their teaching processes to create new learning experiences for their students. It is therefore important that the educational institutions develop policies for the utilisation of mobile devices in teaching and learning. Consideration now turns to the lecturers' perceptions based on the UTAUT2 factors in order to specifically highlight the potential benefits of mobile technology and to explore the factors associated with the Saudi university lecturers' perceptions on the adoption of mobile technology to teach the English language at state universities in the Kingdom of Saudi Arabia.

## 5.3 Research Objectives 2 and 3

In this section, the second and third objectives are explored by utilising the UTAUT2 model in order to identify and focus on those factors that determine lecturers' use behaviour and their behavioural intention in terms of using mobile technologies when teaching EFL. Both the quantitative and qualitative data are utilised to discuss the findings and respond to the second and third research objectives:

(ii) To consider the traditional, cultural and practical obstacles to the use of mobile technology among English language lecturers in the research context.

(iii) To gain a deeper understanding of the perceived benefits and the challenges of using mobile technology to teach the English language.

Regression and moderation analysis were conducted to investigate the factors and test the research hypotheses concerning the lecturers' use behaviour and behavioural intention regarding the application of mobile technology in their teaching. The results indicate that habit and hedonic motivation had the most significant influence on the behavioural intention for using mobile technology, followed by performance expectancy and effort expectancy, whereas social influence, facilitating conditions, and price value had no impact. The study's findings also reveal that facilitating conditions had the most significant influence on use behaviour for using mobile technology, followed by habit and price value, whereas performance expectancy, effort expectancy, social influence, and hedonic motivation had no impact. Moreover, the results reveal that there are a

number of moderating factors that influence the relationship between the independent variables and dependant variables, which are discussed later in relation to each variable. The qualitative findings give more in-depth explanation to the quantitative findings.

The following sub-sections examine the factors, independent variables, that determine the lecturers' use behaviour and behavioural intention regarding their utilisation of mobile technologies for teaching EFL, as well as the significant intervening variables of the research model. The assessment is undertaken by utilising the quantitative and qualitative data, where the findings are integrated in order to examine the teaching of EFL in Saudi higher education institutions in the context of mobile technology usage.

### 5.3.1 Performance expectancy

According to the proposed study model, performance expectancy refers to the extent to which Saudi higher education lecturers believe that using mobile technology benefits them while performing their teaching tasks. The findings revealed that performance expectancy was one of the major predictors of behavioural intention for using mobile learning technology. This essentially means that an individual who strongly believes that mobile technology is useful is more likely to have the intention to adopt mobile learning when compared to an individual who believes that mobile technology is less useful. However, performance expectancy did not appear to predict the lecturers' actual use of mobile technology for teaching. The qualitative findings can partly explain this apparent contradiction, with some of the interviewees explaining that although they believed that mobile technology has pedagogical potential, they did not have sufficient access to training and had concerns regarding technology becoming a distraction to the teaching aims. Moreover, they believed that mobile technology might be more useful outside of the classroom.

The findings revealed no gender, age, experience, or qualification differences that appeared to impact on the benefit assessment level of performance expectancy and behavioural intention to use mobile technology. This is consistent with findings from previous studies in different national contexts such as in the Kingdom of Saudi (Aljuaid et al., 2014; Alharbi et al., 2017) and in Iraq (Jawad and Hassan, 2015), where it was found that performance expectancy significantly influenced the behavioural intention for using mobile learning technology in the absence of moderating effects.

Compared to the literature discussed, this finding is broadly consistent with the performance expectancy in the model of behavioural intention for using technology moderated by gender and age, and was more significant among younger men (Venkatesh et al., 2003), with Lewis et al. (2013) also reporting a significantly positive direct effect of performance expectancy on lecturers' behavioural intention (β=.39**) and technology use (β=.17**). However, the finding contrasts with the effect of the moderation, where Lewis et al. (2013) reported gender as a significant moderating variable on the effect of performance expectancy on behavioural intention. This contrast can be explained through Lewis et al.'s (2013) study being conducted in different context (the USA) to the current study's Saudi setting.

Furthermore, the qualitative results highlight that all the interviewees found mobile learning technology to be useful in their academic teaching, offering increasing productivity and usefulness through the different apps available via mobile learning technology. The combined findings suggest that leaders in higher education should develop pedagogical policies to take advantage of the perceived usefulness of mobile learning technology for Saudi higher education lecturers, providing them with teaching opportunities to enable new content to be offered to students. Pimmer et al. (2016) focused their study on the use of mobile devices as an integral component of pedagogical design, while constructivist learning studies have revealed a high level of acceptance of mobile learning amongst students, although there are indications that teachers may be reluctant to adopt the technology as part of their pedagogical planning.

Negative comments by the interviewees focused on the distraction issue when using mobile devices in the classroom setting rather its use outside the classroom, through undermining the students' focus during lectures. Preservice lecturers identified disruption as their primary concerns in terms of the classroom use of mobile technology (Thomas et al., 2013), with the current study echoing this finding, where the interviewees felt students may become distracted by texting during class or carrying out other activities using their mobile phones, unrelated to their learning.

Common Sense (2010) reported that a third of students admitted to using mobile phones to cheat, with one-quarter doing so via text messaging. Regarding the participants' concerns about the perceived disruptive nature of phones, McCoy (2016) surveyed 675 American college students in 26 states to examine classroom learning distractions caused by the use of digital devices for non-class purposes, finding that 85% of students admitted to texting during class, with 67% sending emails, 66% checking their social networks,

and 89% acknowledging that their digital devices distracted them. Moreover, half of the college students surveyed by Baker et al. (2012) believed that any use of phones in the classroom was a disturbance. A strict set of rules of use must therefore be agreed with the students, imposed and punished by sanctions to alleviate any temptation to use such devices inappropriately.

The Kingdom of Saudi Arabia is a non-English environment with little opportunity to interact with native speakers outside of the classroom, and therefore the locus for learning English is solely within the classroom. However, technologies provide virtual language learning settings and contexts essential to communication skills and understanding, while extending foreign language learning outside classrooms to enable frequent informal practices, which is essential for language acquisition (Kukulska-Hulme, 2009; Kukulska-Hulme, 2012). Interviewee 2 suggested the technology to be more suited to use outside the classroom, where she indicated that Cambly, for example, is an app for practising English with native English speakers over video chat:

> "*In teaching English particularly technology would be very helpful to encourage the students learn a second language very well through different type of applications that are known nowadays such as Cambly application. Many students make use of this application and improve their speaking skill through contacting and have conversations with natives.*"

### 5.3.2 Effort expectancy

According to the proposed study model, effort expectancy indicates that there is a greater likelihood of Saudi higher education lecturers using mobile technology if it is easy to use the mobile device in their daily lives. The research findings herein highlight that effort expectancy was another predictor of the behavioural intention for using mobile learning technology. That is, an individual who believes that mobile technology is easy to use is more likely to have the intention to adopt mobile learning compared to someone who believes that mobile technology is less easy. However, the findings revealed that effort expectancy did not appear to predict the instructors' actual use of mobile technology for teaching.

The qualitative findings can partly explain this apparent contradiction, as some of the interviewees explained that although they recognised the ease of use of mobile technology, as well as its mobility and accessibility, some indicated that classroom use required additional time to set up the tasks and monitor the students. Significant education

and age differences in terms of their effects on behavioural intention and use behaviour were also noted, which are discussed later in this section.

The results of the present study are consistent with the findings of previous research in various contexts such as the Kingdom of Saudi Arabia (Aljuaid et al., 2014; Almarwani, 2016; Alharbi et al., 2017) and Iraq (Jawad and Hassan, 2015), where it was noted that effort expectancy significantly influenced behavioural intention for using mobile technology. However, the results contrast with those of Alghamdi's (2017) study in the Kingdom of Saudi Arabia, who sought to identify the key factors that influence the acceptance of adopting smart mobile learning tools into learning and teaching activities among instructors in Saudi universities. Alghamdi (2017) found that effort expectancy had no direct effect on the learners' use of mobile technology. This finding may be because Alghamdi's (2017) participants were limited to only three universities in the Kingdom of Saudi Arabia.

In terms of the moderating effects on effort expectancy as a predictor of behavioural intention and use behaviour, the results of this study indicate that there are significant education and age differences regarding their effects:

(i) It was found that educational level moderated the relationship between effort expectancy and behavioural intention for mobile technology use. The impact increased as the level of education decreased, with a lower educational level (i.e. Diploma) leading to a stronger effect of effort expectancy on behavioural intention, whereby such lecturers who believed that using mobile technology to teach English involved significant effort were less likely to use the technology for such purposes.

(ii) Age moderated the relationship between effort expectancy and use behaviour, where the effect increased with the lecturer's age. Moreover, it was found that older lecturers (i.e. 45–49 years) who believed that using mobile technology to teach English would involve significant effort were less likely to use it, while the younger lecturers who perceived mobile technology as easy to use were thus more likely to engage in its implementation due to their beliefs of its effort-free nature.

Venkatesh et al. (2003) found that effort expectancy is a stronger predictor of older generation's ICT usage intention compared to that of younger people, noting that age

moderates effort expectancy's impact on intention, with the effect observed to be higher among older workers. On the other hand, Lewis et al. (2013), who surveyed instructors' use of technology at a south-eastern university in USA and included only gender and age as moderators, noted that the effect of effort expectancy on behavioural intention was stronger among male instructors.

It is arguable that older lecturers have to deal with more novel challenges in the workplace in terms of using technology. Venkatesh et al. (2013) found that older generations struggle with using new technology, while their younger counterparts tend to have higher computer expertise. The present study notes that to increase the use of mobile learning amongst less experienced technology users, policy-makers and programme leaders should improve the usage of mobile learning by providing education and training courses for various mobile computing technologies. This would improve the perception that mobile learning can be easier to utilise, and so lecturers would be more likely to adopt its use in the future, thus improving the intention to use factor. This may be more applicable to older lecturers who have developed strong affiliations to their own particular pedagogy. However, justifying and validating these propositions requires further investigations in future study.

Further, this research finds that lecturers with a lower educational level who believe that using mobile technology for teaching English will involve significant effort are less likely to intend to use it. This may be because instructors with high education levels have strong cognitive abilities regarding the use of technology, due to their continued engagement with technology throughout their higher studies, especially as most Saudi EFL lecturers complete their studies overseas. Therefore, high educational level is associated with high levels of technological literacy.

The results of the statistical analysis are supported by the qualitative analysis, which showed that the majority of the interview participants affirmed the ease of use of mobile learning technology, whereby the 'ease of use' theme was mentioned ten times throughout the interviews, which indicates a high perceived ease of use of mobile learning technology emerging from the qualitative interviews. Mobility and accessibility was another theme representing effort expectancy, where most of the interview participants found mobile learning technology easy to learn, thus increasing the influence of effort expectancy on the lecturers' behavioural intentions for using mobile learning technology. This finding asserts the ease of use as an essential predictor of lecturers' acceptance of mobile learning technology.

However, a contrasting perspective was conveyed by four interviewees who believed that mobile technology did not assist with their management of study time. Interviewee 4 indicated that adopting mobile technology necessitates spending greater time on managing and monitoring the students, "*I'd feel better if I had more time with my students*", while Interviewee 8 suggested the technology to be more suited to use outside the classroom, "*I believe that mobile technology for teaching English can be useful in practising language outside of classrooms, as lecturers need additional time to monitor and guide their students using this technology*".

Thus, this finding suggests that instructional designers should take into account the ease of use and mobility when designing instructional materials. Leaders in higher education and deans in Saudi universities should therefore consider the ease of use and mobility when making decisions regarding purchasing or designing teaching systems, in order to increase acceptance among lecturers in terms of mobile learning technology. Thus, lecturers need guidance on how to make effective use of apps that are already available, or fora to share their experiences.

### 5.3.3 Social influence

According to the proposed study model, social influence is the degree to which Saudi higher education lecturers perceive that those who are important to them (e.g. family, friends and close colleagues) believe they should or should not use mobile technologies for teaching EFL. The descriptive statistical tests showed that the lecturers believed in the importance of social influences, that is, if one lecturer begins using and becoming familiar with a mobile learning system, they may begin to persuade their colleagues and friends to adopt it. However, the findings of the inferential statistics showed that such positivity had no significant effect on the lecturers' intention to use mobile learning or their use behaviour.

The qualitative findings from the interview data indicated that all the interview participants were encouraged to use mobile learning technology, with the highest sources of encouragement being self-encouragement and technology functions, while universities and peers were found to be less encouraging factors for using mobile technology.

The findings further revealed that the interactive moderators on social influence had effects on the lecturers' intention to use mobile learning. Age moderated the relationship between social influence and behavioural intention, and the effect or influence was enhanced as the age increased. This finding of negligible or no significant effect on both

the lecturers' intention to use mobile learning and their use behaviour is contradicted by Lewis et al. (2013), who found that in the context of instructors' use of technology, the most important antecedents are performance expectancy, effort expectancy and social influence. Moreover, Venkatesh et al. (2012) found that social influence was a positive predictor of behavioural intention. Hence, the effect of social influence on behavioural intention and use behaviour in EFL is rejected, even in the presence of interactions with the moderating variable of age. This finding can be interpreted as a result of the level of voluntariness making it likely that social influence will be a significant predictor of behavioural intention and use behaviour if the context changes to Saudi universities introducing mobile learning and teaching as a mandatory institutional policy (Venkatesh and Davis, 2000).

Since Saudi lecturers tend to be relatively independent and have considerable autonomy over the type of technology they use, as confirmed in the qualitative findings where the majority of the lecturers' motivation to use technology was 'individual attempt' and 'individual effort', this result can be accepted. Further, Venkatesh et al. (2003, p.469) claimed that "*the role of social influence constructs has been controversial*" due to the number and variety of the related constructs that were included and excluded in different studies. Much also depends on the effect of individual characteristics on the relationship between social influence and behavioural intention or technology use (Venkatesh et al., 2012).

Previous studies such as Alharbi et al. (2017), conducted in a similar Saudi context, found that social influence significantly impacts the participants' behaviour intention for using mobile learning technology. Alharbi et al.'s (2017) study examined the factors that affected university instructors' intentions to use mobile learning at Hail University, again using the quantitative survey method of data collection, where it was found that social influence predicted the instructors' use of mobile learning. Despite this study being conducted in a similar context and applying the same model, its findings contradict those of the current study in terms of the effect of social influence; however, Alharbi et al.'s (2017) study was limited to one university and excluded the inclusion of the moderating factors.

Sun and Zhang (2006), who examined the role of moderating factors in user technology acceptance, note that moderating factors impact the majority of the relationships and must thus be taken into account when examining the acceptance of user technology. Therefore,

the discrepancy in the findings is arguably the result of the assessment of the intervening, moderating variables.

The interaction of the moderator variables is indicative in this research of social influence having no significant effect on both the lecturers' intention to adopt mobile learning or their use behaviour, while age actually moderated the relationship. The effect increased along with the lecturer's age, insofar as social influence impacts on behavioural intention. Older lecturers who tended to be more concerned about what their friends and family perceived and thought about mobile technology were less likely to use it, and were more driven to use technology due to the social influence of those they perceived to be important. Al-Gahtani et al. (2007) suggest that the responsiveness of older lecturers to social influence could be because older lecturers are particularly sensitive to peer pressure to adopt and use mobile learning, since this influence can extend to their teaching. Most older lecturers hold senior positions, which can result in younger lecturers pressurising them to adopt and use mobile learning. For example, Interviewee 7 (49 years of age) revealed that "*lecturer competitiveness*" was one of the reasons to use mobile technology.

The younger lecturers, on the other hand, appeared to have higher levels of self-confidence and computer literacy than their older counterparts, and thus tended to decide for themselves whether they wanted to adopt an advanced mobile learning system without being influenced by those around them. For example, a 35-year-old female lecturer (Interviewee 6) stated: "*I think that if we can make use of it, particularly in English teaching, it will help in many ways, particularly with our generation who are considered digital natives*".

Nevertheless, Kirschner and De Bruyckere (2017) found no significant age-related differences in the use of digital technologies, suggesting that the generation of lecturers born and educated post-1984 are considered to be experienced lecturers in terms of digital literacy. This alternative explanation follows the meta-analytical findings concerning the negative relationship of age with social motives, whereby younger workers' growth motives concerning new learning, advancement and training are stronger (Kooij et al., 2011).

Perhaps digital natives who were born one or two decades later in 1994 or 2004 cannot be considered as digital natives, but rather as digital consumers. In a study of first-year undergraduate students at the University of Hong Kong, Kennedy and Fox (2013) found that the students seemed to use a large number and variety of technologies for

communication, learning, staying connected with their friends and interacting with the world around them. This use tended to be for personal empowerment and entertainment, as opposed to consistently using digital literacy to promote their learning, and was particularly clear when it came to students' use of technology as content users rather than content creators specifically for academic purposes (Kennedy and Fox, 2013).

The qualitative findings emerging from interview data presented two important themes: encouragement and support. All the interview participants reported that they were encouraged to use mobile learning technology. The highest sources of encouragement were self-encouragement and technology functions, while universities and peers were found to be less encouraging factors for using mobile technology. This finding suggests that policy-makers of mobile learning in Saudi higher education institutions have to create a supportive social environment before implementing mobile learning technology, including peers and professors as early adopters who can take the lead in the later phases (Rogers, 2003). Creating an encouraging environment will positively influence lecturers' behavioural intention for trying this new technology (Tan et al., 2012).

### 5.3.4 Facilitating conditions

According to the proposed study model, facilitating conditions indicate that if Saudi higher education lecturers believe an organisational and technical infrastructure exist to support mobile technology teaching and knowledge sharing, they will be more likely to employ mobile devices for teaching with greater frequency. The finding shows that in accordance with the original UTAUT model (Venkatesh et al., 2003), the facilitation conditions construct directly influences use behaviour rather than behavioural intentions. In this study, the construct had the most significant influence on the lecturers' use behaviour for using mobile technology, but did not influence the behavioural intention for using mobile technology. The qualitative findings can partly explain this apparent contradiction, whereby the majority of the interviewees explained that that simply providing a resource does not ensure its use, and that lecturers should therefore also be provided guidance on how to use mobile technology for effective teaching.

This result may be because according to Venkatesh et al. (2003), facilitating conditions have a positive relationship with technology usage. In earlier models such as Theory of Planned Behaviour and the Decomposed Theory of Planned Behaviour, facilitating conditions predicted intention when effort expectancy is unavailable. However, in the Model of Personal Computer Utilization and the Innovation Diffusion Theory, the

prediction of facilitating conditions' influence on behavioural intention is not significant (Venkatesh et al., 2003). Where an individual believes that support to use technology is erratic, there will be a negative and significant influence on the intention to use technology. However, where the support is consistent, the expectation is that facilitating conditions will directly predict and positively influence use behaviour. Regarding the interactive effect of the moderators, despite the result showing that facilitating conditions had no significant effect on the lecturers' intention of using mobile technology, age and education level moderated the relationship between facilitating conditions and behavioural intention for using mobile technologies among the instructors, with the effect increasing as the education level decreased and the age increased.

This finding is in line with the studies by Alghamdi (2017) and Alharbi et al. (2017) in the Saudi context, and the study by Jawad and Hassan (2015) in Iraq where the facilitating conditions construct was found to be significant in the Iraqi culture. This is similar to the Saudi culture, as the Kingdom of Saudi Arabia and Iraq are both collectivist countries, but is inconsistent with the findings of Almarwani (2016), who conducted her study at Taibah University in the Kingdom of Saudi Arabia, and reported a different finding, as facilitating conditions had no significant influence on instructors' behavioural intention, although this may be because Almarwani's (2016) participants were limited to one teaching programme at one university.

The interactive effects of age were included in Venkatesh et al.'s (2003) study, and the present study further examined the impact of the lecturers' education level. The findings revealed that age and education level moderated the relationship between facilitating conditions and behavioural intention for using mobile technologies among the instructors, with the effect increasing as the education level decreased and the age increased, which is in line with the empirical evidence presented by Morris and Venkatesh (2000). Organisational psychologists have noted that older workers attach greater importance to receiving help and assistance on the job. The findings also noted that the lower the educational level, the stronger the effect of facilitating conditions on behavioural intention, which may be due to individuals with high education levels having strong cognitive abilities as they possess higher skill levels, including cognitive skills that encompass the ability to learn and adapt (Mumford et al., 2007). Therefore, as discussed earlier in this chapter in terms of the effect of the educational level on the effort expectancy, high educational levels are expected to be associated with high levels of technology literacy and reduced reliance on facilitating conditions. Given that most Saudi

EFL lecturers complete their studies overseas, high educational levels are expected to be associated with high levels of technology literacy because they learn independently, thus developing greater confidence.

Gender moderated the relationship between facilitating conditions and use behaviour for using mobile technologies among the instructors, with the effect more prominent among females than males. That is, when the female instructors believed that organisational and technical infrastructure existed to support mobile technology teaching and knowledge sharing, then their actual use of this technology increased. This result contrasts with the original UTAUT model (Venkatesh et al., 2003) that showed no significant differences between men and women in terms of facilitating conditions, and may be because cultural and religious norms have created gender segregation in the Saudi educational system, which differs significantly from that of Western cultures and significantly impacts the attitudes and norms that influence the female Saudi lecturers' behaviour.

Of significant interest, the qualitative analysis revealed important issues concerning the facilitating conditions construct, principally that although the majority of the participants reported the benefits of mobile learning, some lecturers believed that there was infrastructure but a lack of support such as Wi-Fi and training. The majority indicated that simply providing a resource does not ensure its use, and therefore that lecturers should also be informed how to effectively utilise the mobile technology for effective teaching. There was no clear guide to follow, while the number of the students in the classroom was also an issue as the instructors had to micromanage the students while using mobile technology in the classrooms.

There were insightful suggestions from the lecturers, whereby university authorities as well as relevant national policy-makers should take into account the support provided by the university and the availability of Wi-Fi connection on campus. Indeed, the instructors reported that concerns over Wi-Fi connectivity was a major factor behind their unwillingness to use mobile technologies for teaching, and therefore it is crucial to invest in unrestricted and fast broadband access. This was also noted by Alghamdi (2019), who pointed to issues in the meaningful integration of ICT in the reviewed Tatweer schools in the Kingdom of Saudi Arabia, and asserted that there was a need for more professional development for teachers in terms of ICT integration in education and ICT skills, as well as to upgrade equipment and provide technical support.

The instructors also raised several additional issues that inhibit mobile technology use for academic purposes, which included the lack of skills and knowledge regarding using mobile technologies for teaching, the misuse of the devices and the dominant influence of traditional teaching, as well as cultural constraints that presented as a threat to female instructors' use of these technologies. As per the interview data, four of the eleven participants had insufficient knowledge of mobile technology's application, with the lecturers reporting their lack of technological knowledge and skill to select and use the appropriate technology for effective teaching.

English language lecturers must therefore enhance their teaching through effective training and skills' accumulation in order to facilitate the integration of technology into their role. The participants did not believe they were sufficiently competent to achieve such integration without training, and so professional development and continued training has become a vital aspect of the EFL lecturers' professional careers. As the application of technology is crucial in EFL classes, policy needs to be implemented to ensure lecturers' professional careers are integrated with the knowledge content, pedagogy, and technology (Koehler and Mishra, 2008). Godwin-Jones (2015) noted that implementing technology in classrooms ensures language lecturers can use networked computers and help connect people from different parts of the world. This is a vital factor to contextual, critical and collaborative learning, with lecturer training developed by self-learning, conferences and formal workshops where government and institutional policy facilitates this.

The lecturers showed considerable support for structured professional development programmes in a range of areas such as time management and engaging the students through the utilisation of mobile technology in their teaching, while also building confidence. They reported that they need technology proficiency training to introduce improved English teaching practices and strive towards excellence in the teaching and learning of English throughout the Kingdom of Saudi Arabia. These desires are reflected in the Vision 2030 initiative's aim to provide motivation as well as structure, and to ensure improved educational outcomes and opportunities for Saudis in general.

A major problem that must be addressed in several universities offering lecturer education is that the present ICT and mobile technology courses are headed by ICT experts who do not have expertise in teaching didactics. Maderick et al. (2016) notes that not having the precise knowledge of the digital competence of the preservice lecturers as Technological Pedagogical Content Knowledge (TPACK) can lead to the lecturer educators being less

able to offer the required skills for integrating technology use into lecturer learning experiences. Moreover, relying on the belief that prospective lecturers, described as the digital native generation, are digital-technology proficient in the classroom is also a problem (Kirschner and De Bruyckere, 2017). This study emphasises the concept of 'learning by doing', as it involves prospective lecturers progressing from basic to expert level in their digital competency. It is important to train lecturers in the competent use of technologies in diverse teaching contexts, including general as well as professional contexts. However, experienced lecturers have developed their own pedagogical content knowledge that, if successful, is not easily changed. Ensuring lecturer competency in technology classroom use will contribute towards enhancing the student outcomes pedagogically or methodologically (Špernjak and Šorgo, 2017).

### 5.3.5 Habit

According to the proposed study model, habit is the extent to which Saudi higher education lecturers tend to automatically use mobile technologies when teaching EFL. The findings show that habit had the most significant influence on the behavioural intention for using mobile technology, and had a significant influence on the use behaviour of mobile technologies when teaching EFL. The findings of the qualitative data support the quantitative findings, showing that all the participants tended to use mobile technology and were willing to employ it throughout their teaching, acknowledging the potential benefits provided that they are given support and encouragement by their institutions. Further, the present study indicates that none of the moderators had a significant moderating effect on the relationship between habit and behavioural intention and the use behaviour of mobile technologies when teaching EFL,

These findings on the importance of habit corroborate the empirical evidence of Venkatesh et al. (2012). Overall, habit was observed to be the highest significant predictor that contributed to the variance in behavioural intention ($\beta$=0.436, p-value<.001), and was a significant predictor that contributed to the variance in use behaviour ($\beta$=0.196, p-value=.008). Habit was thus the most prominent factor for both behavioural intention and the use behaviour of mobile technologies for EFL teaching.

This result suggests that the efficiency of mobile technology teaching and the engagement of instructors in such an environment are highly determined by personal factors such as habit. As asserted by Ouellette and Wood (1998), future behaviour can be best predicted by automaticity and strength of habit, with individuals' behaviours resulting from habit

representing a reasonable explanation for an action that may appear to be irrational or harmful. Therefore, the instructors' habits of being excessively involved in the use of mobile technologies for a considerable period of time may become a driving force to generate habitual and automatic behaviours regarding mobile teaching use, and thus increase the application of these technologies in the future.

Despite the contention that habits are unintentional, non-volitional and are automatically performed with the least attention to those actions (Ronis et al., 1989), Ouellette and Wood (1998), Ajzen (2002) and Polites (2005) assert that the opposite may apply in intentional behaviour systems. In the case of the present study, the data analysis indicated that multimedia services, e-mail, and social media were the mobile applications most frequently used by the instructors. Further, Global Media Insight (2020) reports that the Kingdom of Saudi Arabia has the highest percentage of internet users who actively use Twitter. Hence, there is the potential to transform the habits of e-mail, social media, and multimedia services' use into learning and teaching processes through guidance and enhancing the advantages of such technologies in the educational context.

The findings of the qualitative data support the quantitative findings, showing that all the participants tended to use mobile technology and were willing to use it throughout their teaching. They acknowledged the potential benefits of using this technology if they were given support and encouragement by the universities, and hence the importance of considered policies for use. If the universities and policy-makers provide the required support, there is a willingness and motivation for using mobile technology when teaching EFL, supported by the results of facilitating conditions discussed above.

### 5.3.6 Hedonic motivation

According to the proposed study model, an individual who believes that mobile technology is enjoyable is more likely to have the intention to adopt mobile learning when compared to someone who believes it is less enjoyable. The findings show that hedonic motivation was positioned second after habit in terms of predicting the behavioural intention to utilise mobile technologies when teaching EFL, although hedonic motivation did not appear to predict the lecturers' actual use of mobile technology for teaching. The qualitative findings only explain this apparent contradiction in part. Some of the interviewees explained that although they believed the enjoyment component to be crucial to their use of mobile devices, privacy when using mobile technology in the classrooms was an issue for some, as discussed later in this section. Nevertheless, the

present study finds that hedonic motivation had a significant effect on behavioural intention, but did not report differences in respect to gender, age, experience or qualification.

This result is consistent with those obtained in Raman and Don's (2013) study at the University Utara Malaysia, which explored pre-service lecturers' acceptance and use of an LMS in their learning process Their study investigated the effects of effort and performance expectancy, hedonic motivation, social influence, habit and facilitating conditions on both use behaviour and behavioural intention using the UTAUT2 model, but eliminated the effect of any moderators. Moreover, their research revealed that as a predictor, habit preceded hedonism in importance and in terms of contributing to the variance, which explained the instructors' behavioural intention for using mobile technology. Kang et al. (2015) also found hedonic motivation to significantly affect the behavioural intention for using mobile learning in the higher education context of South Korea. However, the findings of the present study contradict those of Lewis et al. (2013), which indicated that hedonic motivation was not a significant determinant of either behavioural intention or use behaviour concerning mobile technologies for teaching EFL when compared to other factors.

Hedonic motivation was not, however, a significant predictor of use behaviour concerning mobile technologies among the EFL lecturers, which is consistent with the findings reported by Venkatesh et al. (2012) and Raman and Don (2013). Venkatesh et al. (2012) claim that hedonic motivation is a critical predictor of behavioural intention among consumers of mobile internet technology, moderated by age, gender and experience. However, the present study found that hedonic motivation had a significant effect on behavioural intention, but did not observe gender, age, experience, or qualification differences.

Despite Venkatesh et al. (2012) arguing that the effect of hedonic motivation on technology use will decrease as the experience increases, the current study indicates that virtually all of the EFL participants owned smartphones, with over three-quarters of them using these to access the internet more than five times per day, and around half frequently using applications developed by the faculty, department or university for teaching English, as well as e-mail and social media. It is evident that the EFL instructors were developing an effective level of experience regarding the use of these mobile technologies. Venkatesh et al. (2012) argue that the effect of hedonic motivation on technology use will decrease as the experience increases, which contradicts the current

study's findings where no experience differences were observed. The literature suggests that perceived enjoyment is a positive predictor of user intentions for mobile learning (Huang et al., 2006; Wang et al., 2008). The qualitative analysis in this study supports the quantitative findings, as the participants noted that enjoyment is crucial for using mobile devices. The participants also identified that fun and enjoyment lead to further exploration of technology use, and that the convenience of accessing information on a mobile device contributed to their enjoyment.

Hence, both the quantitative and qualitative findings suggest that the more the lecturers enjoy using mobile technology while teaching, the more likely it is that their attitude towards adopting these technologies will be positive and they will have enhanced motivation to engage with mobile teaching activities. Promoting playful use of mobile devices for teaching and emphasising their benefits and usefulness for teaching can be a positive strategy for increasing mobile technology teaching (Raiskinmäki, 2019).

The qualitative findings also provide further explanation to comprehend the abovementioned findings, as security and privacy represent an important theme derived from the qualitative data. Two of the participants reported concerns about their privacy when using mobile learning technology in the classrooms, where both were female. These participants held conservative views regarding the use of mobile devices equipped with a camera, thus negatively affecting the use of mobile teaching in their classrooms. They expressed concerns that a student might take photos of them or share images through SnapChat during the class, and questioned how they could ensure they were not being filmed and then posted to such social media. It can therefore be stated that some social and cultural issues in the Saudi context may present barriers to mobile learning implementation among female instructors. As this study aims to understand instructors' perceptions of mobile learning, the acceptance of mobile learning by individuals is critical to its successful implementation, and this acceptance is impacted by personal perceptions as well as social and cultural issues, the acknowledgement of which enhances our understanding of such beliefs about the mobile technology use.

This research therefore advances awareness of the impact of differences in gender, age, years of teaching experience, and the level of qualifications on mobile learning. Understanding these differences can help in developing superior strategies, systems and policies that can assist instructors to better participate and improve the teaching experience. It should be noted that there is limited research on the impact of individual characteristics such as gender and age differences on mobile technology use in the

Kingdom of Saudi Arabia. Academic institutions and higher education policy-makers in the state will thus need to consider the development of mobile learning environments at academic institutions through awareness of the social and cultural factors, as well as religious norms and traditions.

However, as only two female participants reported these concerns, there is a need to further examine the influence of the security and privacy of teaching on female lecturers' behavioural intentions towards the acceptance and use of mobile technology in the classroom. Thus, such investigations regarding female perceptions towards the use of mobile technology in their teaching will be an important contribution to the literature on the theme of gender that can help to develop improved understanding of EFL lecturers' acceptance.

### 5.3.7 Price value

According to the proposed study model, price value is the extent to which Saudi higher education lecturers perceived that using mobile technologies when teaching EFL offered greater value than the monetary cost. The findings show that the price of mobile technology and services had no effect on the behavioural intention, although the price of such technology and services did have a significant impact on use behaviour. According to Venkatesh et al. (2012), when the perceived price of a technology has a positive effect on the use behaviour, this suggests that the user perceives the benefits of that technology to be greater than the cost. In the qualitative findings of this study, all the participants noted that while mobile devices and internet connection were expensive, they were also affordable, and that lecturers as well as students had the economic means to own and use them. This may be the reason behind the statistical finding that price directly influences use behaviour. The result further indicated that experience moderates the relationship between price value and use behaviour, with the effect increasing as the level of experience decreases.

This study's investigation of the lecturers' views regarding the cost of mobile technology shows that the majority of the lecturers believed that the price of mobile technology, be it devices or internet services, was high. Nevertheless, under half of the respondents asserted that mobile technology was reasonably priced, with around one-quarter disagreeing and thus affecting their behavioural intention for using these technologies and the use behaviour.

In accordance with the qualitative findings, all the participants noted that mobile devices and internet connection were expensive, but they also reported that it was affordable for both lecturers and students, as indicated by the ownership levels. This is in accordance with Venkatesh et al.'s (2012) observation. Lawrence et al. (2008) suggest that the price of both mobile devices and internet access are primary cost barriers to students and lecturers, and that there is no uniform access to mobile technology, but this is clearly not the case in the Saudi university context.

Ahmed (2013) notes that 4G wireless technology has expanded exponentially in the Kingdom of Saudi Arabia, and has thus enabled ultrafast connection that delivers high performance at low cost, with a higher likelihood of consumers perceiving the price of mobile technologies as good compared to these devices' usefulness.

Even where the price of mobile technology and services may significantly impact on the use behaviour for EFL teaching, it is noteworthy that the Kingdom of Saudi Arabia is undergoing rapid growth in the marketplace for mobile technologies. Al Wahaishi and Snásel (2013) report a rise in the penetration of mobile phones in Saudi Arabia, with Al Babtain et al. (2014) noting some 186% registered users, thus implying multiple device ownership by many individuals. The average ownership rate for mobile phones in the developing world is 73%, with 116% in the developed world.

In the Kingdom of Saudi Arabia there has been a considerable rise of internet usage to reach 32.23 million (93.31%), with 25 million (72.38%) of the population being active social media users, often accessing the platforms by smartphone (Global Media Insight, 2020), and with growth clearly continuing towards the saturation point. This is suggestive of a high actual use behaviour concerning mobile technologies for learning EFL and for general use, although other factors discussed herein will have a separate impact.

Experience moderates the relationship between price value and use behaviour, with the effect increasing as the level of experience decreases. That is, the effect of price value on use behaviour in EFL is highly significant at a low experience level. It can thus be noted that the price of devices may hinder lecturers inexperienced in mobile technologies from implementing such technologies for EFL teaching. On the other hand, this obstacle will be ameliorated by the lecturers gaining more experience.

Al Fahad (2009) found that around half of his survey respondents (56%) who were inexperienced mobile technology users believed that the use of mobile technologies for

learning would be expensive. Chanchary and Islam (2011) examined the benefits as well as the technological challenges concerning mobile learning in the Kingdom of Saudi Arabia by implementing a survey of undergraduate university students, observing the cost of mobile technologies to be an unfavourable characteristic of mobile learning. It should, however, be noted that the majority of their survey respondents (85%) were inexperienced users who had no knowledge of using their devices' features for mobile learning. Therefore, the findings of Al Fahad (2009), as well as of Chanchary and Islam (2011), are consistent with those of the present study. Experienced mobile technology users, however, ignore the devices' price and focus on the potential advantages.

### 5.3.8 Use behaviour

This section discusses the actual practices and use behaviour of lecturers when teaching EFL. The survey revealed that mobile technologies and mobile applications are frequently used to teach EFL, with the lecturers particularly utilising e-mail and social media for EFL teaching through their mobile devices. Furthermore, the majority of the instructors reported that they frequently used multimedia services to teach English and half used applications developed by the faculty, department or university to teach English. A quarter of the instructors reported that they frequently used websites on their mobile devices to teach or support EFL teaching, as well as commercial applications and using SMS to a lesser extent. Regarding the social media usage, the qualitative findings indicated that the majority of the participants were using social media such as WhatsApp, Telegram and Twitter to encourage their students to practise their English language either inside or outside the classrooms. As highlighted in sections 2.6.1 and 2.6.2, communication, interaction, and collaboration with social media can promote real-life experiences as a foundation for learning (Greenhow and Lewin, 2015; Godwin-Jones, 2017, 2018).

These findings, in the absence of any specific university policy, are indicative of voluntary action to improve teaching. As noted by Alshenqeeti (2018), mobile technologies have tremendous potential for resolving the difficulties of EFL teaching and learning in the Kingdom of Saudi Arabia. Thus, the present research, rather than representing a trial to assess the existing mobile teaching situation in Saudi universities, was developed to shed light on how frequently mobile learning is practised and accepted. It aims to help organisations by providing support for the teaching of EFL through utilising the latest mobile technologies that most students and instructors can easily access. However, it is important for institutions to take more direct policy action to

approve and integrate these practices. The practices and use behaviour for teaching EFL are currently informal and individually motivated, because they are not facilitated by the university and not limited to a specific type of teaching. Nevertheless, the features and functions of mobile technologies allow for a wide range of activities.

Considering the frequent uses of mobile technologies among the EFL instructors, it is important that the educational institutions become more involved with this practice, rather than to simply approve its usage. The potential of mobile technologies for addressing EFL teaching challenges in the Kingdom of Saudi Arabia cannot be denied (Alshenqeeti 2018). However, Alshenqeeti (2018) noted that despite the positive views of the technology in the EFL classroom, some issues still need to be addressed. Unfortunately, administrators often believe that merely allocating a substantial budget for hardware will meet lecturers' needs, while virtually ignoring the associated software and staff training requirement. This fails to take account of the fact that technology needs to be integrated into teaching, rather than being seen as a separate aid for lecturers or students to use. The mere presence of mobile devices for language teaching and learning does not necessarily lead lecturers to teach the language effectively, and while it encourages collaborative and interactive communication, mobile technology can only fulfil its potential as a teaching tool when integrated into the classroom environment as a policy practice.

Mobile learning should move in the direction of mobile technology's rapid advancement by ensuring that devices are widely available for people to use, and that they provide learning and performance opportunities (Quinn, 2011). This makes it possible to disseminate capability where required, while exploring new opportunities. The present study can thus be considered as the first step towards evaluating the current situation, as well as the major factors behind mobile learning and teaching being implemented successfully at higher education institutions in the Kingdom of Saudi Arabia.

## 5.4 Summary

This study has determined that smartphone usage was highly popular, and therefore its use must be promoted to higher education policy-makers insofar as such technologies continue to evolve through valuable features for learning. Corbeil and Valdes-Corbeil (2007) observe that smartphones integrate diverse computing and communication features into a single compact system, and therefore there is significant potential to exploit this in the context of teaching and learning. This chapter has presented a discussion of the findings collected through the questionnaire and interviews, in order to reflect the key

findings related to each research objective in relation to the literature, and in an attempt to demonstrate how the research objectives have been achieved. The discussion of the findings offers a basis for policy-makers to formally integrate mobile technology use into classroom and extra-classroom teaching. The next and final chapter presents the study's conclusion, as well as the contribution to knowledge, limitations, recommendations and opportunities for further research.

# Chapter 6
# Conclusion

## 6.1 Introduction

This final chapter presents a summary of the main outcomes of the study, outlining the theoretical and practical contributions and implications drawn from the findings. It also acknowledges the study's limitations and provides suggestions for future research opportunities.

## 6.2 Research Overview

The study set out to investigate lecturers' experiences and perceptions regarding the use of mobile technology in teaching EFL, in an effort to determine the level of acceptance of mobile technology teaching among instructors at universities in the Kingdom of Saudi Arabia. The first step in conducting this study was to explore the related literature on mobile learning around the world, and particularly in Arabic-speaking nations, while the potential benefits of mobile technologies in language teaching and learning were also identified. This review drew to a close by exploring academic studies on the acceptance of mobile learning and teaching, and reviewing technology acceptance theories, with the focus placed on the UTAUT2 model, which provided guidance to enable the researcher to refine the plan of the study and formulate the research enquiry. The main research questions of the study were:

1) What is the Saudi university lecturers' experience of using mobile technology?

2) What are the factors that are associated to the Saudi university lecturers' perceptions on the adoption of mobile technology to teach the English language in state universities?

3) What are the challenges faced by English language lecturers in using mobile technology, and how might these challenges affect their usage of mobile technology in their teaching?

To answer these questions, a mixed-methods approach was adopted to examine the perspectives and experiences of Saudi EFL lecturers in the use of mobile technology in their teaching. This involved quantitative and qualitative data collection and analysis by

questionnaire survey and semi-structured interviews, respectively, with participant lecturers. The UTAUT2 model was implemented to guide the exploration of the study.

All EFL instructors at universities in the Kingdom of Saudi Arabia were invited to participate, with 270 instructors joining the first survey stage, and 12 the second interview stage. A range of statistical techniques were employed to analyse the responses. Once the data had been gathered, the researcher generated descriptive and inferential statistics, and used various statistical techniques to analyse the responses. The qualitative findings drawn from thematic analysis were then presented to provide greater depth of understanding to the results.

The key findings of both the quantitative and qualitative analysis will be summarised in the next section.

## 6.3 The Key Findings of this Research

The key findings from this study are presented in relation to each of the research questions.

- Research Question 1

  What is the Saudi university lecturers' experience of using mobile technology?

The key findings from this research question will be summarised in the following two subsections.

### 6.3.1 Ownership of mobile devices (smartphone and tablet)

This study found that almost all the participant instructors owned a smartphone and half owned a tablet. Ownership of smart mobile devices among lecturers in this study was very high, especially for smartphones, where almost all of the lecturers owned such a device. However, when it came to the ownership of tablets, only half of the lectures indicated that they owned one. This finding shows the importance of deciding which smart mobile devices universities and their instructors should use to start designing their mobile learning activities. Also, it is important for the university policy-makers to consider how to get the most benefit for their university, such as exploiting this high ownership of smartphones by instructors. One suggestion is to adopt a BYOD policy in Saudi universities.

Problems with technology and barriers to the successful implementation of a BYOD strategy may be reduced by adequate preparation, but the lecturers interviewed indicated that their institutions failed to provide adequate support for those who were using their own devices, as well as those who wanted to. The lecturers claimed that the use of their own devices could be best supported through online or offline training, together with additional information and resources.

### 6.3.2 The use of mobile devices

The study also found further evidence of lecturers' engagement with mobile devices, where they reported that smartphones were their most used devices, rather than tablets. A high proportion of the lecturers often or always used their smartphones to receive and send text messages and schedule appointments, while over half used them to edit and read documents, and hold video conversations. This reported usage was considerably higher than that reported for the same often or always usage of their personal tablets, with only editing and reading documents being carried out by over half of the tablet users, while scheduling appointments, holding video conversations, and receiving and sending text messages often or always was only carried out by less than one-quarter of the tablet users. The above-mentioned finding shows the importance of raising awareness of mobile learning, its benefits, and how it can be adopted in learning and teaching activities among students and instructors.

- Research Questions 2 and 3

  What are the factors that are associated to the Saudi university lecturers' perceptions on the adoption of mobile technology to teach the English language in state universities?

  What are the challenges faced by English language lecturers in using mobile technology, and how might these challenges affect their usage of mobile technology in their teaching?

The key findings of both the quantitative and qualitative analysis of these research questions based on the UTAUT2 model will be summarised in the following two subsections:

### 6.3.3 Factors that are associated to the Saudi university lecturers' perceptions on the adoption of mobile technology

Overall, the lecturers had a positive attitude towards using mobile technology in their teaching. The UTAUT2 model included both the intention to use and use behaviour as independent variables, and measured the effect of the dependent variables: performance expectancy, effort expectancy, social influence, facilitating condition, habit, hedonic motivation and price value. The lecturers expressed the usefulness, easiness and self-encouragement when using mobile technology in their teaching, while they confirmed the existence of some support from their institutions, such as Wi-Fi and training, but they reported a lack of guidance on how to use the technology effectively. Meanwhile, the lecturers conceded that while mobile technology was expensive in terms of the cost of the devices and internet services, it was essentially affordable and accessible for all those who participated in the study.

The aforementioned analysis investigated the behavioural intention and use behaviour as the dependent variables of the seven antecedent constructs. The results of the regression analysis concluded that performance expectancy, effort expectancy, habit and hedonic motivation significantly influenced lecturers' intention to use mobile technology in their teaching. Then, price value, facilitating conditions and habit also influenced the lecturers actual use of mobile technology. However, Venkatesh et al. (2003) found that the behavioural intention of consumers towards technology significantly influences the use behaviour; thus, the more lecturers have positive behavioural intentions towards mobile learning technology, the more often they will use the mobile learning technology. Moreover, personal characteristics also played a role, with the results indicating potential differences among the lecturers in terms of their use behaviour and intention to use mobile technology. Educational level moderated the relationship between effort expectancy and behavioural intention for mobile technology use, with the impact increasing as the level of education decreased. Age moderated the relationship between effort expectancy and use behaviour, where the effect increased with the lecturer's age. Age was also found to moderate the relationship between social influence and behavioural intention, and the effect or influence was enhanced as the age increased. Age and education level moderated the relationship between facilitating conditions and behavioural intention for using mobile technologies among the instructors, with the effect increasing as the education level decreased and the age increased. Gender moderated the relationship between facilitating conditions and use behaviour for using mobile technologies among the instructors, with the effect more prominent among females than males. The results further

indicated that experience moderated the relationship between price value and use behaviour, with the effect increasing as the level of experience decreased.

Finally, this study utilised the UTAUT2 to study the educational settings, especially with mobile learning technology. The six proposed constructs of mobile learning (performance expectancy, effort expectancy, social influence, facilitating conditions, habit, hedonic motivation and price value) explained 67.9% of the variance in the lecturers' behavioural intention and 22% of the variance in the lecturers' use behaviour of mobile learning technology.

### 6.3.4 Mobile device use for language teaching

The lecturers particularly utilised e-mail and social media for EFL teaching through their mobile devices. Furthermore, the majority of the instructors reported that they frequently used multimedia services to teach English, and half used applications developed by the faculty, department or university to teach English. A quarter of the instructors reported that they frequently used websites on their mobile devices to teach or support EFL teaching, as well as commercial applications and using SMS to a lesser extent.

## 6.4 Key Contributions of the Research

The contribution and implications of this study include both theoretical and practical facets. In the case of the theoretical contribution, this study enriches the literature on mobile technology and related terms by employing the UTAUT2 model. Then, the practical contribution provides all stakeholder groups, including academics, university managers and policy-makers, with useful information that can guide and support the implementation of mobile learning and teaching in higher education. These contributions and implications are discussed in greater detail in sections 6.4.1 and 6.4.2 below.

### 6.4.1 Theoretical and methodological implications

The researcher was aware of the potential benefits of using mobile technology in the field of language teaching. However previous research confirmed that teachers were reluctant to implement this technology in the field of language teaching, and particularly in the Kingdom of Saudi Arabia mobile learning was not widespread. To find out what might prevent lecturers from utilising mobile technology in their teaching, and after reviewing many of the previous studies regarding the lecturers' use and acceptance of mobile learning in EFL teaching in higher education, the study found a paucity of studies of mobile learning acceptance at the university level among lecturers around the world, and

especially in the Saudi context. Moreover, most of the available studies did not address the use of mobile learning for language learning, since these studies either:

- investigated mobile learning technology without the relevant framework support, while it is also important to underscore that theoretical frameworks were absent from most of the studies that investigated the effectiveness of mobile learning in the Saudi context (e.g. Abachi & Muhammad, 2014); or
- were already based on a theoretical model, but adopted only one approach that was mostly quantitative (e.g. Almarwani, 2016); or
- excluded the effects of potential moderators that might affect the lecturers' perceptions towards the use of mobile learning (e.g. Abachi & Muhammad, 2014; Aljuaid et al., 2014); or
- had one major limitation in common, whereby their findings were either not generalisable or had limited potential for generalisation, as most of these studies were conducted either in one university (e.g. Aljuaid et al., 2014), or with either male or female participant lecturers (e.g. Abachi & Muhammad, 2014).

Therefore, this study investigated lecturers' acceptance of using mobile learning in their teaching of EFL in the Kingdom of Saudi Arabia. The research model in this study was mainly based on the UTAUT2 model (Venkatesh et al., 2012). This research model was validated within the Saudi context and its hypotheses were tested to determine the key factors that affected university lecturers' intention and use behaviour towards the acceptance of mobile learning. The main theoretical contribution of this work is using the UTAUT2 model for the mobile learning context, which extends the generalisability of the model from an organisational context, where the intention to use and actual use behaviour are primarily formed based on performance considerations. The following are the key theoretical contributions of the current study to the body of knowledge:

- In accordance with the UTAUT2 model, this study proposed that gender, age, teaching experience and academic qualification are moderating variables of the relationship between the seven constructs and lecturers' behavioural intentions and the actual use behaviour of mobile learning technology. Thus, this study included and examined both behavioural intention and use behaviour. This study, therefore, raises awareness of the effect on mobile learning of variations in gender, age, years of teaching experience, and the level of qualification. Understanding these variations will assist in the creation of superior strategies, programmes and policies that can help lecturers engage more and enhance the experience of

teaching. It should be noted that in the Kingdom of Saudi Arabia there is limited research on the effect of individual characteristics on the use of mobile technologies. Academic institutions and policy-makers in higher education would also need to consider the advancement of mobile learning environments in academic institutions under boundary conditions and circumstances that could influence the use of mobile learning. The current study collected its data from instructors over a large area that included all public universities in the Kingdom of Saudi Arabia, and who taught EFL with participants of both genders (male and female), which allows for the generalisation of the study findings.

- This study conducted an explanatory sequential mixed method, where the quantitative method was initially employed, followed by the qualitative method to provide an in-depth understanding of the findings (Creswell, 2014).

Therefore, this study is considered the first in the Kingdom of Saudi Arabia that addresses mobile learning in EFL, resulting in the above-mentioned contributions through investigating mobile learning acceptance among instructors in higher education.

### 6.4.2 Practical contribution and implications

The findings emerging from this study will provide mobile learning providers (e.g. academics, university managers and policy-makers) with valuable information that can guide the implementation and support of mobile teaching in higher education in general for all higher education institutions and policy-makers globally. Specifically, this study provides insight that helps to understand the underlying factors that encourage or impede the use of mobile technologies in EFL teaching in higher education in the Kingdom of Saudi Arabia.

The 2030 Vision for Saudi higher education is promising, and effectively advocates for a change in teaching attitudes and methodologies (Vision 2030, n.d.), which would benefit from the utilisation of mobile technology; however, policy- and decision-makers in Saudi higher education should consider lecturers' acceptance of mobile learning technology initiatives before implementation, while taking into account the rapid evolution of technology and learners' positive perceptions of its application for language acquisition (Alasmary and Zhang, 2019). This study's findings offer evidence to support such initiatives, where the lecturers of Saudi public universities exhibited an intention towards using mobile learning technology, suggesting a change in their beliefs on classroom practice (Burns, 1992) and representing an improvement on Abahussain's (2016) study

that found a prevailing preference for traditional approaches to second language teaching and learning. Furthermore, the research provides an evaluation of the Saudi government's vision of introducing transformative investments that travel beyond the reliance of oil into a knowledge-based economy (Kingdom of Saudi Arabia, 2017), in terms of the optimum support to be provided to Saudi EFL lecturers regarding the integration of mobile technology in education. The study's practical contributions and implications in light of the findings are as follows:

- First, regarding the availability of mobile devices, this study has notable implications for those involved in teaching and institutional leadership, whereby policy-makers will find particular benefit as they strive to realise the wider adoption of mobile technology, taking it beyond the currently scattered individual attempts to integrate mobile technology into teaching and learning, and exploiting the significant benefits that can be realised (Botero, Questier and Zhu, 2019). As discussed in section 5.2.1, this study calls for the widespread implementation of mobile learning through the adoption of a BYOD strategy (Kraut, 2013) throughout institutions, which is not only highly cost-effective, but also takes advantage of the high ownership of internet-enabled smartphones prevalent in the Kingdom of Saudi Arabia (Global Media Insight, 2019). The study's findings indicated that there is a high percentage of smartphone ownership among lecturers. It is recommended that Saudi universities adopt the BYOD policy to exploit the benefits that the availability of these devices offer for in-class teaching activities. Such an approach would also impact the lecturers' perceptions and behaviours towards their pedagogy through social influence and increasing the positive perceptions of effort expectancy (Li, 2020). Moreover, it is recommended that universities provide smart devices to be available for both students and lecturers to borrow if they have in-class mobile learning activities, so that those who do not have or want to use their own devices can still benefit from the activities. Furthermore, it is recommended that universities offer financial solutions for those students and instructors who are not able to buy their own smart mobile devices, as facilitating conditions that stimulate the acceptance and use of MALL were highlighted as an important construct in Hoi's (2020) findings from higher education Vietnamese language learners.
- Second, regarding training, the lecturers indicated a lack of awareness of mobile learning and how it can be implemented into learning and teaching activities, although Blume's (2017) study did not find the moderating factor of experience

to be a limiting factor in pre-service teachers' willingness to consider technology as a medium for learning. Therefore, in order to ensure the implementation of mobile learning activities, lecturers need to receive effective, professional development training in mobile learning, and not just be provided with basic information. The participants also highlighted the need for continuous and accessible training, underscoring the importance of ongoing training to ensure a positive impact on the intention to use CALL behaviour by providing EFL teachers with the confidence, belief and skills necessary to implement such technology effectively in their classroom (Hedayati et al., 2018). Several stages of training are suggested in this regard. 1) Training on the educational use of mobile technology, especially in teaching EFL. The problem (as discussed in section 5.3.4) is that in several universities offering lecturer training, the trainings are headed by ICT experts who do not have expertise in teaching didactics. Lecturers must receive training on the competent use of technologies in diverse teaching contexts and how to make use of mobile technology in the context of teaching language in order to develop their own pedagogical content knowledge. 2) There is a need for training on managing the classroom while conducting in-class mobile learning activities, to ensure that effort expectancy has a positive influence (Li, 2020). 3) Effective training that is led by self-motivated instructors must be implemented across institutions, notwithstanding the available technological infrastructure and institutional policies. It is essential that the skills, behaviours and beliefs of such self-motivated people are transferred to instructor colleagues in order to maximise the potential of mobile technologies through exploiting reflexivity and allowing teachers to share their rich experiences of successful implementation and the subsequent acquisition by language learners (Freeman, 2002). This is particularly relevant for older lecturers, who as the findings indicated tend to be more concerned about their friends and family's perceptions of mobile technology, whereby their use of technology was highly affected by social influence from those they perceived to be important, echoing Hedayati et al.'s (2018) findings on the impact of peer perceptions, as well as Gümüşoğlu and Akay's (2017) observations on the need for ongoing support and training regardless of the lecturers' ICT background or age. Tan et al. (2012) emphasise the importance of an encouraging and inspirational environment, which renders lecturers more willing to experiment with this new technology. In the Saudi higher education context, this finding indicates the importance of

policy-makers creating a supportive social environment among instructors before they seek to implement mobile learning technologies. To do so, leaders in higher education and deans in Saudi universities should consider motivation and encouragement when making decisions regarding purchasing or designing teaching systems, to thus increase acceptance among lecturers in terms of mobile learning by ensuring that the institutional support is prominent and concerns over performance and effort expectancy are minimised (Gümüşoğlu and Akay, 2017). There is a real need to create a platform so lecturers can share their experiences of using mobile technology and motivate others.

- Third, regarding social media use, like other countries around the world, social media plays a pivotal role in Saudi society (Global Media Insight, 2020), with statistics indicating that this phenomenon is increasing. Moreover, due to contemporary learners being familiar and confident with mobile phone technology and social media, connectivism offers opportunities for learning to be conceptualised via mobile devices (Al-Shehri, 2011). According to the Communications and Information Technology Commission (2019), almost 92% of the Saudi population used social media in 2018, representing the highest growth of any country worldwide, with the Commission indicating that the growth of social media users in the Kingdom of Saudi Arabia reached 32%, considerably higher than the 13% global average. As the findings of this study reported the frequent use of social media by lecturers, these social networks could be used to improve EFL teaching and learning in the context of higher education (Kukulska-Hulme, 2012). In addition, social media could introduce a different form of knowledge construction and consumption that enables students to actively co-produce content, promoting real-life experiences as a basis for learning (Greenhow and Lewin, 2015; Godwin-Jones, 2017, 2018). This could also have a positive impact on lifelong learning, as both formal and informal learning and teaching communities are created on social media platforms that facilitate a novel approach to learning. These communities already exist, so the decision is not about whether to integrate them, but rather how their benefits can be maximised in the context of teaching EFL. It is important for universities to have regulations that encourage and motivate their instructors so that they adopt this type of teaching, addressing lecturers' concerns over effort expectancy (Almarwarni, 2021), and enhancing the key CALL variables of behavioural intention and use behaviour (Amarwarni, 2016).

- Fourth, regarding university policy, it is important for universities to start developing policy on the usage of mobile technologies in general on their campuses, and particularly in the EFL faculties, due to the unique characteristics of language teaching and language lecturers when compared to other subjects (Borg, 2006). Many of the lecturers reported in the interviews that their universities should have clear regulations in terms of supporting the use of mobile devices, which would have a positive impact through the contextual factors that influence teacher cognition (Borg, 2003). Moreover, Huang (2018) reported effort expectancy, facilitating conditions and habit all have a significantly positive impact on the intention to use social media as a teaching and learning medium in higher education. Lecturers need guidance on how to make effective use of mobile technologies that are already widely available (Alshaikhi, 2018), and as we have seen with Covid-19, when using technology is mandatory with clear policy, lecturers are quite capable of utilising it.
- Fifth, the lecturers identified disruption as their primary concern regarding the classroom use of mobile technology. This can be eliminated by implementing a strategy that focuses on using this technology outside the classroom environment, thus overcoming performance expectancy concerns and leading to enhanced behavioural intention and the promotion of technology use (Lewis et al., 2013) for language learning beyond the classroom walls. The Kingdom of Saudi Arabia is a non-English environment with little opportunity to interact with native speakers outside the classroom, which is crucial for language acquisition (Kukulska-Hulme, 2009; Kukulska- Hulme, 2012), and therefore English can currently only be learned in the classroom. However, mobile technologies could change this by providing technologies that offer virtual language learning settings and contexts essential to communication skills and understanding, representing a new direction for teaching and learning (Darling-Hammond et al., 2020). Extending foreign language learning through frequent informal practice is fundamental to second language acquisition.
- Sixth, regarding female privacy issues, as discussed in section 5.3.6, the lack of regulation regarding the use of mobile technologies inside the universities prevents female lecturers from allowing students to bring mobile devices into their classes, as some female lecturers are sceptical and afraid that the use of these devices may invade their privacy, with similar privacy concerns also reported by the Saudi lecturers in Alsolamy's (2017) study. Therefore, it is important to

highlight the universities' policy in this regard and find an alternative resolution, since the teachers' beliefs will influence their classroom practice (Burns, 1992). The study found that female lecturers were interested in mobile learning. The gender segregation in Saudi education could encourage female lecturers to use mobile learning and thus lead to better opportunities for them to more easily develop MALL skills, as mobile learning would allow them to attend seminars, watch lectures, participate in online discussions and other learning activities, in which there may be male lecturers and students, with fewer obstacles than in a face-to-face situation. Therefore, it is recommended that universities benefit from female lecturers' interest in mobile learning by providing them with appropriate regulations that can protect their privacy and create the appropriate facilitating conditions (Gümüşoğlu and Akay, 2017) that will enable them to confidently adopt mobile learning in their classroom teaching activities.

## 6.5 Limitations

This study has several limitations, which can be summarised as follows:

- First, this study only collected faculty members' perceptions and views of how they currently use their mobile devices, and no observations were made regarding actual mobile device usage. To understand further how mobile devices are actually being used in English language learning, in-class observations would be beneficial as this would facilitate both the documentation of actual mobile device use, as well as commentary on the effectiveness of these devices as tools of instruction in an EFL context. This could be further enhanced by clarifying and exploring the specific teaching activities carried out in the EFL classroom. Currently, empirical evidence on how mobile phones or tablets are employed in classrooms is at an embryonic stage, such as Nikolopoulou and Kousloglou's (2019) study investigating the teaching of science.
- Second, the views of the deans and university principals were not investigated, although without their permission it would not be possible to implement mobile technology in an effective manner. Further research should involve more educational stakeholders, such as policy-makers, university and faculty leaders, to gather primary data on the mobile learning situation in higher education from more diverse perspectives, and determine these stakeholders' perceptions of mobile technology, including their opinions about the benefits, barriers and concerns of using mobile devices for educational purposes.

- Third, while the findings of this study are valuable starting points for other educational institutions globally, since culture is unpredictable and differs from place to place, the findings cannot be completely generalised to other countries around the globe. Moreover, the outcomes of the acceptance of mobile learning and barriers found by the population of the study cannot be generalised to other regions, especially as the Kingdom of Saudi Arabia is the most conservative country in the region in terms of social and cultural factors, as well as religious norms and traditions. In this context, the findings are more indicative than definitive for countries outside the Kingdom of Saudi Arabia, although they will serve as a valuable guide for later research into the acceptance of mobile learning. Empirical research is therefore needed to identify the form of culture and obstacles in other higher education institutions where future study will take place.

## 6.6 Opportunities for further research

Based on the findings in this study, along with the review of the literature on mobile learning in higher education, the researcher believes that further research is still needed. Suggestions are presented as follows:

- As two female participants reported privacy concerns, there is a need to further examine the influence of the security and privacy of teaching on female lecturers' behavioural intentions towards the acceptance and use of mobile technology in the classroom. Thus, such investigations regarding female perceptions towards the use of mobile technology in their teaching will be an important contribution to the literature on the theme of gender that can help to develop improved understanding of EFL lecturers' acceptance.
- Further study involving deans, policy-makers, and mobile learning providers is important to have a wider perspective and identify barriers that belong to the university infrastructure and training.
- Research that focuses on the culture, social constraints and obstacles of using mobile learning in higher education in the Kingdom of Saudi Arabia is required, as the findings show several barriers that have arisen in regards to these constraints. This may be more applicable to older lecturers who have developed strong affiliations to their own particular pedagogy.

## 6.7 Conclusion

This study can be regarded as a guiding light that maps the path towards the successful implementation of mobile education technologies in Saudi higher education. To fulfil the aims of Vision 2030 and build an education system that is fit for the future, the integration of ICT is critical as this is the foundation of the country's potential to become a successful competitor in today's global knowledge economy. Globalisation has led to the English language becoming increasingly dominant, both socially and intellectually, in the networked world in which we live, and it is therefore essential for the success of individual students, both now and in the future, that this study's findings are implemented. Failure to act on these findings will not only impede such individuals' progression, but also inhibit the ability of the entire Saudi higher education sector to compete in the rapidly growing global higher education sector. The reputation and excellence of universities are determined by international university rankings, and Saudi institutions can only take their place within these rankings if they provide learning and teaching that allows students to compete in the global knowledge economy. Furthermore, these findings are also of national importance, and must be acted upon to enable the Kingdom of Saudi Arabia to make the critical transition from reliance on its finite resources to a more sustainable future.

# References

Abahussain, M. O. (2016) Implementing Communicative Language Teaching Method in Saudi Arabia: Challenges Faced by Formative Year Teachers in State Schools. PhD thesis. University of Stirling. Available at: https://dspace.stir.ac.uk/bitstream/1893/24166/1/Majed%20abahussain%20final%20thesis%20(Jan%202016).pdf (Accessed: 27 October 2020).

Abdulrahman, R. A., & Benkhelifa, E. (2017) A systematic literature review on mobile learning in Saudi Arabia. In: IEEE/ACS 14th International Conference on Computer Systems and Applications (pp.1354–1361). Hammamet, Tunisia, October 30 – November 3.

Achari, P. D. (2014) *Research Methodology: A Guide to Ongoing Research Scholars in Management*. Horizon Books.

Ahmed, M. H. A. (2013) Performance test of 4G (LTE) networks in Saudi Arabia. In: Technological Advances in Electrical, Electronics and Computer Engineering (pp.28–33). Mevlana University, Konya, Turkey, 9-11 May.

Ajjan, H., & Hartshorne, R. (2008) Investigating faculty decisions to adopt web 2.0 technologies: Theory and empirical tests. *The Internet and Higher Education*, 11(2), pp.71–80.

Ajzen, I. (2002) Residual effects of past on later behavior: habituation and reasoned action perspectives. *Personality and Social Psychology Review*, 6(2), pp.107–122.

Al Asmari, A. R. (2013) Saudi University Undergraduates' Language Learning Attitudes: A Preparatory Year Perspective. *International Journal of Asian Social Science*, 3(11), pp.2288–2306.

Al-Fahad, F. N. (2009) Students' attitudes and perceptions towards the effectiveness of mobile learning in King Saud University, Saudi Arabia. *Turkish Online Journal of Educational Technology*, 8(2), pp.111–119.

Al Harthi, M. H. (2018) Mobile Learning in Saudi Arabia–A Review. *Global Journal of Education and Training*. 1(3), pp.1–7.

Al-Hujran, O., Al-Lozi, E., & Al-Debei, M. M. (2014) Get Ready to Mobile Learning: Examining Factors Affecting College Students' Behavioral Intentions to Use M-Learning in Saudi Arabia. *Jordan Journal of Business Administration*, 153(3301), pp.1–18.

Al-Husain, D., & Hammo, B. H. (2015) Investigating the readiness of college students for ICT and mobile learning: a case study from King Saud University. *International Arab Journal of e-Technology*, 4(1), pp.48–55.

Al-Khairy, M. H. (2013) English as a foreign language learning demotivational factors as perceived by Saudi undergraduates. *European Scientific Journal*, 9(32), pp.365–382.

Al-Nofaie, H. (2010). The attitudes of teachers and students towards using Arabic in EFL classrooms in Saudi public schools – a case study. *Novitas-Royal: Research on Youth and Language*, 4(1), pp.64–95.

Al-Saadi, H. (2014) Demystifying Ontology and Epistemology in Research Methods. Available at: https://www.researchgate.net/publication/260244813_Demystifying_Ontology_and_Epistemology_in_Research_Methods (Accessed: 27 October 2020).

Al-Saraj, T. M. (2014) Foreign language anxiety in female Arabs learning English: Case studies. *Innovation in Language Learning and Teaching*, 8(3), pp.257–278.

Al-Shehri, S. (2011) Connectivism: A new pathway for theorising and promoting mobile language learning. *International Journal of Innovation and Leadership on the Teaching of Humanities*, 1(2), pp.10–31.

Al-Shehri, S. (2020) Transforming English Language Education in Saudi Arabia: Why Does Technology Matter? *International Journal of Emerging Technologies in Learning*, 15(6), pp.108–123.

Al-Wabil, N. (2015) Usability of Mobile Applications in Saudi Higher Education: An Exploratory Study. In: HCI International 2015 Posters' Extended Abstracts. Los Angeles, CA: Springer (pp.201–205).

Al-Zahrani, N. O. (2017) The role of English language teachers in achieving the Kingdom's 2030 Vision. *Arab Journal of Sciences and Research Publishing*, 1(1), pp.111–126. (Arabic)

Alasmari, T., & Zhang, K. (2019) Mobile learning technology acceptance in Saudi Arabian higher education: an extended framework and a mixed-method study. *Education and Information Technologies*, 24(3), pp.2127–2144.

Aldosemani, T. (2019) Inservice teachers' perceptions of a professional development plan based on SAMR Model: A case study. *The Turkish Online Journal of*

*Educational Technology*, 18(3), pp.46–53.

Alebaikan, R., & Troudi, S. (2010) Blended learning in Saudi universities: challenges and perspectives. *ALT-J: Research in Learning Technology*, 18(1), pp.49–59.

Alghamdi, J. (2019) A mixed methods study exploring the practice of mathematics education, with a focus on the integration of online gamified mathematics practice activities in primary classroom settings in Saudi Arabia. Unpublished thesis. Dublin City University: Dublin. Available at: http://doras.dcu.ie/23418/1/Jawaher_Alghamdi_PhDThesis_4thJune2019_FULLTHESIS.pdf (Accessed: 28 October 2020).

Alghamdi, S. (2018) Curriculum Innovation In Selected Saudi Arabia Public Secondary Schools: The Multi-Stakeholder Experience Of The Tatweer Project. PhD thesis. University of Sheffield. Available at: http://etheses.whiterose.ac.uk/23683/1/AutoRecovery%20save%20of%20Revised%20thesis%5B24312%5D.asd.pdf (Accessed: 28 October 2020).

Alghamdi, S. (2019) Curriculum Innovation in Selected Saudi Arabia Public Secondary Schools: The Multi-Stakeholder Experience of the Tatweer Project. PhD thesis. University of Sheffield, Sheffield. Available at: http://etheses.whiterose.ac.uk/23683/1/AutoRecovery%20save%20of%20Revised%20thesis%5B24312%5D.asd.pdf (Accessed: 28 October 2020).

Alhadhrami, M. N. (2016) Using mobile phone apps inside and outside the English language classroom by undergraduate students at Sultana Qaboos University: Attitudes, practices and challenges. *Journal of Teaching English for Specific and Academic Purposes*, 4(1), pp.61–74.

Alhamed, M. et al. (2007) *Education in Kingdom of Saudi Arabia*. 4th ed. Riyadh: Alrushd.

Alharbi, O., Alotebi, H., & Masmali, A. (2017) Instructor Acceptance of Mobile Learning in Saudi Arabia: A Case Study of Hail University. *International Journal of Business and Management*. 12(5), pp.27–35.

Alhawsawi, S. (2013) Investigating Student Experiences of Learning English as a Foreign Language in a Preparatory Programme in a Saudi university. PhD thesis. University of Sussex. Available at: http://sro.sussex.ac.uk/id/eprint/48752/1/Alhawsawi%2C_Sajjadllah.pdf (Accessed: 28 October 2020).

Aljohani, N. (2016) English as a Second Language in Saudi Arabia. *International Journal of Scientific and Engineering Research*, 7(3), pp.360–367.

Aljuaid, N., Alzahrani, M., & Atiquil, A. (2014) Assessing mobile learning readiness in Saudi Arabia higher education: an empirical study. *The Malaysian Online Journal of Educational Technology*, 2(2), pp.1–14.

Alkhunaizan, A., & Love, S. (2013) Predicting consumer decisions to adopt mobile commerce in Saudi Arabia. In: Proceedings of the 19th Americas Conference on Information Systems, Chicago, Illinois, 15-17 August.

Allam, M., Elyas, T., Bajnaid, A., & Rajab, H. (2017) Using Twitter as an ELT tool in the Saudi EFL context. *International Journal of Linguistics*, 9(5), pp.41–63.

Almalki, S. (2016) Integrating Quantitative and Qualitative Data in Mixed Methods Research—Challenges and Benefits. *Journal of Education and Learning*, 5(3), pp.288–296.

Almarwani, M. A. (2011) ML for EFL: Rationale for mobile learning. In: The 4th Edition of the International Conference "ICT for Language Learning", Florence, 20–21 October. Italy: Simonelli Editore.

Almarwani, M. A. (2016) *E3-Electronic Education for English: Developing Mobile Learning and Teaching in Saudi Arabia*. (Doctoral dissertation). Lincoln, UK: University of Lincoln.

Almarwani, M. A. (2021) Acceptance and Use of Mobile Technologies in Learning and Teaching of EFL: An Economic Perspective. *The EuroCALL Review*, 28(2), pp.39–49.

Almekhlafy, S. S. A., & Alzubi, A. A. F. (2016) Mobile-mediated communication a tool for language exposure in EFL informal learning settings. *Arab World English Journal*, 7(1), pp.388–407.

Alnahdi, G. H. (2014) Educational Change In Saudi Arabia. *Journal of International Education Research*, 10(1), pp.1–6.

Alrabai, F. (2016) Factors underlying low achievement of Saudi EFL learners. *International Journal of English Linguistics*, 6(3), pp.21–37.

Alrabai, F. (2018) Learning English in Saudi Arabia. In: C. Moskovsky & M. Picard (Eds.). *English as a foreign language in Saudi Arabia: New insights into teaching and learning English*. Routledge.

Alrashidi, O., & Phan, H. (2015) Education Context and English Teaching and Learning in the Kingdom of Saudi Arabia: An Overview. *English Language Teaching*, 8(5), pp.33–44.

Alsadoon, H. S. (2012) Use of cell phones in education at King Saud University in the Kingdom of Saudi Arabia. PhD thesis. Ohio University. Available at: https://etd.ohiolink.edu/!etd.send_file?accession=ohiou1353509728&disposition=inline (Accessed: 27 October 2020).

Alshabeb, A., & Almaqrn, R. (2018) A study of EFL Saudi students' use of mobile social media applications for learning. *Arab World English Journal*, Special Issue on CALL, (4).

Alshahrani, M. (2016) A Brief Historical Perspective of English in Saudi Arabia. *Journal of Literature, Languages and Linguistics*, 26, pp.43–47.

Alshammari, R., Parkes, M., & Adlington, R. (2017) Using WhatsApp in EFL Instruction with Saudi Arabian University Students. *Arab World English Journal*, 8(4).

Alshehri, A. M. (2010) E-learning in Saudi Arabia: To E or not to E, that is the question. *Journal of Family & Community Medicine*, 17(3), pp.147–50.

Alshenqeeti, H. (2018) Technology in the language classroom: how social media is changing the way EFL is taught. *Arab World English Journal*, Special Issue on CALL (4).

Alsolamy, F. (2017) Social networking in higher education: academics' attitudes, uses, motivations and concerns. PhD thesis. Sheffield Hallam University. Available at: http://shura.shu.ac.uk/15852/1/Fah%20Alsolamy%20-%20social%20networking%20%28VoR%29.pdf (Accessed: 27 October 2020).

Alsuhaibani, Z. (2019) Using Computer-assisted Language Learning in Classrooms: What Does Research Say about Teachers' Beliefs and Practices? *Theory and Practice in Language Studies*, 9(6), pp.723–728.

Altameem, T. (2011) Contextual mobile learning system for Saudi Arabian universities. *International Journal of Computer Applications*, 21(4), pp.21–26.

Alwahaishi, S., & Snásel, V. (2013) Acceptance and use of information and communications technology: a UTAUT and flow based theoretical model. *Journal of Technology Management & Innovation*, 8(2), pp.61–73.

Alwedinani, J. A. (2016) Gender and Subject Choice in Higher Education in Saudi Arabia. PhD thesis. University of York. Available at: https://core.ac.uk/download/pdf/77023811.pdf (Accessed: 28 October 2020).

Anderson, A., & Rainie, L. (2018) The positives of digital life. Pew Research Centre. 03 July 2018. Available at: https://www.pewresearch.org/internet/2018/07/03/the-positives-of-digital-life/ (Accessed: 27 October 2020).

Andrews, K., & Rothman, M. (2002) Cultivating innovation: How a charter/district network is turning professional development into professional practice. *Phi Delta Kappan*, 83(7), pp.506–512.

Ary, D., Jacobs, L. C., & Sorenson, C. (2010) *Introduction to Research in Education*. 8th ed. Belmont, CA: Wadsworth, Centage Learning.

Aslam, S. (2019) Twitter by the Numbers: Stats, Demographics & Fun Facts. Available at: https://www.omnicoreagency.com/twitter-statistics/ (Accessed: 15 June 2019).

Assulaimani, T. (2019) The Future of Teaching English in Saudi Arabia. *Universal Journal of Educational Research*, 7(8), pp.1623–1634.

Atas, A. H., & Celik, B. (2019) Smartphone Use of University Students: Patterns, Purposes, and Situations. *Malaysian Online Journal of Educational Technology*, 7(2), pp.59–70.

Babakr, Z., Mohamedamin, P., & Kakamad, K. (2019) Piaget's Cognitive Developmental Theory: Critical Review. *Education Quarterly Reviews*, 2(3), pp.517–524.

Bada, S. O. (2015) Constructivism Learning Theory: A Paradigm for Teaching and Learning. *IOSR Journal of Research and Method in Education*, 5(6).

Bahrani, T. (2011) Mobile phones: just a phone or a language learning device? *Cross-Cultural Communication*, 7(2), pp.244–248.

Baker, E. W., Al-Gahtani, S. S., & Hubona, G. S. (2007) The effects of gender and age on new technology implementation in a developing country. *Information Technology & People*, 20(4), pp.352–375.

Baker, W. M., Lusk, E. J., & Neuhauser, K. L. (2012) On the use of cell phones and other devices in the classroom: evidence from a survey of faculty and students. *Journal of Education for Business*, 87(5), p.275e289.

Baki, R. (2004) Gender-segregated education in Saudi Arabia: Its impact on social

norms and the Saudi labor market. *Education Policy Analysis Archives*, 12(28).

Baron, R. M., & Kenny, D. A. (1986) The moderator–mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), pp.1173–1182.

Başoğlu, E. B., & Akdemir, Ö. (2010) A comparison of undergraduate students' English vocabulary learning: using mobile phones and flash cards. *The Turkish Online Journal of Educational Technology*, 9(3), 1–7.

Becker, S. A., Cummins, M., Davis, A., Freeman, A., Hall, C. G., & Ananthanarayanan, V. (2017) NMC horizon report: 2017 higher education edition (pp.1–60). The New Media Consortium.

Beetham, H., & Sharpe, R. (2007) *Rethinking pedagogy for a digital age: Designing and delivering e-learning*. Abingdon, VA: Routledge.

Begum, R. (2010) Prospect for cell phones as instructional tools in the EFL classroom: A case study of Jahangirnagar University, Bangladesh. *English Language Teaching*, 4(1), pp.105–115.

Berg, B., & Lune, H. (2012) *Qualitative research methods for the social sciences*. London: Pearson.

Berger, P. L., & Luckmann, T. (1975) *The social construction of reality*. London: Penguin Books.

Bessenyei, I. (2008) Learning and teaching in the information society: eLearning 2.0 and connectivism. Available at: http://www.mmiweb.org.uk/ltnt/site/downloads/Besseneyi_2008.pdf (Accessed: 28 December 2017).

Bilal, M. T. (2017) Students and Teachers' Perceptions into the Viability of Mobile Technology Implementation to Support Language Learning for First Year Business Students in a Middle Eastern University. *International Journal of Education and Literacy Studies*, 5(2).

Birello, M. (2012) Teacher Cognition and Language Teacher Education: beliefs and practice. A conversation with Simon Borg. *Ballaterra Journal of Teaching & Learning Language & Literature*, 5(2), pp.88–94.

Blaikie, N. W. H. (2010) *Designing social research: the logic of anticipation*. 2nd ed. Cambridge: Polity Press.

Blume, C. (2019) Games people (don't) play: An analysis of pre-service EFL teachers' behaviors and beliefs regarding digital game-based language learning. *Computer Assisted Language Learning*, 33(1-2), pp.109–132.

Bohman, J. (2013) Critical Theory. In: E. N. Zalta (Ed.). *The Stanford Encyclopaedia of Philosophy* (Spring 2013 Edition). Available at: https://plato.stanford.edu/archives/spr2013/entries/critical-theory/ (Accessed: 12 June 2019).

Bonaiuti, G. (2006) *E-Learning 2.0. Il futuro dell'apprendimento in rete, tra formale e informale*. Gardolo (TN): Edizioni Erickson.

Borg, S. (1999) Studying teacher cognition in second language grammar teaching. *System*, 27(1), pp.19–31.

Borg, S. (2003) Teacher cognition in language teaching: A review of research on what language teachers think, know, believe, and do. *Language Teaching*, 36(2), pp.81–109.

Borg, S. (2006) The distinctive characteristics of foreign language teachers. *Language Teaching Research*, 10(1), pp.3–31.

Boruff, J. T., & Storie, D. (2014) Mobile devices in medicine: a survey of how medical students, residents, and faculty use smartphones and other mobile devices to find information. *Journal of the Medical Library Association*, 102(1), pp.22–30.

Bozdoğan, D. (2015) MALL revisited: current trends and pedagogical implications. *Procedia- Social and Behavioral Sciences*, 195, pp.932–939.

Brand-Gruwel, S., Testers, L., & Gegenfurtner, A. (2014) Motivation to transfer: Factors influencing transfer of learned competences to the job. The Open and Flexible Higher Education Conference (EADTU). AGH University of Science and Technology in Krakow, 23–24 October.

Braun, V., & Clarke, V. (2006) Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), pp.77–101

Brewer, J., & Hunter, A. (1989) *Multi-method research: A synthesis of styles*. Newbury Park, CA: Sage Publications.

Broughton, G., Brumfit, C., Flavell, R., Hill, P., & Pincas, A. (2003) *Teaching English as a Foreign Language*. 2nd ed. J. Eggleston (Ed.). London: Routledge.

Brown, K. (2020) Why I Take Students' Cellphones. Inside Higher Ed. 28 January

2020. Available at: https://www.insidehighered.com/advice/2020/01/28/professor-gives-three-reasons-why-he-doesnt-allow-cellphones-his-classes-opinion (Accessed: 28 October 2020).

Brown, S., Dennis, A., & Venkatesh, V. (2010) Predicting collaboration technology use: Integrating technology adoption and collaboration research. *Journal of Management Information Systems*, 27(2), pp.9–53.

Brown, T. H., & Mbati, L. S. (2015) Mobile Learning: Moving Past the Myths and Embracing the Opportunities. *International Review of Research in Open and Distributed Learning*, 16(2), pp.115–135.

Burns, A. (1992) Teacher beliefs and their influence on classroom practice. *Prospect*, 7(3), pp.56–66.

Bryman, A. (1992) Quantitative and qualitative research: Further reflections on their integration. In: J. Brannen (Ed.). *Mixing methods: Qualitative and quantitative research* (pp.57–78). Aldershot: Ashgate.

Bryman, A. (2001) *Social research methods*. Oxford: Oxford University Press.

Bryman, A., & Bell, E. (2015) *Business Research Methods*. Oxford University Press.

Bryman, A., & Cramer, D. (2002) *Quantitative data analysis with SPSS release 10 for Windows: A guide for social scientists*. Routledge.

Bryman, A., & Cramer, D. (2011) *Quantitative data analysis with IBM SPSS 17, 18 & 19: A guide for social scientists*. Routledge.

Bryman, T. (2012) A quadripartite approach to analysing young British South Asian adults' dual cultural identity. *Journal of Marketing Management*, 33(9–10), pp.789–816.

Budiman, A. (2017) Behaviorism and Foreign Language Teaching Methodology. English Franca: *Academic Journal of English Language and Education*, 1(2), pp.101–114.

Burns, N., & Grove, S. K. (2005) *The study guide for practice of nursing research: Conduct, critique and utilization*. 5th ed. Arlington, TX: Saunders.

Burrell, G., & Morgan, G. (1979) *Sociological Paradigms and Organisational Analysis*. Heinemann.

Butgereit, L. L., & Botha, A. (2009) Hadeda: the noisy way to practice spelling vocabulary using a cell phone. In: IST-Africa 2009 Conference Proceedings: the

IST Africa 2009 Conference & Exhibition, Kampala, Uganda, 6–8 May.

Castrillo, M. D., Barcena, E., & Martín-Monje, E. (2014) New forms of negotiating meaning on the move: The use of mobile-based chatting for foreign language distance learning. *IADIS International Journal on WWW/Internet*, 12(2), pp.51–67.

Chanchary, F. H., & Islam, S. (2011) Mobile learning in Saudi Arabia: prospects and challenges. In: International Arab Conference on Information Technology (ACIT'2011), Zarqa University, Jordan, 11–14 December.

Chartrand, R. (2012) Social networking for language learners: Creating meaningful output with Web 2.0 tools. *Knowledge Management & E-Learning: An International Journal*, 4(1), pp.97–101.

Chartrand, R. (2016) Advantages and Disadvantages of Using Mobile Devices in a University Language Classroom. Available at: https://swsu.ru/sbornik-statey/pdf/gaiken23_1-13.pdf (Accessed: 27 October 2020).

Chatterjee, S., Hadi, A., & Price, B. (2000) *Regression analysis by example*. New York, NY: Wiley.

Chen, C. M., & Hsu, S. H. (2008) Personalized intelligent mobile learning system for supporting effective English learning. *Educational Technology & Society*, 11(3), pp.153–180.

Chen, E., & DiVall, M. (2018) Social Media as an Engagement Tool for Schools and Colleges of Pharmacy. *American Journal of Pharmaceutical Education*, 82(4), p.6562.

Cheon, J., Lee, S., Crooks, S. M., & Song, J. (2012). An investigation of mobile learning readiness in higher education based on the theory of planned behavior. *Computers and Education*, 59(3), pp.1054–1064.

Cho, J.-H. (2014) Teachers' perceptions of changes to teaching practice and the influence of professional development: Experienced EFL teachers in South Korea. Master's thesis. University of Wellington. Available at: https://core.ac.uk/download/pdf/41338719.pdf (Accessed: 28 October 2020).

Choudhury, N. (2014) World Wide Web and Its Journey from Web 1.0 to Web 4.0. *International Journal of Computer Science and Information Technologies*, 5(6), pp.8096–8100.

Christensen, R., & Knezek, G. (2018) Reprint of readiness for integrating mobile

learning in the classroom: Challenges, preferences and possibilities. *Computers in Human Behavior*, 78, pp.379–388.

Clark, E. V. (1995) *The lexicon in acquisition*. Cambridge: Cambridge University Press.

Clark, V. (1995) *Proceedings from SCLR '95: The Stanford Child Language Research Forum*. United States: CSLI Publications.

Cohen, J. (1988) *Statistical power analysis for the behavioral sciences*. Hillsdale, NJ: Erlbaum.

Cohen, L., Manion, L., & Morrison, K. (2000) *Research methods in education*. 5th ed. London: Routledge.

Cohen, L., Manion, L., & Morrison, K. (2007) *Research methods in education*. 6th ed. New York, NY: Routledge.

Cohen, L., Manion, L., & Morrison, K. (2010) *Research methods in education*. 6th ed. London: Routledge.

Cohen, L., Manion, L., & Morrison, K. (2018) *Research methods in education*. 8th ed. Oxon: Routledge.

Cohen, P. (1983) *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences*. 2nd ed. Hillsdale, NJ: Lawrence Erlbaum Associates.

Collins, A., & Halverson, R. (2018) *Rethinking education in the age of technology: The digital revolution and schooling in America*. Teachers College Press.

Common Sense Media. (2012) Children, Teens, and Entertainment Media: The View from the Classroom. A Common Sense Research Study. 01 November 2012. Available at: https://www.commonsensemedia.org/research/children-teens-and-entertainment-media-the-view-from-the-classroom/key-finding-1%3A-media-use-impacts-academic-performance (Accessed: 27 October 2020).

Communication and Information Technology Commission (2014) Annual Report 2014. Available at: https://www.citc.gov.sa/en/reportsandstudies/Reports/Documents/PR_REP_010Eng.pdf (Accessed: 27 October 2020).

Comstock, D. E. (1982) A method of critical research. In E. Bredo & W. Feinberg (Eds.). *Knowledge and values in social and educational research* (pp.370–390). Philadelphia, PA: Temple University Press.

Conrad, R., & Donaldson, A. (2004) *Engaging the on line learner*. San Francisco, CA: Jossey-Bass.

Corbeil, J. R., & Valdes-Corbeil, M. E. (2007) Are you ready for mobile learning? *EDUCAUSE Quarterly*, 30(2), pp.51–58.

Cortes-Sanchez, J. D. (2017) What do universities want to be? A content analysis of mission and vision statements worldwide. LSE Blog. 20 December 2017. Available at: https://blogs.lse.ac.uk/impactofsocialsciences/2017/12/20/what-do-universities-want-to-be-a-content-analysis-of-mission-and-vision-statements-worldwide/ (Accessed: 28 October 2020).

Craig, T., & Van Lom, M. (2009) Impact constructivist learning theory and mobile technology integration. Theories of Educational Technology. Available at: https://sites.google.com/a/boisestate.edu/edtechtheories/craig_and_vanlom (Accessed: 01 August 2016).

Creswell, J. W. (1995) *Research design: Qualitative and quantitative approaches*. Thousand Oaks, CA: Sage Publications, Inc.

Creswell, J. W. (2014) *A concise introduction to mixed methods research*. Sage Publications.

Creswell, J. W., & Plano Clark, V. L. (2011) *Designing and Conducting Mixed Methods Research*. 2nd ed. Thousand Oaks: Sage Publications, Inc.

Crompton, H. (2013) A historical overview of mobile learning: Toward learner-centered education. In: Z. L. Berge & L. Y. Muilenburg (Eds.). *Handbook of mobile learning* (pp.3–14). Routledge.

Crotty, M. (1998) *The foundations of social research: Meaning and perspective in the research process*. London: Sage Publications.

Cruz, M. B. (2012) Student and teacher perceptions of a mobile-based vocabulary study tool for English language learners. PhD thesis. George Mason University.

Cruz, Y., Boughzala, I., & Assar, S. (2014) Technology acceptance and actual use with mobile learning: first stage for studying the influence of learning styles on the behavioral intention. 22nd European Conference on Information Systems (pp.1–16). Tel Aviv, Israel, June 9–11.

Dabas, N. (2018) Role of Computer and Information Technology in Education System. *International Journal of Engineering and Techniques*, 4(1), pp.570–574.

Dana, J., Dawes, R., & Peterson, N. (2013) Belief in the unstructured interview: The persistence of an illusion. *Judgment and Decision Making*, 8(5), pp.512–520.

Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2020) Implications for educational practice of the science of learning and development. *Applied Developmental Science*, 24(2), pp.97–140.

Dashtestani, R. (2016) Moving bravely towards mobile learning: Iranian students' use of mobile devices for learning English as a foreign language. *Computer Assisted Language Learning*, 29(4), pp.815–832.

Davidson, L. Y. J., Richardson, M., & Jones, D. (2014) Teachers' perspective on using technology as an instructional tool. *Research in Higher Education Journal*, 24, pp.1–25.

De Bel-Air, F. (2015) The Socio-Political Background and Stakes of 'Saudizing' the Workforce in Saudi Arabia: the Nitaqat Policy. Gulf Labour Markets and Migration. GLMM - EN - No. 3/2015.

De Laine, M. (1997) English as a medium of instruction in the Gulf: When students and teachers speak. *Language Policy*, 14(1), pp.3–23.

Denscombe, M. (2001) *The good research guide*. Berkshire: Open University Press.

Denscombe, M. (2010) *Good research guide: For small-scale social research*. 4th ed. Berkshire: Open University Press.

Denzin, N. K., & Lincoln, Y. S. (2000) Introduction: The discipline and practice of qualitative research. In: N. K. Denzin & Y. S. Lincoln (Eds.). *Handbook of qualitative research* (pp.1–28). Thousand Oaks, CA: Sage Publications, Inc.

DeWaal, F. (2001) *The ape and the sushi master: cultural reflections of a primatologist*. New York, NY: Basic Books.

Dincer, A., & Dariyemez, T. (2020) Proficient Speakers of English as a Foreign Language: A Focus-Group Study. *IAFOR Journal of Education*, *8*(1), pp.83–99.

Donachy, J. (2014) Four Learning Theories: Behaviorism, Cognitivism, Constructivism and Connectivism. Available at: https://pypinub.wordpress.com/2014/11/09/four-learning-theories-behaviorism-cognitivism-constructivism-and-connectivism/ (Accessed: 28 October 2020).

Dörnyei, Z. (2007) *Research methods in applied linguistics*. Oxford: Oxford University Press.

Draper, N. R., & Smith, H. (1998) *Applied regression analysis* (Vol. 326). John Wiley & Sons.

Driscoll, D. L., Appiah-Yeboah, A., Salib, P., & Rupert, D. J. (2007) Merging qualitative and quantitative data in mixed methods research: How to and why not. *Ecological and Environmental Anthropology (University of Georgia)*, 18. Available at: https://core.ac.uk/download/pdf/188116257.pdf (Accessed: 27 October 2020).

Driscoll, M., & van Barneveld, A. (2015) *Applying Learning Theory to Mobile Learning*. American Society for Training and Development.

Duke, B., Harper, G., & Johnston, M. (2013) Connectivism as a Digital Age Learning Theory. *The International HETL Review*, Special Issue, pp.4–13.

Dunlap, J., & Lowenthal, P. R. (2009) Instructional uses of Twitter. In: P. R. Lowenthal, D. Thomas, A. Thai & B. Yuhnke (Eds.). *The CU Online Handbook: Teach Differently: Create and collaborate* (pp.46–52). Raleigh, NC: Lulu Enterprises.

Easton, G. (2010) Critical realism in case study research. *Industrial Marketing Management*, 39(2010), pp.118–128.

Edward, A., & Talbott, R. (2014) *The hard-pressed researcher: A research handbook for the caring professions*. 2nd ed. Oxford: Routledge.

EF English Proficiency Index. (2017) Available at: http://www.ef.com/sa/epi/ (Accessed: 28 October 2020).

El-Hussein, M. O. M., & Cronje, J. C. (2010) Defining Mobile Learning in the Higher Education Landscape. *Educational Technology & Society*, 13(3), pp.12–21.

El Hariry, N. A. (2015) Mobile Phones as Useful Language Learning Tools. *European Scientific Journal*, 11(16), pp.298–317.

Ertmer, P. A., & Newby, T. J. (2013) Behaviorism, cognitivism, constructivism: Comparing critical features from an instructional design perspective. *Performance Improvement Quarterly*, 26(2), pp.43–71.

Ertmer, P. A., Ottenbreit-Leftwich, A., & York, C. S. (2006) Exemplary technology-using teachers: Perceptions of factors influencing success. *Journal of Computing in Teacher Education*, 23(2), pp.55–61.

Farris, D., & Ylimaki, R. (2010) Towards a neo-Vygotskian approach to 21st Century learning. Available at:

http://www.academia.edu/221038/Article_on_Vygotskys_and_the_21st_century_learning_enironment

Flick, U. (2006) *An introduction to qualitative research*. London: Sage Publications.

Foreman-Peck, L., & Winch, C. (2010) *Using Educational Research to Inform Practice: A Practical Guide to Practitioner Research in Universities and Colleges*. Abingdon, VA: Routledge.

Fortune, A. E., Reid, W. J., & Miller, R. L. (2013) *Qualitative research in social work*. 2nd ed. New York, NY: Columbia University Press.

Fotos, S., & Browne, C. M. (2004) The Development of CALL and Current Options. In: S. Fotos and C. M. Browne (Eds.). *New Perspectives on CALL for Second Language Classroom* (pp.3–14). Routledge.

Fotouhi-Ghazvini, F., Earnshaw, R. A., Robison, D., & Excell, P. S. (2009) Designing augmented reality games for mobile learning using an instructional–motivational paradigm. Paper presented at 2009 International Conference on CyberWorlds, Bradford, England, UK.

Fox, N. (2009) Using Interviews in a Research Project. The NIHR Research Design Service for Yorkshire and the Humber. Available at: https://www.rds-yh.nihr.ac.uk/wp-content/uploads/2013/05/15_Using-Interviews-2009.pdf (Accessed: 28 October 2020).

Francis, W. N., & Kucera, H. (1964) *Manual of Information to accompany A Standard Corpus of Present-Day Edited American English, for use with Digital Computers*. Providence, Rhode Island: Department of Linguistics, Brown University. Available at: http://clu.uni.no/icame/manuals/BROWN/INDEX.HTM (Accessed: 27 October 2020).

Frazier, P. A., Tix, A. P., & Barron, K. E. (2004) Testing moderator and mediator effects in counseling psychology research. *Journal of Counseling Psychology*, 51(1), pp.115–134.

Freeman, D. (2002) The hidden side of work: Teacher knowledge and learning to teach. *Language Teaching*, 35, pp.1–13.

Fu, Q. K., & Hwang, G. J. (2018) Trends in mobile technology-supported collaborative learning: A systematic review of journal publications from 2007 to 2016. *Computers & Education*, 119, pp.129–143.

Gall, M. D., Gall, J. P., & Borg, W. R. (2003) *Educational research: An introduction*. Boston, MA: Allyn and Bacon.

Gall, M. D., Gall, J. P., & Borg, W. R. (2007) *Educational research: An introduction*. 8th ed. Boston, MA: Pearson Education, Inc.

Galvis, H. (2012) Understanding beliefs, teachers' beliefs and their impact on the use of computer technology. *Profile Issues in Teachers' Professional Development*, 14, pp.95–112.

Gamlo, N. (2019) The Impact of Mobile Game-Based Language Learning Apps on EFL Learners' Motivation. *English Language Teaching*, 12(4), pp.49–56.

García-Martínez, I., Fernández-Batanero, J. M., Cobos Sanchiz, D., & Luque de la Rosa, A. (2019) Using Mobile Devices for Improving Learning Outcomes and Teachers' Professionalization. *Sustainability*, 11, p.6917.

Gasaymeh, A. (2009) A Study of Faculty Attitudes towards Internet-based Distance Education: A Survey of Two Jordanian Public Universities. PhD thesis. The College of Education: Ohio University, OH.

General Authority for Statistics, Kingdom of Saudi Arabia. (2018) Tenth development plan. Available at: https://www.stats.gov.sa/en/page/72 (Accessed: 28 October 2020).

Gerard, J., & Goldie, S. (2016) Connectivism: a knowledge learning theory for the digital age?. *Medical Teacher*, 38(10), pp.1064–1069.

Gibbs, G. R. (2007) Thematic coding and categorizing. In: *Analyzing Qualitative Data* (pp.38–55). SAGE Publications Ltd.

Gikas, J., & Grant, M. (2013) Mobile computing devices in higher education: Student perspectives on learning with cellphones, smartphones & social media. *Journal of Internet and Higher Education*, 19, pp.18–26.

Global Media Insight. (2020) Saudi Arabia Social Media Statistics. Available at: https://www.globalmediainsight.com/blog/saudi-arabia-social-media-statistics/ (Accessed: 27 October 2020).

Godwin-Jones, R. (2011) Emerging Technologies Mobile Apps for Language Learning. *Language Learning and Technology*, 15(2), pp.2–11.

Godwin-Jones, R. (2015) Emerging technologies the evolving roles of language teachers: trained coders, local researchers, global citizens. *Language, Learning and*

*Technology*, 19(1), pp.10–22.

Godwin-Jones, R. (2017) Smartphones and language learning. *Language Learning & Technology*, 21(2), pp.3–17.

Godwin-Jones, R. (2018) *Using mobile devices in the language classroom*. Part of the Cambridge Papers in ELT series. Cambridge: Cambridge University Press.

Gomes, C. (2005) Integration of ICT in science teaching: a study performed in Azores, Portugal. In: A. Vilas, B. Pereira, J. Gonzalez & J. Gonzalez (Eds.). *Recent Research Developments in Learning Technologies* (pp.165–168). Ponta Delgada, Portugal: Badajoz FORMATEX.

Goyal, A. (2018) Language Learning Mobile App Development Cost & Features. Octal Software. Available at: https://www.octalsoftware.com/blog/language-learning-app-development (Accessed: 28 October 2020).

Grant, C., & Osanloo, A. (2014) Understanding, Selecting, And Integrating A Theoretical Framework In Dissertation Research: Creating The Blueprint For Your "House". *Administrative Issues Journal: Connecting Education, Practice, And Research*, 4(2), pp.12–26.

Gray, D. (2009) *Doing research in the real world*. London: Sage Publications.

Greenberg, J., & Baron, R. A. (2000) *Behavior in organizations*. 7th ed. Upper Saddle River, NJ: Prentice Hall.

Greenhow, C., & Lewin, C. (2015) Social media and education: Reconceptualizing the boundaries of formal and informal learning. *Learning, Media and Technology*, 41, pp.1–25.

Grosseck, G., & Holotescu, C. (2008) Can we use Twitter for educational activities? Paper presented at the 4th International Scientific Conference, eLearning and Software for Education, Bucharest, Romania, 17–18 April.

GSMA. (2019) The Mobile Economy 2019. GSM Association. Available at: https://data.gsmaintelligence.com/api-web/v2/research-file-download?id=39256194&file=2712-250219-ME-Global.pdf (Accessed: 28 October 2020).

Guba, E., & Lincoln, Y. (1994) Competing paradigms in qualitative research. In: N. Denzin & Y. Lincoln (Eds.). *Handbook of qualitative research* (pp.105- 117). London: Sage Publications.

Guest, G., Namey, E., & Mitchell, M. (2013) *Collecting Qualitative Data: A Field Manual for Applied Research*. London: Sage Publications.

Gümüşoğlu, E. K., & Akay, E. (2017) Measuring Technology Acceptance Level of Teachers by Using Unified Theory of Acceptance and Use of Technology. *International Journal of Languages Education*, 5(4), pp.378–394.

Guyer, P., & Horstmann, R.-P. (2019) Idealism. In: E. N. Zalta (Ed.). *The Stanford Encyclopedia of Philosophy* (Winter 2019). Metaphysics Research Lab, Stanford University.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2014) Multivariate Data Analysis. Edinburg Gate, Harlow: Pearson Education Limited.

Hammond, M., & Wellington, J. (2013) *Research methods: The key concepts*. London: Routledge.

Harmer, J. (2007) *The practice of English language teaching*. 4th ed. Edinburgh: Pearson Education Limited.

Harrison, D. (2010) Teacher factors influencing classroom ICT use. In: S. Hennessy, B. Onguko, D. Harrison, E. K. Ang'ondi, S. Namalefe, A. Naseem & L. Wamakote (Eds.). *Developing the Use of Information and Communication Technology to Enhance Teaching and Learning in East African Schools: Review of the Literature*. Centre for Commonwealth Education & Aga Khan University Institute for Educational Development – Eastern Africa Research Report No. 1. Available at: https://www.educ.cam.ac.uk/centres/archive/cce/publications/CCE_Report1_LitRevJune0210.pdf (Accessed: 27 October 2020).

Harmandaoglu, E. (2012) The Use of Twitter in Language Learning and Teaching. International Conference: ICT for Language Learning. 5th ed. Available at: http://conference.pixel-online.net/ICT4LL2012/common/download/Paper_pdf/211-IBT41-FP-Harmandaoglu-ICT2012.pdf (Accessed: 28 October 2020).

Hatch, J. A. (2002) *Doing qualitative research in education settings*. New York, NY: State University of New York.

Hay, C. (2002) *Political Analysis: A Critical Introduction*. Macmillan International.

Hayes, A. F. (2013) *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY: The Guilford Press.

Hayes, A. F. (2018) *Introduction to Mediation, Moderation, and Conditional Process*

*Analysis*. *A Regression-Based Approach (Methodology in the Social Sciences)*. 2nd ed. New York, NY: The Guilford Press.

Hazaea, A. N., & Alzubi, A. A. (2016) The effectiveness of using mobile on EFL learners' reading practices in Najran University. *English Language Teaching*, 9(5), pp.8–21.

Hedayati, M., Reynolds, B., & Bown, A. (2018) The Impact of Computer-assisted Language Learning Training on Teachers' Practices. *Journal of Language Teaching and Research*, 9(6), pp.1127–1137.

Heil, C. R., Wu, J. S., Lee, J. J., Schmidt, T. (2016) A review of mobile language learning applications: trends, challenges and opportunities. *The EUROCALL Review*, 24(2), pp.32–50.

Hennessy, S., Onguko, B., Harrison, D., Ang'ondi, E. K., Namalefe, S., Naseem, A., & Wamakote, L. (2010) Developing the Use of Information and Communication Technology to Enhance Teaching and Learning in East African Schools: Review of the Literature. Centre for Commonwealth Education & Aga Khan University Institute for Educational Development – Eastern Africa Research Report No. 1. Available at: https://www.educ.cam.ac.uk/centres/archive/cce/publications/CCE_Report1_LitRevJune0210.pdf (Accessed: 28 October 2020).

Hirsh-Pasek, K., Zosh, J. M., Golinkoff, R. M., Gray, J. H., Robb, M. B., & Kaufman, J. (2015) Putting Education in "Educational" Apps: Lessons from the Science of Learning. *Psychological Science in the Public Interest*, 16(1), pp.3–34.

Hofweber, T. (2017) Conceptual Idealism Without Ontological Idealism: Why Idealism Is True After All. Available at: http://www.thomashofweber.com/wp-content/uploads/2018/11/conceptual-idealism.pdf (Accessed: 28 October 2020).

Hoi, V. N. (2020) Understanding higher education learners' acceptance and use of mobile devices for language learning: A Rasch-based path modeling approach. *Computers & Education*, 146, p.103761.

Hoy, A. W., & Hoy, W. K. (2003) *Instructional leadership: A learning-centered guide*. Allyn and Bacon.

Hsu, L. (2012) English as a foreign language learners' perception of mobile assisted language learning: A cross-national study. *Computer Assisted Language Learning*, 1, pp.1–17.

Huang, X. (2018) *Social Media Use by College Students and Teachers: An Application of UTAUT2*. (Doctoral dissertation). Minneapolis, MN: Walden University.

Huang, Y. M., Huang, Y. M., Huang, S. H., & Lin, Y. T. (2012) A ubiquitous English vocabulary learning system: Evidence of active/passive attitudes vs. usefulness/ease-of-use. *Computers and Education*, 58(1), pp.273–282.

Humphries, B. (2000) From critical thought to emancipatory action. In: C. Truman, D. M. Mertens, & B. Humphries (Eds.). *Research and inequality* (pp.175–186). London: UCL Press.

Hunter, J., & Daly, N. (2013) iPads in teacher education: integrating a range of language learning knowledges through a technological medium. *Computers in New Zealand Schools: Learning, Teaching, Technology*, 25(1–3), pp.96–116.

IBM. (n.d.) Mainframe: Family tree and chronology. Available at: https://www.ibm.com/ibm/history/exhibits/mainframe/mainframe_FT1.html (Accessed: 27 October 2020).

Imtiaz, M. A., & Maarop, N. (2014) A review of technology acceptance studies in the field of education. *Jurnal teknologi*, 69(2), pp.27–32.

Ismail, I., Azizan, S. N., & Gunasegaran, T. (2016) Mobile learning in Malaysian universities: are students ready? *International Journal of Interactive Mobile Technologies*, 10(3), pp.17–23.

Ivankova, N. V., Creswell, J. W., & Stick, S. L. (2006) Using Mixed-Methods Sequential Explanatory Design: From Theory to Practice. *Field Methods*, 18(1), pp.3–20.

Jaradat, R. M. (2014) Students' attitudes and perceptions towards using m-learning for French language learning: a case study on Princess Nora University. *International Journal of Learning Management Systems*, 2(1), pp.33–44.

Javid, C. Z., Farooq, M. U., & Gulzar, M. A. (2012) Saudi English-major undergraduates and English teachers' perceptions regarding effective ELT in the KSA: A Comparative Study. *European Journal of Scientific Research*, 85(1), pp.55–70.

Jawad, H., & Hassan, Z. (2015) Applying UTAUT to evaluate the acceptance of mobile learning in higher education in Iraq. *International Journal of Science and Research*, 4(5), pp.952–954.

Johnson, R., & Onwuegbuzie, A. (2004) Mixed methods research: A research paradigm whose time has come. *Educational Research*, 33(7), pp.14–26.

Jones-Smith, J. C., & Popkin, B. M. (2010) Understanding community context and adult health changes in China: development of an urbanicity scale. *Social Science & Medicine*, 71(8), pp.1436–1446.

Jupp, V. (2006) The SAGE Dictionary of Social Research Methods. SAGE. https://dx.doi.org/10.4135/9780857020116

Kang, M., Liew, B. Y. T., Lim, H., Jang, J., & Lee, S. (2015) Investigating the determinants of mobile learning acceptance in Korea using UTAUT2. In: G. Chen, V. Kumar, Kinshuk, R. Huang & S.-C. Kong (Eds.). *Emerging issues in smart learning, lecture notes in educational technology* (pp.209–216). Berlin Heidelberg: Springer.

Karimi, S. (2016) Do learners' characteristics matter? An exploration of mobile-learning adoption in self-directed learning. *Computers in Human Behavior*, 63, pp.769–776.

Katz, Y. J., & Yablon, Y. B. (2011) Affect and the digital learning at the university level. *Campus-Wide Information Systems*, 28(2), pp.114–123.

Kaware, S.S., & Sain, S.K. (2015) ICT Application in Education: An Overview. *International Journal of Multidisciplinary Approach and Studies*, 2(1), pp.25–32.

Kearneya, M., Schucka, S., Burdenb, K., & Aubussona, P. (2012) Viewing mobile learning from a pedagogical perspective. *Research in Learning Technology*, 20(1).

Kebritchi, M. (2010) Factors affecting teachers' adoption of educational computer games: a case study. *British Journal of Educational Technology*, 41(2), p.256e270.

Keegan, D. (2002) The future of learning: from e-learning to m-learning. Hagen, Germany: Fern University. Available at: https://files.eric.ed.gov/fulltext/ED472435.pdf (Accessed: 28 October 2020).

Kelley, C. (2011) Reviewing Literature and Formulating Problems. In: C. F. Conrad & R. C. Serlin (Eds). *The SAGE Handbook for Research in Education: Pursuing Ideas as the Keystone of Exemplary Inquiry.* Sage Publications, Inc.

Kennedy, D. M. (2014) M-learning to support English in a Hong Kong university. *MERLOT Journal of Online Learning and Teaching*, 10(4), pp.640–653.

Kennedy, D. M., & Fox, R. (2013) 'Digital natives': An Asian perspective for using

learning technologies. *International Journal of Education and Development using ICT*, 9(1), pp.65–79.

Kesselring, T., & Muller, U. (2011) The concept of egocentrism in the context of Piaget's theory. *New Ideas in Psychology*, 29(3), pp.327–345.

Kessler, G., & Bikowski, D. (2010) Developing collaborative autonomous learning abilities in computer mediated language learning: Attention to meaning among students in wiki space. *Computer Assisted Language Learning*, 23(1), pp.41–58.

Khoo, E. G. L., & Cowie, B. (2011) A framework for developing and implementing an online learning community. *Journal of Open, Flexible and Distance Learning*, 15(1), pp.47–59.

Kim, D., Rueckert, D., Kim, D.-J., & Seo, D. (2013) Students' perceptions and experiences of mobile learning. *Language Learning & Technology*, 17(3), pp.52–73.

Kingdom of Saudi Arabia. (2017) Saudi Arabia's Vision 2030: National Transformation Program 2020. Available at: http://vision2030.gov.sa/en/ntp (Accessed: 11 January 2017).

Kirschner, P. A., & De Bruyckere, P. (2017) The myths of the digital native and the multitasker. *Teaching and Teacher Education*, 67, pp.135–142.

Kivunja, C., & Kuyini, A. B. (2017) Understanding and Applying Research Paradigms in Educational Contexts. *International Journal of Higher Education*, 6(5), pp.26–41.

Klimova, B. (2019) Impact of mobile learning on students' achievement results. *Educational Sciences*, 9, p.90.

Koehler, M. J., & Mishra, P. (2008) Introducing tpck. In: AACTE Committee on Innovation and Technology (Ed.). *Handbook of technological pedagogical content knowledge (TPCK) for educators* (pp.3–29). London; New York: Routledge.

Kooij, D. T., De Lange, A. H., Jansen, P. G., Kanfer, R., & Dikkers, J. S. (2011). Age and work-related motives: Results of a meta-analysis. *Journal of Organizational Behavior*, 32(2), pp.197–225.

Kraut, R. (2013) UNESCO policy guidelines for mobile learning. France: UNESCO. Available at: http://unesdoc.unesco.org/images/0021/002196/219641e.pdf (Accessed: 28 October 2020).

KSA Ministry of Finance. (2019) Budget Statement Fiscal Year 2019. Available at: https://www.mof.gov.sa/en/financialreport/budget2019/Documents/Budget%20Statement%202019.pdf (Accessed: 28 October 2020).

Kukulska-Hulme, A. (2005) Reading course materials in e-book form and on mobile devices. In: A. Kukulska-Hulme & J. Traxler (Eds.). *Mobile learning: a handbook for educators and trainers* (pp.125–132). Abingdon, VA: Routledge.

Kukulska-Hulme, A. (2007) Mobile usability in educational contexts: what have we learnt? *The International Review of Research in Open and Distance Learning*, 8, pp.1–16.

Kukulska-Hulme, A. (2009) Will mobile learning change language learning? *ReCALL*, 21(2), pp.157–165.

Kukulska-Hulme, A. (2012) How should the higher education workforce adapt to advancements in technology for teaching and learning? *Internet and Higher Education*, 15, pp.247–254.

Kukulska-Hulme, A. (2012) Language learning defined by time and place: A framework for next generation designs. In: J. E. Díaz-Vera (Ed.). *Left to My Own Devices: Learner Autonomy and Mobile Assisted Language Learning* (pp.1–13). Innovation and Leadership in English Language Teaching, 6. Bingley, UK: Emerald Group Publishing Limited.

Kukulska-Hulme, A. (2018) Mobile-assisted language learning. In: C. A. Chapelle (Ed.). *The Concise Encyclopedia of Applied Linguistics*. Wiley.

Kukulska-Hulme, A. (2019) Mobile Language Learning Innovation Inspired by Migrants. *Journal of Learning for Development*, 6(2), pp.116–129.

Kukulska-Hulme, A., & Shield, L. (2008) An overview of mobile assisted language learning: from content delivery to supported collaboration and interaction. *ReCALL*, 20(3), pp.271–289.

Lai, C., & Gu, M. (2011) Self-regulated out-of-class language learning with technology. *Computer Assisted Language Learning*, 24(4), pp.317–335.

Lajoie, S. P. (2005) Extending the scaffolding metaphor. *Instructional Science*, 33, pp.541–557.

Lam, L. (2015) A Qualitative Study to Understand the Factors Influencing Student Acceptance of Mobile Learning. In: 2015 International Symposium on Educational

Technology (pp.158–162). Wuhan, China, 27–29 July.

Lan, Y. F., Tsai, P. W., Yang, S. H., & Hung, C. L. (2012) Comparing the social knowledge construction behavioral patterns of problem-based online asynchronous discussion in E/M-learning environments. *Computers & Education*, 59(4), pp.1122–1135.

Lantolf, J. P., & Poehner, M. E. (2014) *Sociocultural Theory and the Pedagogical Imperative in L2 Education*. Routledge.

Laurillard, D. (2007) Pedagogical forms for mobile learning: Framing research questions. In: N. Pachler (Ed.). *Mobile learning: towards a research agenda* (pp.153–175). London: WLE Centre for Excellence, Institute of Education.

Lawrence, E., Bachfischer, A., Dyson, L. E., & Litchfield, A. (2008) Mobile learning and student perspectives: An mReality check! Paper presented at the 7th International Conference on Mobile Business. Barcelona, Spain, 7–8 July.

Lawrence, G. (2014) The Role of Teachers and Their Beliefs in Implementing Technology-Mediated Language Learning. *International Journal of Computer-Assisted Language Learning and Teaching*, 4(4), pp.59–75.

Lee, C. C. E., Leow, S. W. Y., & Kong, X. J. (2020) The use of mobile technologies for learning in higher education: Students' readiness. *SEARCH Journal of Media and Communication Research*, pp.107–127.

Lee, J., & Bonk, C. (2015) Social network analysis of peer relationships and online interactions in a blended class using blogs. *The Internet and Higher Education*, 28, pp.35–44.

Leech, N. L., & Onwuegbuzie, A. J. (2009) A typology of mixed methods research designs. *Quality and Quantity*, 43(2), pp.265–275.

Leonardo, Z. (2004) Critical social theory and transformative knowledge: The functions of criticism in quality education. *Educational Researcher*, 33(6), pp.11–18.

Lewis, C. C., Fretwell, C. E., Ryan, J., & Parham, J. B. (2013) Faculty use of established and emerging technologies in higher education: a unified theory of acceptance and use of technology perspective. *International Journal of Higher Education*, 2(2), pp.22–34.

Li, L. (2020) *Language Teacher Cognition: A Sociocultural Perspective*. London: Palgrave Macmillan.

Lincoln, Y. S., & Guba, E. G. (Eds.) (1985) *Naturalistic Inquiry*. Sage.

Lister, K., Pearson, V. K., Collins, T. D., & Davies, G. J. (2020) Evaluating inclusion in distance learning: a survey of university staff attitudes, practices and training needs. *Innovation: The European Journal of Social Science Research*, pp.1–19.

Liton, H. A. (2012) Developing EFL teaching and learning practices in Saudi colleges: a review. *International Journal of Instruction*, 5(2), pp.129–152.

Liu, Q., & He, X. (2014) Using mobile apps to facilitate English learning for college students in China. Bachelor's thesis. University of Borås. Available at: http://www.diva-portal.org/smash/get/diva2:896787/FULLTEXT01.pdf (Accessed: 28 October 2020).

Liu, Y., & Li, H. (2010) Mobile internet diffusion in China: an empirical study. *Industrial Management & Data Systems*, 110(3), pp.309–324.

Lodico, M. G., Spaulding, D. T., & Voegtle, K. H. (2010) *Methods in educational research: From theory to practice* (Vol. 28). John Wiley & Sons.

Luzon, M. J., & Gonzalez, M. I. (2006) Using the Internet to promote autonomous learning in ESP. In: E Arno, A. Soler & C. Rueda (Eds.). *Information Technologies in Language for Specific Purposes* (pp.177–190). Issues and Prospects. New York, NY: Springer.

Lyddon, P. (2016) Mobile-assisted language learning and language learner autonomy. In: L. Bradley, S. Thouesny & S. Papadima-Sophocleous (Eds). *CALL communities and culture*. Short papers from EUROCALL 2016. Research Publishing Net.

MacCallum, K. (2011) Influences on the adoption of mobile technology by students and teachers. PhD thesis. Massey University, Albany, New Zealand. Available at: https://www.researchgate.net/publication/257938631_Influences_on_the_adoption_of_mobile_technology_by_students_and_teachers_a_thesis_presented_in_partial_fulfilment_of_the_requirements_for_the_degree_of_Doctor_of_Philosophy_in_Information_Systems_at_M (Accessed: 28 October 2020).

Machado, M., & Tao, E. (2007) Blackboard vs. moodle: Comparing user experience of learning management systems. 37th Annual Frontiers In Education Conference - Global Engineering: Knowledge Without Borders, Opportunities Without Passports. Milwaukee, WI, October 10–13.

Mack, N., Woodsong, C., MacQueen, K. M., Guest, G., & Namey, E. (2005)

*Qualitative research methods: A data collector's field guide*. Research Triangle Park, NC: Family Health International.

Maderick, J. A., Zhang, S. N., Hartley, K., & Marchand, G. (2016) Preservice Teachers and Self-Assessing Digital Competence. *Journal of Educational Computing Research*, 54(3), pp.326–351.

Maddala, G. S. (2001) *Introduction to Econometrics*. New York, NY: John Wiley & Sons.

Madu, C. N., & Madu, A. A. (2002) Dimensions of equality. *International Journal of Quality & Reliability Management*, 19(3), pp.246–259.

Malmqvist, J., Hellberg, K., Mollas, G., Rose, R., & Shevlin, M. (2019) Conducting the Pilot Study: A Neglected Part of the Research Process? Methodological Findings Supporting the Importance of Piloting in Qualitative Research Studies. *International Journal of Qualitative Methods*, 188, pp.1–11.

Malone, J. (2017) John B. Watson. Spring Encyclopedia of Animal Cognition and Behavior. Available at: https://www.researchgate.net/publication/319076898_John_B_Watson (Accessed: 28 October 2020).

Marhan, A. M. (2006) Connectivism: Concepts and Principles for Emerging Learning Networks. Institute of Philosophy and Psychology of the Romanian Academy. Available at: https://www.researchgate.net/publication/241897939_Connectivism_Concepts_and_Principles_for_emerging_Learning_Networks (Accessed: 28 October 2020).

Marsick, V. J., & Watkins, K. E. (2001) Informal and incidental learning. *New Directions for Adult and Continuing Education*, 2001(89), pp.25–34.

Mazer, J. P., Murphy, R. E., & Simonds, C. J. (2007) I'll see you on "Facebook": The effects of computer-mediated teacher self-disclosure on student motivation, affective learning, and classroom climate. *Communication Education*, 56(1), pp.1–17.

McCoy, B. R. (2016) Digital Distractions in the Classroom Phase II: Student Classroom Use of Digital Devices for Non-Class Related Purposes. Faculty Publications, College of Journalism & Mass Communications.

McGregor, S. L. T., & Murnane, J. A. (2010) Paradigm, methodology and method:

Intellectual integrity in consumer scholarship. *International Journal of Consumer Studies*, 34(4), pp.419–427.

McHugh, C., & Ariza, E. (2011) Methods/approaches of teaching ESOL: a historical overview. In: H. Zainuddin, N. Hahya & C. A. Morales-Jones (Eds.). *Fundamentals of Teaching English to Speakers of Other Languages in K-12 Mainstream Classrooms* (pp.63–74). 3rd ed. Dubuque, IA: Kendall Hunt Publishing Co.

McQuiggan, S., Kosturko, L., McQuiggan, J., & Sabourin J. (2015) *A Handbook for Developers, Educators, and Learners*. Hoboken, NJ: John Wiley & Sons, Inc.

Mertens, D. M. (2014) *Research and Evaluation in Education and Psychology: Integrating Diversity with Quantitative, Qualitative, and Mixed Methods*. 4th ed. London: Sage Publications.

Miao, F., West, M., So, H.-J., & Toh, Y. (2017) Supporting teachers with mobile technology: lessons drawn from UNESCO projects in Mexico, Nigeria, Senegal and Pakistan. Education 2030, UNESCO. Available at: https://unesdoc.unesco.org/ark:/48223/pf0000251511 (Accessed: 28 October 2020).

Mills, A. J., Durepos, G., & Wiebe, E. (Eds.) (2010) *Encyclopedia of case study research*. Sage Publications.

Miles, M. B., & Huberman, A. M. (1994) *Qualitative data analysis: An expanded sourcebook*. Sage Publications.

Ministry of Communications. (2020) Saudi Arabia Has The Highest Users Of Mobile Phones. Available at: https://www.mcit.gov.sa/en/media-center/news/91510 (Accessed: 28 October 2020).

Ministry of Education. (2017). Ministry of Education: Statistical Report. Available at: https://www.moe.gov.sa/AR/HIGHEDUCATION/GOVERNMENT-UNIVERSITIES/LISTOFUNIVERSITIES/Pages/default.aspx (Accessed: 28 October 2020).

Ministry of Education. (2018) Available at: https://www.moe.gov.sa/ar/news/Pages/future-gate-launch.aspx (Accessed: 28 October 2020).

Mitchell, B. (2017) English Language Teaching in the Kingdom of Saudi Arabia: Past, Present and Beyond. *Mediterranean Journal of Social Sciences*, 8(2), pp.317–325.

Mittal, N., Chaudhary, M., & Alavi, S. (2020) An Evaluative Framework for the Most

Suitable Theory of Mobile Learning. In: S. Alavi & V. Ahuja (Eds.). *Managing Social Media Practices in the Digital Economy* (pp.1–24). IGI Global.

Mogashoa, T. (2014) Applicability of Constructivist Theory in Qualitative Educational Research. *American International Journal of Contemporary Research*, 4(7), pp.51–59.

Moreno, A., & Traxler, J. (2016) MALL-Based MOOCs for Language Teachers: Challenges and Opportunities. Porta Linguarum Monografico, pp.73–85.

Mork, C. (2009) Using Twitter in EFL Education. *The JALT CALL Journal*, 5(3), pp.41–56.

Mufanti, R., & Susilo, A. (2016) Establishing a WhatsApp conversation: One of innovations in English language teaching. Paper presented at the Proceedings of the 63rd TEFLIN International Conference, Surabaya, Indonesia, 8–10 September.

Muhammed, A. A. (2014) The impact of mobiles on language learning on the part of English foreign language (EFL) university students. *Procedia-Social and Behavioral Sciences*, 136, pp.104–108.

Mumford, M. D., Todd, E. M., Higgs, C., & McIntosh, T. (2017) Cognitive skills and leadership performance: The nine critical skills. *The Leadership Quarterly*, 28(1), pp.24–39.

Naismith, L., Lonsdale, P., Vavoula, G., & Sharples, M. (2004) Literature Review in Mobile Technologies and Learning Report 11: Futurelab Series. University of Birmingham. Available at: https://www.nfer.ac.uk/publications/futl15/futl15.pdf (Accessed: 28 October 2020).

Naninaggia, R. (2017) Attitudes Toward Using Mobile Devices in the Classroom. Universiti Malaysia Pahang. Available at: http://repository.ump.ac.id/4404/4/RIZKI%20NANINGGIA%20BAB%20II.pdf (Accessed: 27 October 2020).

Narayanasamy, F. S., & Mohamed, J. B. K. (2013) Adaptation of mobile learning in higher educational institutions of Saudi Arabia. *Age*, 18(10), pp.34–38.

Nasrollahi-Mouziraji, A., & Nasrollahi-Mouziraji, A. (2015) Memorization Makes Progress. *Theory and Practice in Language Studies*, 5(4), pp.870–874.

Nassuora, A. (2012) Students acceptance of mobile learning for higher education in Saudi Arabia. *American Academic & Scholarly Research Journal*, 4(2), pp.24–30.

Nataliya, V. I., Creswell, J. W., & Stick, S. L. (2006) Using Mixed-Methods Sequential Explanatory Design: From Theory to Practice. *Field Methods*, 18(1), pp.3–20.

Nayak, M. S. D. P., & Narayan, K. A. (2019) Strengths and Weakness of Online Surveys. *Journal Of Humanities And Social Science*, 24(5), pp.31–38.

Nazimuddin, S. K. (2014) Computer Assisted Instruction (CAI): A New Approach in the Field of Education. *International Journal of Scientific Engineering and Research*, 3(7), pp.185–188.

Neuman, L. (2007) *Basics of social research: Qualitative and quantitative approaches*. London: Pearson.

Neuman, W. L. (2014) Why Do Research? In W. L. Neuman (Ed.). *Social Research Methods: Qualitative and Quantitative Approaches*. 7th ed. Pearson.

Newman, I., Benz, C. R., & Ridenour, C. S. (1998) *Qualitative–Quantitative Research Methodology: Exploring the Interactive Continuum*. SIU Press.

Newman, M., & Gough, D. (2019) Systematic Reviews in Education Research: Methodology, Perspectives and Application. In: O. Zawacki-Richter, M. Kerres, S. Bedenlier, M. Bond & K. Buntins (Eds). *Systematic Reviews in Educational Research*. Springer Nature.

Nikolopoulou, K. (2020) Secondary education teachers' perceptions of mobile phone and tablet use in classrooms: benefits, constraints and concerns. *Journal of Computers in Education*, 7, pp.257–275.

Nikolopoulou, K., & Kousloglou, M. (2019) Mobile learning in science: A study in secondary education in Greece. *Creative Education*, 10(6), pp.1271–1284.

O'Leary, Z. (2010) *The essential guide to doing your research project*. London: Sage Publications.

Olufadi, Y. (2015) A configurational approach to the investigation of the multiple paths to success of students through mobile phone use behaviors. *Computers and Education*, 86, pp.84–104.

Olutanji, B., Ebesutani, C., Hardt, J., & Sawchuk, C. (2014) Specificity of disgust domains in the prediction of contamination anxiety and avoidance: a multimodel examination. *Behavioral Therapy*, 45(4), p.469e481.

Onwuegbuzie, A. J., & Leech, N. L. (2004) Enhancing the interpretation of "significant" findings: The role of mixed methods research. *The Qualitative*

*Report*, 9(4), pp.770–792.

Otto, S. U. E. (2017) From Past to Present: A Hundred Years of Technology for L2 Learning. In: C. A. Chapelle & S. Sauro (Eds.). *The Handbook of Technology and Second Language Teaching and Learning* (pp.10–25). 1st ed. John Wiley and Sons, Inc.

Ouellette, J. A., & Wood, W. (1998) Habit and intention in everyday life: The multiple processes by which past behavior predicts future behavior. *Psychological Bulletin*, 124(1), pp.54–74.

Pachler, N., Bachmair, B., & Cook, J. (2010) *Mobile learning: structures, agency, practices*. New York, NY: Springer.

Pallant, J. (2010) *SPSS survival manual: A step by step guide to data analysis using SPSS*. England: McGraw-Hill International.

Patton, M. (2002) *Qualitative research and evaluation methods*. London: Sage Publications.

Pavlov, I. P. (1927) *Conditioned Reflexes: An Investigation of the Physiological Activity of the Cerebral Cortex*. G. V. Anrep (Ed. & Trans.). London: Oxford University Press.

Peel, D. (2004) The significance of behavioural learning theory to the development of effective coaching practice. *International Journal of Evidence Based Coaching and Mentoring*, 3(1), pp.18–28.

Pedhazur, E. J. (1997) *Multiple regression in behavioral research*. 3rd ed. New York, NY: Wadsworth.

Pedro Lopes, R. (2014) Gamification as a Learning Tool. *International Journal of Developmental and Educational Psychology INFAD Revista de Psicología*, 1(2), pp.565–573.

Pemberton, L., Winter, M., & Fallahkhair, S. (2010) Collaborative mobile knowledge sharing for language learners. *Journal of the Research Centre for Educational Technology*, 6(1), pp.144–148.

Persson V., & Nouri, J. (2018) A Systematic Review of Second Language Learning with Mobile Technologies. *International Journal of Emerging Technologies in Learning*, 13(2), pp.188–210.

Phakiti, A. (2015) *Experimental research methods in language learning*. Bloomsbury Publishing.

Phillips, D. C. (1995) The good, the bad, and the ugly: The many faces of constructivism. *Educational Researcher*, 24(7), pp.5–12.

Piaget, J. (1936) *Origins of intelligence in the child*. London: Routledge and Kegan Paul.

Pianfetti, E. (2001) Focus on research: teachers and technology: digital literacy through professional development. *Language Arts*, 78(3), pp.255–262.

Picard, M. (2018) The future of EFL and TESOL in Saudi Arabia. In: C. Moskovsky & M. Picard (Eds.). *English as a Foreign Language in Saudi Arabia: New Insights into Teaching and Learning English*. London: Routledge.

Pimmer, C., Mateescu, M., & Gronhbiel, U. (2016) Mobile and ubiquitous learning in higher education settings: A systematic review of the empirical studies. *Computers in Human Behaviour*, 63, pp.490–501.

Podolskiy, O. (2012) Audiovisual Learning. In: N. M. Seel (Ed.). *Encyclopedia of the Sciences of Learning* (pp.384–386). Boston, MA: Springer.

Polites, G. (2005) Counterintentional habits as an inhibitor of technology acceptance. In: Proceedings of the 2005 Southern Association for Information Systems Conference (pp.264–271). Atlanta, GA, 25–26 February.

Prensky, M. (2001b) Digital Natives, Digital Immigrants: Do they really think different? *On the Horizon*, 9(6), pp.1–6.

Prescott, J. (2014) Teaching style and attitudes towards Facebook as an educational tool. *Active Learning in Higher Education*, 15(2), pp.117–128.

Purcell, K., Heaps, A., Buchanan, J., & Friedrich, L. (2013) *How teachers are using technology at home and in their classrooms*. Washington, DC: Pew Research Center's Internet & American Life Project.

Quinn, C. (2011) *Mobile learning: landscape and trends*. Santa Rosa, CA: The eLearning Guild Research.

Raiskinmäki, J. (2019) The use of mobile devices in English teaching: A survey study on Finnish high school teachers' perceptions. Master's thesis. University of Jyväskylä, Finland. Available at: https://jyx.jyu.fi/bitstream/handle/123456789/64719/URN:NBN:fi:jyu-

201906193303.pdf?sequence=1 (Accessed: 28 October 2020).

Rakhmawati, D., & Kusuma, A. (2016) Digital Native: A Study on The First-Year Student. *LiNGUA: Jurnal Ilmu Bahasa dan Sastra*, 10(2), pp.82–89.

Ramamuruthy, V., & Rao, S. (2015) Smartphones Promote Autonomous Learning in ESL Classrooms. *Malaysian Online Journal of Educational Technology*, 3(4), pp.23–35.

Raman, A., & Don, Y. (2013) Preservice teachers' acceptance of learning management software: an application of the UTAUT2 model. *International Education Studies*, 6(7), pp.157–164.

Rasinger, S. M. (2013) *Quantitative research in linguistics: An introduction*. A and C Black.

Rehman, A. A., & and Alharthi, K. (2016) An introduction to research paradigms. *International Journal of Educational Investigations*, 3(8), pp.51–59.

Reinders, H. (2010) 20 Ideas for Using Mobile Phones in the Language Classroom. Available at: https://www.researchgate.net/publication/323187426_20_Ideas_for_Using_Mobile_Phones_in_the_Language_Classroom (Accessed: 27 October 2020).

Reiser, R. (2001) A History of Instructional Design and Technology: Part I: A History of Instructional Media. *Educational Technology Research and Development*, 49(1), pp.53–64.

Reiser, R. A., & Ely, D. P. (1997) The field of educational technology as reflected through its definitions. *Educational Technology Research and Development*, 45(3), pp.63–72.

Richards, K. (2003) *Qualitative inquiry in TESOL*. Palgrave Macmillan.

Robson, C. (2002) *Real World Research: A Resource for Social Scientists and Practitioner-Researchers*. 2nd ed. Oxford: Blackwell Publishers Ltd.

Robson, C. & McCartan, K. (2016) *Real World Research*. 4th ed. Chichester: John Wiley & Sons Ltd.

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

Rogers, Y., Connelly, K., Hazlewood, W., & Tedesco, L. (2010) Enhancing learning: a study of how mobile devices can facilitate sensemaking. *Personal and Ubiquitous Computing*, 14(2), pp.111–124.

Rojon, C., & Saunders, M. N. K. (2016) Formulating a convincing rationale for a research study. Surrey Business School. University of Surrey. Available at: http://epubs.surrey.ac.uk/135497/3/Saunders_Formulating.pdf (Accessed: 28 October 2020).

Roller, M. (2017) Mixed Methods Research. Available at: https://www.slideshare.net/MargaretRoller/mixed-methods-research-73994556 (Accessed: 28 October 2020).

Ronis, D. L., Yates, J. F., & Kirscht, J. P. (1989) Attitudes, decisions, and habits as determinants of repeated behavior. In: A. R. Pratkanis, S. J. Breckler & A. G. Greenwald (Eds.). *Attitude structure and function* (pp.213–239). Hillsdale, NJ: Lawrence Erlbaum Associates.

Rosegard, E., & Wilson, J. (2013) Capturing students' attention: An empirical study. *Journal of the Scholarship of Teaching and Learning*, 13(5), pp.1–20.

Salaberry, M. R. (2001) The Use of Technology for Second Language Learning and Teaching: A Retrospective. *The Modern Language Journal*, 85(1), pp.39–56.

Saran, M., Cagiltay, K., & Seferoglu, G. (2008) Use of mobile phones in language learning: Developing effective instructional materials. 5th IEEE International Conference on Wireless, Mobile, and Ubiquitous Technology in Education0 (pp.39–43). Beijing, China, 23–26 March.

Saudi Arabia Ministry of Economic Planning (2010) The Ninth Development Plan (2010–2014) Ministry of Economic Planning, Riyadh, Chap. 19.

Saudi Communications and Information Technology Commission. (2017) Annual Report 1438-1439 | 2017. Available at: https://www.citc.gov.sa/en/mediacenter/annualreport/Documents/PR_REP_013Eng.pdf (Accessed 28 October 2020).

Saudi Embassy (2020) About Saudi Arabia: Education. Available at: https://www.saudiembassy.net/education (Accessed: 28 October 2020).

Saunders, M., Lewis, P., & Thornhill, A. (2016) *Research Methods for Business Students*. 7th ed. Harlow: Pearson Education Limited.

Sawin, T. (2017) Why use mobile phones? Mobile-Assisted Language Learning-Resources for integrating MALL into teacher-designed instruction. Available at: https://sites.miis.edu/mall/why-use-mobile-phones/ (Accessed: 28 October 2020).

Scanlon, E. (2014) Mobile Learning: location, collaboration and scaffolding inquiry. In: A. Mohamed & T. Avgoustos (Eds.). *Increasing Access through Mobile Learning. Perspectives on Open and Distance Learning* (pp.85–98). Vancouver: Commonwealth of Learning.

Schepman, A., Rodway, P., Beattie, C., & Lambert, J. (2012) An observational study of undergraduate students' adoption of (mobile) note-taking software. *Computers in Human Behavior*, 28, pp.308–317.

Schmoker, M. (1999) *Results: The key to continuous school improvement*. 2nd ed. Alexandria, VA: Association for Supervision and Curriculum Development.

Schunk, D. H. (2012) *Learning Theories: An Educational Perspective*. 6th ed. Pearson.

Schwandt, T. (2007) *The Sage Dictionary of Qualitative Inquiry*. London: Sage Publications.

Schwandt, T. (2007) *Dictionary of Qualitative Inquiry*. 3rd ed. Thousand Oaks, CA: Sage Publications, Inc.

Seliaman, M. E., & Al-Turki, M. S. (2012) Mobile learning adoption in Saudi Arabia. *World Academy of Science, Engineering & Technology*, 69, pp.356–358.

Selwyn, N. (2011) Social media in higher education. In: A. Gladman (Ed.). *The Europa world of learning* (pp.1–9). London, UK: Routledge.

Serdyukov, P. (2017) Innovation in education: what works, what doesn't, and what to do about it? *Journal of Research in Innovative Teaching & Learning*, 10(1), pp.4–33.

Sharma, S. K., & Kitchens, F. L. (2004) Web services architecture for m-learning. *Electronic Journal on e-Learning*, 2(1), pp.203-216.

Sharples, M. (2000) The design of personal mobile technologies for lifelong learning. *Computers & Education*, 34(3), pp.177–193.

Shih, R. C. (2011) Can Web 2.0 technology assist college students in learning English writing? Integrating Facebook and peer assessment with blended learning. *Australasian Journal of Educational Technology*, 27(5).

Shukri, A. I. (1972) Education Manpower Needs and Socio-economic Development Saudi Arabia. PhD thesis. London: University of London. Available at: https://discovery.ucl.ac.uk/id/eprint/10019171/1/318782.pdf (Accessed: 28 October 2020).

Siemens, G. (2005) Connectivism: A learning theory for the digital age. *International Journal of Instructional Technology & Distance Learning*, 2(1).

Siemens, G. (2006) *Knowing Knowledge*. Lulu Publishing.

Siragusa, L., & Dixon, K. (2008) *Planned Behaviour: Learner Attitudes towards the Use of ICT Interactions in Higher Education*. Melbourne: Asclilite.

Skinner, B. F. (1953) *Science and human behavior*. New York, NY: Free Press.

Smith, L., & Abouammoh, A. (Eds.) (2013) *Higher Education in Saudi Arabia: Achievements, Challenges and Opportunities*. Springer Science and Business.

Snape, D., & Spencer, L. (2003) The foundations of qualitative research. In: J. Ritchie & J. Lewis (Eds.). *Qualitative research practice: A guide for social science students and researchers* (pp.1–23). London: Sage Publications.

Sofaraa English. (2011) Chicago forum: Private sector to help reform Saudi education system. 12 December. Available at: http://sofaraa.net/en/2011/12/chicago-forum-private-sector-to-help-reform-saudi-education-system/ (Accessed: 28 October 2020).

Sozudogru, O., Altinay, M., Dagli, G., Altinay, Z., & Altinay, F. (2019) Examination of connectivist theory in English language learning: The role of online social networking tool. *The International Journal of Information and Learning Technology*, 36(4), pp.354–363.

Špernjak, A., & Šorgo, A. (2017) Differences in acquired knowledge and attitudes achieved with traditional, computer-supported and virtual laboratory biology laboratory exercises. *Journal of Biological Education*, 52(2), pp.1–15.

Steel, C. (2012) Fitting learning into life: language students' perspectives on benefits of using mobile apps. In: M. Brown, M. Hartnett & T. Stewart (Eds.). Proceedings of Ascilite 2012: Future challenges, sustainable future (pp.875–880), Wellington, New Zealand, 25–28 November.

Stockwell, G. (2007) Vocabulary on the move: investigating an intelligent mobile phone-based vocabulary tutor. *Computer Assisted Language Learning*, 20(4), pp.365–383.

Stockwell, G., & Hubbard, P. (2013) Some emerging principles for mobile-assisted language learning. Monterey, CA: The International Research Foundation for English Language Education. TIRF Report, pp.1–14.

Sudhaus, P. (2013) Teachers as learners: higher education faculty learning to use technology for instruction. PhD thesis. University of Arizona.

Sullivan, T., Slater, B., Phan, J., Tan, A., & Davis, J. (2019) M-learning: Exploring mobile technologies for secondary and primary school science inquiry. *Teaching Science*, 65(1), pp.13–16.

Sulphey, M. M. (2017) Game based learning as an aid for extenuating higher education sector issues—the case of Saudi Arabia. *International Journal of Simulation: Systems, Science and Technology*, 18(1), pp.6.1–6.10.

Sun, H., & Zhang, P. (2006) The role of moderating factors in user technology acceptance. *International Journal of Human-Computer Studies*, 64(2), pp.53–78.

Sung, Y. T., Chang, K. E., & Yang, J. M. (2015) How effective are mobile devices for language learning? A meta-analysis. *Educational Research Review*, 16, pp.68–84.

Suvorova, E., Ahmetzyanova, T., & Zharova, K. (2019) The "Communicative Circle" Method in Teaching English at a University. *Arab World English Journal*, 10(2), pp.55– 67.

Suwannasom, T. (2010) *Teacher cognition about technology-mediated EFL instruction in the Thai tertiary context*. (Doctoral dissertation). Massey University, New Zealand.

Tadros, M. (2011) A social media approach to higher education. In C. Wankel (Ed.). *Educating educators with social media (Cutting-edge technologies in higher education)*. Bingley: Emerald Group.

Taif University. (2016) *Mobile learning Systems in Taif University*. Taif, Saudi Arabia: Taif University.

Taj, I. H., Sulan, N. B., Sipra, M. A., & Ahmad, W. (2016) Impact of mobile assisted language learning (MALL) on EFL: a meta-analysis. *Advances in Language and Literary Studies*, 7(2), pp.76–83.

Tan, G. W. H., Ooi, K. B., Sim, J. J., & Phusavat, K. (2012) Determinants of mobile learning adoption: An empirical analysis. *Journal of Computer Information Systems*, 52(3), pp.82–91.

Tania deLuzuriaga (2010) Access Harvard on mobile device. The Harvard Gazette. 31 August 2010. Available at: https://news.harvard.edu/gazette/story/2010/08/access-harvard-on-mobile-device/ (Accessed: 28 October 2020).

Tashakkori, A., & Teddlie, C. (1998) *Mixed Methodology: Combining Qualitative and Quantitative Approaches*. Thousand Oaks, CA: Sage Publications, Inc.

Tashakkori, A., & Teddlie, C. (2010) *Mixed Methods in Social & Behavioral Research*. 2nd ed. London: Sage Publications.

Tatweer, J. (2010) King Abdullah Project for General Education Development. Saudi Arabia Projects. Available at: http://www.tatweer.edu.sa/Pages/home.aspx (Accessed: 26 June 2012).

Teeler D., & Gray P. (2000) *How to Use the Internet in ELT*. Edinburgh Gate, Harlow: Longman; Pearson Education Limited.

The eBusiness Guide. (n.d.) The World's Most Popular Social Network Sites. Available at: http://www.ebizmba.com/articles/social-networking-websites (Accessed: 01 October 2016).

Thomas, K., & O'Bannon, B. (2013) Cell phones in the classroom: Preservice teachers' perceptions. *Journal of Digital Learning in Teacher Education*, 30(1), pp.11–20.

Thorne, S., Black, R. W., & Sykes, J. M. (2009) Second language use, socialization, and learning in Internet interest communities and online gaming. *Modern Language Journal*, 93, pp.802–821.

Thornton, P., & Houser, C. (2005) Using mobile phones in English education in Japan. *Journal of Computer Assisted Learning*, 21(3), pp.217–228.

Timperley, H., Wilson, A., Barrar, H., Fung, I. (2007) Teacher Professional Learning and Development Best Evidence Synthesis Iteration. Ministry of Education, New Zealand. Available at: http://www.oecd.org/education/school/48727127.pdf (Accessed: 27 October 2020).

Tindell, D. R., & Bohlander, R. W. (2012) The use and abuse of cell phones and text messaging in the classroom: a survey of college students. *College Teaching*, 60(1), pp.1–9.

Traxler, J. (2005) Defining mobile learning. In: P. Isaías, C. Borg, P. Kommers & P. Bonanno (Eds.). Proceedings of the IADIS International Conference on Mobile Learning (pp.261–266), Qwara, Malta, 28–30 June.

Traxler, J. (2007) Defining, Discussing and Evaluating Mobile Learning: The moving finger writes and having writ… *The International Review of Research in Open and Distributed Learning*, 8(2).

UNCTAD. (2019) Digital Economy Report 2019: Value Creation and Capture: Implications for Developing Countries. United Nations Conference on Trade and Development. Available at: https://unctad.org/en/PublicationsLibrary/der2019_en.pdf (Accessed: 28 October 2020).

Utecht, J., & Keller, D. M. (2019) Becoming Relevant Again: Applying Connectivism Learning Theory to Today's Classrooms. *Critical Questions in Education*, 10, pp.107–119.

Van Praag, B., & Sanchez, H. S., (2015) Mobile technology in second language classrooms: insights into its uses, pedagogical implications, and teacher beliefs. *ReCall*, 27(3), pp.288–303.

Van Teijlingen, E. R., & Hundley, V. (2001) The importance of pilot studies. *Social Research Update*, 35. Available at: https://sru.soc.surrey.ac.uk/SRU35.html (Accessed: 28 October 2020).

Van Vaerenbergh, Y., & Thomas, T. D. (2012) Response styles in survey research: A literature review of antecedents, consequences, and remedies. *International Journal of Public Opinion Research*, 25(2), pp.195–217.

Venkatesh, B., Nargundkar, R., Sayed, F. K., & Shahaida, P. (2006) Assessing Indian students' perceptions towards m-learning–some initial conclusions. *International Journal of Mobile Marketing*, 1(2), pp.75–79.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003) User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), pp.425–478.

Venkatesh, V., Thong, J. Y., & Xu, X. (2012) Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. *MIS Quarterly*, 36(1), pp.157–178.

Venkatesh, V., Thong, J. Y. L., & Xu, X. (2013) Unified Theory of Acceptance and Use of Technology: A Synthesis and the Road Ahead. *Journal of the Association for Information Systems*, 17(5), pp.328–376.

Veselá, K. (2013). Connectivism in Foreign Language Education. *Education and Languages in Europe*, 25(17), pp.320–325.

Viberg, O., & Grönlund, Å. (2012) Mobile assisted language learning: A literature review. Proceedings of the 11th International Conference on Mobile and

Contextualised Learning (pp.9–16). Helsinki, Finland, October 16–18.

Vision 2030. (n.d.) Vision 2030. Kingdom of Saudi Arabia. Available at: https://vision2030.gov.sa/sites/default/files/report/Saudi_Vision2030_EN_2017.pdf (Accessed: 28 October 2020).

Vosloo, S. (2012) Mobile learning and policies: key issues to consider. France: UNESCO. Available at: http://unesdoc.unesco.org/images/0021/002176/217638E.pdf (Accessed: 28 October 2020).

Vygotsky, L. S. (1978) *Mind in Society: The Development of Higher Psychological Processes*. Cambridge, MA: Harvard University Press.

Wang, M., Shen, R., Novak, D., & Pan, X. (2009) The impact of mobile learning on students' learning behaviours and performance: report from a large blended classroom. *British Journal of Educational Technology*, 40(4), pp.673–695.

Watson, J. B. (1930) *Behaviorism*. 2nd ed. New York, NY: Norton.

Wellington, J., & Szczerbinski, M. (2007) *Research methods for the social sciences*. London: Continuum.

West, T., & Paine, C. (2012) The opportunities of mobile learning for executive education. *The Ashridge Journal*, 13.

Wexler, S., Brown, J., Metcalf, D., Rogers, D., & Wagner, E. (2008) *eLearning guild research 360 report: mobile learning.* Santa Rosa, CA: eLearning Guild.

Whalley, B., France, D., Park, J., Mauchline, A., & Welsh, K. (2020) Developing active personal learning environments on smart mobile devices. In: K. Arai, R. Bhatia & S. Kapoor (Eds.). Proceedings of the future technologies conference (FTC) 2019 (Vol.2) (pp.871–889). Cham, Switzerland: Springer Nature.

White, C., Direnzo, R., & Bortolotto, C. (2016) The learner-context interface: Emergent issues of affect and identity in technology-mediated language learning spaces. *System*, 62, pp.3–14.

White, J., & Simon, M. (n.d.) Survey/interview validation rubric for expert panel-VREP. Available at: http://dissertationrecipes.com/wp-content/uploads/2011/04/Expert-Validation-v3.pdf (Accessed: 28 October 2020).

Wilkinson, M. (2016) Language Learning with ICT. In: W. Renandya & H. Widodo (Eds.). *English Language Teaching Today*. English Language Education, Vol. 5.

Springer, Cham.

Wilson, L. O. (2020) The Second Principle: Models of teaching. Available at: https://thesecondprinciple.com/essential-teaching-skills/models-of-teaching/ (Accessed: 28 October 2020).

Wilson, M., & Sapsford, R. (2006) Comparison of methods. *Data Collection and Analysis*, 93.

Wong L.-H. (2010) From facilitated seamless learning to self-directed seamless learning. In: Proceedings of Global Chinese Conference on Computers in Education 2010, Singapore, 1–4 June.

Wong, L.-H., & Looi, C.-K. (2010) Vocabulary learning by mobile-assisted authentic content creation and social meaning-making: two case studies. *Journal of Computer Assisted Learning*, 26, pp.421–433.

World Bank. (2020) Government expenditure on education, total (% of GDP). UNESCO Institute for Statistics. Available at: https://data.worldbank.org/indicator/SE.XPD.TOTL.GD.ZS (Accessed: 28 October 2020).

Worldometer. (2020) Saudi Arabia Population. Available at: https://www.worldometers.info/world-population/saudi-arabia-population (Accessed: 28 October 2020).

Wortham, S. (2003) Learning in Education. In: L. Nadel (Ed.). *Encyclopedia of Cognitive Science* (Vol. 1) (pp.1079–1082). New York, NY: Nature Publishing Group.

Wray, Y., & Bloomer, K. (2006) *Language, society and power*. 3rd ed. Taylor & Francis.

Xu, Q., Dong, X., & Jiang, L. (2017) EFL learners' perceptions of mobile-assisted feedback on oral production. *TESOL Quarterly*, 51(2), pp.408–417.

Yang, S. (2013) Understanding undergraduate students' adoption of mobile learning model: a perspective of the extended UTAUT2. *Journal of Convergence Information Technology*, 8(10), pp.969–979.

Yusofa, A. M., Daniel, E, G. S., Low, W. Y., & Aziz, K. A. (2014) Teachers' perception of mobile edutainment for special needs learners: the Malaysian case. *International Journal of Inclusive Education*, 18(12), pp.1237–1246.

Yussra, J. (2012) Understanding Private Higher Education in Saudi Arabia - Emergence, Development and Perceptions. PhD thesis. University of London. Available at: https://www.albany.edu/dept/eaps/prophe/Yussra%20Jamjoom's%20DISS-PHE%20in%20Saudi%20Arabia.pdf (Accessed; 28 October 2020).

Zahn, C., Schaeffeler, N., Giel, K. E., Wessel, D., Thiel, A., Zipfel, S., & Hesse, F. W. (2013) Video clips for YouTube: Collaborative video creation as an educational concept for knowledge acquisition and attitude change related to obesity stigmatization. *Education and Information Technologies*, 19(3), pp.1–19.

Hassan, Z. A., Schattner, P., & Mazza, D. (2006) Doing A Pilot Study: Why Is It Essential? *Malays Fam Physician*, 1(2–3), pp.70–73.

Zilber, J. (2012) Smartphone Apps for ESL: Finding the Wheat amidst the Chaff. Teachers of English as a Second Language Association of Ontario. Contact Magazine (pp.15–21). Available at: https://www.teslontario.org/uploads/pinterest/contactarticles/Apps_Zilber.pdf (Accessed: 28 October 2020).

Zimmerman, J. (2006) Why some teachers resist change and what principals can do about it. *NASSP Bulletin*, 90(3), pp.238–249.

Zimmerman, J. A. (2008) Working the system: Building capacity for school change. *Journal of Scholarship and Practice*, 5(1), pp.9–14.

# Appendices

# Appendix 1: Participant Information Sheet and the Questionnaire


**LIVERPOOL JOHN MOORES UNIVERSITY**

**PARTICIPANT INFORMATION SHEET**

Title of Project: Investigating the Experience of Lecturers in Using Mobile Technology in Teaching English at Saudi Universities

Name of Researcher: Nouf Almofadi School/Faculty: Liverpool Business School

"You are being invited to take part in a research study. Before you decide it is important that you understand why the research is being done and what it involves. Please take time to read the following information. Ask us if there is anything that is not clear or if you would like more information. Take time to decide if you want to take part or not."

What is the purpose of the study?

This study aims to investigate the experience of teachers toward the use of mobile technology in English language classes at state universities in Saudi Arabia

This study will contribute to knowledge in the field of applied linguistics and TEFL (teaching English as a Foreign Language)

Do I have to take part?

Your participation in this study is entirely voluntary so it is up to you to decide whether or not to take part in it. If you do, you will be asked to sign a consent form. However, even after signing the consent form you are still free to withdraw at any time and without giving a reason

What will happen to me if I take part?

Should you decide to participate you will be asked to take part in the survey. The survey will take approximately 15 minutes. The questions about your experience in using mobile technology and your experience (or inexperience) of using such technology to teach English.

Are there any risks / benefits involved?

There are no known or expected risks for involvement in this study.

Will my taking part in the study be kept confidential?

No personal information such as name, date of birth, etc, is required to be declared. Therefore, all data will remain anonymous and will be kept confidential on a Liverpool John Moores University computer that is protected with a user name and password known by the researcher only.

This study has received ethical approval from LJMU's Research Ethics Committee (17/LBS/001)

Contact Details of Researcher: n.a.almofadi@2016.ljmu.ac.uk

If you any concerns regarding your involvement in this research, please discuss these with the researcher in the first instance. If you wish to make a complaint, please contact researchethics@ljmu.ac.uk and your communication will be re-directed to an independent person as appropriate.

## Section 1: Personal Information and Demographics

*Please select the appropriate answer*

| | |
|---|---|
| 1. Gender: | ☐ Male. ☐ Female |
| 2. Age: | ☐ 25-29. ☐ 30-34. ☐ 35-39 ☐ 40-44. ☐ 45-49. ☐ 50-54. ☐ 55-59. ☐ 60+ Years |
| 3. The highest level of the academic Qualification: | ☐ Diploma. ☐ Bachelor. ☐ Master. ☐ PhD |
| 4. Teaching experience: | ☐never taught ☐less than five years ☐between five years and 15 years ☐more than 15 years. |

## Section 2: About Your Use of Different Devices

5. Do you have a smartphone?

a) Yes b) No (if the participant chooses no it will move him to Q 13)

6. Who paid for it? (*please select the answer*)?

a) Myself /b) The University c) Other (please specify)

…….

7. For how long have you had a smartphone? (*Please select the appropriate answer*)

| 1 year or less | 2-5 years | 6-10 years | Over 10 years |
|---|---|---|---|
| | | | |

8. How often do you use a smartphone on average? (*Please select the appropriate answer*)

| Not at all | Once a month | 2-3 times a month | Once a week | 2-3 times a week | 4-6 times a week | Once a day | 2-5 times a day | > 5 times a day |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

9. How many times do you access the internet using a smartphone? (*Please select the appropriate answer*)

| Not at all | Once a month | 2-3 times a month | Once a week | 2-3 times a week | 4-6 times a week | Once a day | 2-5 times a day | > 5 times a day |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

10. What is your view regarding the purchasing cost of smartphones? (*Please select the appropriate answer*).

| Cheap | Good value | Expensive | I do not know |
|---|---|---|---|

11. What is your view regarding the purchasing cost of the internet connection of smartphones? (*Please select the appropriate answer*).

| Cheap | Good value | Expensive | I do not know |
|---|---|---|---|

12. Please indicate how frequently you use a smartphone to perform the following: (*Please select the appropriate answer*)

| | Never | Rarely | Sometimes | Often |
|---|---|---|---|---|
| Have video conversations (for example, Skype). | | | | |
| Receive and send text messages. | | | | |
| Scheduling appointments. | | | | |
| Editing or reading documents. For example, Word and PDF | | | | |

13. Do you have a tablet (for example iPad)?

a) Yes b) No (if the participant chooses no it will move him to Q 21)

14. Who paid for it? (*please select the answer*)?

a) Myself /b) The University c) Other (please specify) …….

15. For how long have you had a tablet? (*Please select the appropriate answer*)

| 1 year or less | 2-5 years | 6-10 years | Over 10 years |
|---|---|---|---|
| | | | |

16. How often do you use tablet your tablet on average? (*Please select the appropriate answer*)

| Not at all | Once a month | 2-3 times a month | Once a week | 2-3 times a week | 4-6 times a week | Once a day | 2-5 times a day | > 5 times a day |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

17. How many times do you access the internet using your tablet? (*Please select the appropriate answer*)

| Not at all | Once a month | 2-3 times a month | Once a week | 2-3 times a week | 4-6 times a week | Once a day | 2-5 times a day | > 5 times a day |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

18. What is your view regarding the purchasing cost of a tablet? (*Please select the appropriate answer*).

| Cheap | Good value | Expensive | I do not know |
|---|---|---|---|

19. What is your view regarding the purchasing cost of the internet connection of tablet? (*Please select the appropriate answer*).

| Cheap | Good value | Expensive | I do not know |
|---|---|---|---|

20. Please indicate how frequently you use your tablet to perform the following: (*Please select the appropriate answer*)

| | Never | Rarely | Sometimes | Often |
|---|---|---|---|---|
| Have video Conversations (for example, Skype). | | | | |
| Send and receive text messages. | | | | |
| Scheduling appointments. | | | | |
| Editing or reading documents. For example, Word and PDF | | | | |

## Section 3: Your opinion on using Mobile Technologies for Teaching English

In terms of using mobile technology in TEFL, to what extent do you agree or disagree with the statements below? Please indicate your level of agreement with each of the following statements using a 5-point scale as given below:

***Scale:***

5=Strongly Agree, 4=Agree, 3= Neutral, 2=Disagree, 1=Strongly Disagree

| **Sr. No.** | **Items** | **5** | **4** | **3** | **2** | **1** |
|---|---|---|---|---|---|---|
| **Performance Expectancy** | | | | | | |
| 21 | I find mobile technology useful in teaching EFL. | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 22 | Using mobile technology helps me accomplish things more quickly. | | | | | |
| 23 | Using mobile technology increases my productivity. | | | | | |
| 24 | If I use mobile technology in my EFL teaching, it will contribute to my career development. | | | | | |
| **Effort Expectancy** | | | | | | |
| 25 | Learning how to use mobile technology is easy for me. | | | | | |
| 26 | I find it easy to use mobile technology to support my teaching of EFL. | | | | | |
| 27 | It is easy for me to become skilful at using mobile technology. | | | | | |
| 28 | I am always thinking about how I can teach EFL through mobile technology. | | | | | |
| **Social Influence** | | | | | | |
| 29 | People who are important to me think that I should use mobile technology to teach EFL. | | | | | |
| 30 | The EFL programme leaders in my university think that I should use mobile technology in my teaching. | | | | | |
| 31 | The EFL programme leaders in my university do not encourage me to use mobile technology in my teaching. | | | | | |
| 32 | Some people who are close to me, such as family, think that there is no role for mobile technology in teaching EFL. | | | | | |
| **Facilitating Conditions** | | | | | | |
| 33 | I have the resources necessary to use mobile technology in teaching EFL. | | | | | |
| 34 | I have the knowledge necessary to use mobile technology in teaching EFL. | | | | | |
| 35 | Mobile technology is compatible with other technologies I use. | | | | | |
| 36 | I can get help from others (family, faculty and friends) when I have difficulties using mobile technology. | | | | | |
| 37 | The use of mobile technology is supported by my university. | | | | | |
| 38 | Wi-Fi connectivity provided on the university campus is reliable. | | | | | |
| **Hedonic Motivation** | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 39 | Using mobile technology is fun. | | | | | |
| 40 | I enjoy using mobile technology to teach EFL. | | | | | |
| **Price Value** | | | | | | |
| 41 | Mobile technology is reasonably priced. | | | | | |
| **Habit** | | | | | | |
| 42 | Using mobile technology in EFL teaching has become a habit for me. | | | | | |
| 43 | I automatically use mobile technology to teach English. | | | | | |
| **Behavioural Intentions** | | | | | | |
| 44 | I intend to continue using mobile technology in the future to teach EFL. | | | | | |
| 45 | I am always trying to teach EFL through mobile technology. | | | | | |

## Section 4: Use of Mobile Technologies to teach EFL

The following statements are used to specify how often you use mobile technologies to teach EFL or to support. To respond, you need to select the appropriate box (on a 4-point scale as given below) against each statement that best represents your viewpoint.

***Scale:***

1=Never, 2=Rarely, 3=Sometimes, 4= Often,

| **Sr. No.** | **Items** | **4** | **3** | **2** | **1** |
|---|---|---|---|---|---|
| 46 | I use commercial applications for teaching English | | | | |
| 47 | I use applications developed by the faculty, department or university for teaching English | | | | |
| 48 | I use websites for accessing materials for the class for teaching English | | | | |
| 49 | I use short message services for teaching English | | | | |
| 50 | I use multimedia services for teaching English | | | | |
| 51 | I use e-mail and social media for teaching English | | | | |

**Thank you for your kind response.**

# Appendix 2: The Questionnaire (Arabic Version)

**جامعة ليفربول جون موريس – ورقة المعلومات للمشارك**

عنوان المشروع: دراسة خبرات المحاضرين في استخدام تكنولوجيا الهواتف المحمولة في تدريس اللغة الإنجليزية في الجامعات السعودية.

اسم الباحث: نوف المفضي  المدرسة/الكلية: كلية ليفربول للأعمال

"أنت مدعو للمشاركة في دراسة بحثية. قبل أن تتخذ قرارك من المهم أن تفهم سبب إجراء البحث وما يتضمنه. من فضلك خذ وقتك لقراءة المعلومات التالية، ولا تتردد في الاستفسار منا إذا واجهت أي شيء غير واضح أو إذا كنت ترغب في الحصول على المزيد من المعلومات. خذ وقتك قبل أن تقرر ما إذا كنت تريد المشاركة أم لا".

ما هو الغرض من هذه الدراسة؟

تهدف هذه الدراسة إلى فحص خبرات المدرسين في استخدام تكنولوجيا الأجهزة المحمولة في محاضرات اللغة الإنجليزية بالجامعات الحكومية في المملكة العربية السعودية.

ستساهم هذه الدراسة في المعرفة بمجال اللغويات التطبيقية وتدريس اللغة الإنجليزية كلغة أجنبية (TEFL).

هل يتوجب علي المشاركة؟

مشاركتك في هذه الدراسة تطوعية تماماً، ولذلك فإن فالأمر متروك لك لتقرير ما إذا كنت ستشارك فيها أم لا. إذا قررت المشاركة سيُطلب منك التوقيع على استمارة الموافقة. لكن يمكنك الانسحاب في أي وقت حتى بعد التوقيع على استمارة الموافقة ودون إبداء أسباب.

ماذا سيحدث لي إذا شاركت؟

إذا قررت المشاركة في الدراسة سيُطلب منك الإجابة على الاستبيان. يستغرق الاستبيان حوالي 15 دقيقة، وتتعلق أسئلته بخبرتك في استخدام تكنولوجيا الأجهزة المحمولة وخبرتك (أو عدم خبرتك) في استخدام هذه التكنولوجيا في تدريس اللغة الإنجليزية.

هل هناك أي مخاطر / فوائد للمشاركة؟

لا توجد مخاطر معروفة أو متوقعة للمشاركة في هذه الدراسة.

هل ستبقى مشاركتي في الدراسة سرية؟

ليس من المطلوب الإفصاح عن أي معلومات شخصية مثل الاسم وتاريخ الميلاد وما إلى ذلك. لذلك ستبقى جميع البيانات مجهولة المصدر وستُحفظ بسرية على كمبيوتر جامعة ليفربول جون موريس المحمي باسم مستخدم وكلمة مرور معروفين للباحث فقط.

تلقت هذه الدراسة الموافقة الأخلاقية من لجنة أخلاقيات البحث بجامعة ليفربول جون موريس (17/LBS/001).

بيانات الاتصال بالباحث: n.a.almofadi@2016.ljmu.ac.uk

إذا كانت لديك أي بواعث قلق بشأن مشاركتك في هذا البحث فيرجى مناقشتها مع الباحث في البداية. إذا كنت ترغب في تقديم شكوى فيرجى التواصل عبر البريد الإلكتروني researchethics@ljmu.ac.uk وسيتم إعادة توجيه رسالتك إلى شخص مستقل حسب الاقتضاء.

**القسم الأول: المعلومات الشخصية والديموغرافية**

يُرجى اختيار الإجابة الصحيحة

| | |
|---|---|
| 1. الجنس: | ☐ ذكر. ☐ أنثى. |
| 2. العمر: | ☐ 25-29. ☐ 30-34. ☐ 35-39. ☐ 40-44.<br>☐ 45-49. ☐ 50-54. ☐ 55-59. ☐ أكثر من 60 سنة. |
| 3. أعلى مؤهل أكاديمي حصلت عليه: | ☐ دبلوم. ☐ بكالوريوس. ☐ ماجيستير. ☐ دكتوراه. |
| 4. الخبرة في مجال التدريس: | ☐ لم يسبق لي التدريس. ☐ أقل من 5 سنوات.<br>☐ بين 5 سنوات و15 سنة. ☐ أكثر من 15 سنة. |

**القسم الثاني: معلومات حول استخدامك للأجهزة المختلفة**

5. هل لديك هاتف ذكي؟

أ) نعم ب) لا (إذا كانت إجابة المشارك "لا" فيحب عليه الانتقال إلى السؤال رقم 13)

6. من دفع ثمنه؟ (يُرجى اختيار الإجابة)؟

أ) أنا ب) الجامعة ج) طرف آخر (يُرجى توضيحه) .....

7. منذ متى تمتلك هاتفاً ذكياً؟ (يُرجى اختيار الإجابة المناسبة)

| سنة أو أقل | 2-5 سنوات | 6-10 سنوات | أكثر من 10 سنوات |
|---|---|---|---|
| | | | |

8. ما هو معدل استخدامك المتوسط للهاتف الذكي؟ (يُرجى اختيار الإجابة المناسبة)

| لا أستخدمه مطلقاً | مرة شهرياً | 2-3 مرات شهرياً | مرة أسبوعياً | 2-3 مرات أسبوعياً | 4-6 مرات أسبوعياً | مرة يومياً | 2-5 مرات يومياً | أكثر من 5 مرات يومياً |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

9. ما هو معدل دخولك على الإنترنت باستخدام الهاتف الذكي؟ (يُرجى اختيار الإجابة المناسبة)

| لا أدخل عليه مطلقاً | مرة شهرياً | 2-3 مرات شهرياً | مرة أسبوعياً | 2-3 مرات أسبوعياً | 4-6 مرات أسبوعياً | مرة يومياً | 2-5 مرات يومياً | أكثر من 5 مرات يومياً |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

10. ما رأيك في تكلفة شراء الهواتف الذكية؟ (يُرجى اختيار الإجابة المناسبة)

| رخيصة | مناسبة القيمة | غالية | لا أعلم |
|---|---|---|---|

11. ما رأيك في تكلفة استخدام خدمات الإنترنت للهواتف الذكية؟ (يُرجى اختيار الإجابة المناسبة)

| رخيصة | مناسبة القيمة | غالية | لا أعلم |
|---|---|---|---|

12. يُرجى توضيح معدل استخدامك للهاتف الذكي للقيام بما يلي: (يُرجى اختيار الإجابة المناسبة)

| | مطلقاً | نادراً | أحياناً | كثيراً |
|---|---|---|---|---|
| إجراء محادثات الفيديو (مثل سكايب). | | | | |
| استقبال وإرسال الرسائل النصية. | | | | |
| جدولة المواعيد. | | | | |
| تحرير أو قراءة المستندات. مثل ملفات Word و PDF | | | | |

13. هل لديك جهاز لوحي/تابلت (مثل آيباد)

أ) نعم ب) لا (إذا كانت إجابة المشارك "لا" فيجب عليه الانتقال إلى السؤال رقم 21)

14. من دفع ثمنه؟ (يُرجى اختيار الإجابة)؟

أ) أنا ب) الجامعة ج) طرف آخر (يُرجى توضيحه) .....

15. منذ متى تمتلك جهازاً لوحياً؟ (يُرجى اختيار الإجابة المناسبة)

| سنة أو أقل | 2-5 سنوات | 6-10 سنوات | أكثر من 10 سنوات |
|---|---|---|---|
| | | | |

16. ما هو معدل استخدامك المتوسط للجهاز اللوحي؟ (يُرجى اختيار الإجابة المناسبة)

| لا أستخدمه مطلقاً | مرة شهرياً | 2-3 مرات شهرياً | مرة أسبوعياً | 2-3 مرات أسبوعياً | 4-6 مرات أسبوعياً | مرة يومياً | 2-5 مرات يومياً | أكثر من 5 مرات يومياً |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

17. ما هو معدل دخولك على الإنترنت باستخدام الجهاز اللوحي؟ (يُرجى اختيار الإجابة المناسبة)

| لا أدخل عليه مطلقاً | مرة شهرياً | 2-3 مرات شهرياً | مرة أسبوعياً | 2-3 مرات أسبوعياً | 4-6 مرات أسبوعياً | مرة يومياً | 2-5 مرات يومياً | أكثر من 5 مرات يومياً |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

18. ما رأيك في تكلفة شراء الأجهزة اللوحية؟ (يُرجى اختيار الإجابة المناسبة)

| رخيصة | مناسبة القيمة | غالية | لا أعلم |
|---|---|---|---|

19. ما رأيك في تكلفة استخدام خدمات الإنترنت للأجهزة اللوحية؟ (يُرجى اختيار الإجابة المناسبة)

| رخيصة | مناسبة القيمة | غالية | لا أعلم |
|---|---|---|---|

20. يُرجى توضيح معدل استخدامك للجهاز اللوحي للقيام بما يلي: (يُرجى اختيار الإجابة المناسبة)

| | مطلقاً | نادراً | أحياناً | كثيراً |
|---|---|---|---|---|
| إجراء محادثات الفيديو (مثل سكايب). | | | | |
| استقبال وإرسال الرسائل النصية. | | | | |
| جدولة المواعيد. | | | | |
| تحرير أو قراءة المستندات. مثل ملفات Word و PDF | | | | |

**القسم الثالث: رأيك في استخدام تكنولوجيا الهواتف المحمولة في تدريس اللغة الإنجليزية**

فيما يتعلق باستخدام تكنولوجيا الأجهزة المحمولة في تدريس اللغة الإنجليزية كلغة أجنبية، إلى أي مدى توافق أو لا توافق على العبارات أدناه؟ برجاء توضيح مستوى اتفاقك مع كل من العبارات التالية باستخدام مقياس مؤلف من 5 نقاط على النحو الموضح أدناه:

**المقياس:**

5= أوافق بشدة، 4= أوافق، 3= محايد، 2= لا أوافق، 1= لا أوافق مطلقاً

| م | العناصر | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|
| | **الأداء المتوقع** | | | | | |
| 21 | أرى أن تكنولوجيا الأجهزة المحمولة مفيدة في تدريس اللغة الإنجليزية كلغة أجنبية. | | | | | |
| 22 | يساعدني استخدام تكنولوجيا الأجهزة المحمولة في إنجاز الأمور بسرعة أكبر. | | | | | |
| 23 | يزيد استخدام تكنولوجيا الأجهزة المحمولة من انتاجيتي. | | | | | |
| 24 | إذا استخدمت تكنولوجيا الأجهزة المحمولة في تدريسي للغة الإنجليزية كلغة أجنبية فإنها ستساهم في تطوير حياتي المهنية. | | | | | |
| | **الجهد المتوقع** | | | | | |
| 25 | من السهل بالنسبة لي تعلم كيفية استخدام تكنولوجيا الأجهزة المحمولة. | | | | | |
| 26 | أرى أنه من السهل استخدام تكنولوجيا الأجهزة المحمولة لدعم تدريسي للغة الإنجليزية كلغة أجنبية. | | | | | |
| 27 | من السهل بالنسبة لي اتقان استخدام تكنولوجيا الأجهزة المحمولة. | | | | | |
| 28 | أفكر دائماً في كيفية تدريس اللغة الإنجليزية كلغة أجنبية من خلال تكنولوجيا الأجهزة المحمولة. | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| **التأثير الاجتماعي** | | | | | | |
| 29 | يعتقد بعض الأشخاص المهمين بالنسبة لي أنه يجب علي استخدام تكنولوجيا الأجهزة المحمولة لتدريس اللغة الإنجليزية كلغة أجنبية. | | | | | |
| 30 | يرى قادة برنامج تدريس اللغة الإنجليزية كلغة أجنبية في جامعتي أنه يجب علي استخدام تكنولوجيا الأجهزة المحمولة في التدريس. | | | | | |
| 31 | لا يشجعني قادة برنامج تدريس اللغة الإنجليزية كلغة أجنبية في جامعتي على استخدام تكنولوجيا الأجهزة المحمولة في التدريس. | | | | | |
| 32 | يعتقد بعض الأشخاص القريبين مني –مثل العائلة– أنه ليس هناك دور لتكنولوجيا الأجهزة المحمولة في تدريس اللغة الإنجليزية كلغة أجنبية | | | | | |
| **تهيئة الظروف** | | | | | | |
| 33 | لدي الموارد اللازمة لاستخدام تكنولوجيا الأجهزة المحمولة في تدريس اللغة الإنجليزية كلغة أجنبية. | | | | | |
| 34 | لدي المعرفة اللازمة لاستخدام تكنولوجيا الأجهزة المحمولة في تدريس اللغة الإنجليزية كلغة أجنبية. | | | | | |
| 35 | تكنولوجيا الأجهزة المحمولة متوافقة مع التكنولوجيات الأخرى التي استخدمها. | | | | | |
| 36 | يمكنني الحصول على المساعدة من الآخرين (العائلة وهيئة التدريس والأصدقاء) عندما أواجه صعوبات في استخدام تكنولوجيا الأجهزة المحمولة. | | | | | |
| 37 | تدعم جامعتي استخدام تكنولوجيا الأجهزة المحمولة. | | | | | |
| 38 | شبكة الإنترنت اللاسلكية (واي فاي) الموجودة في الحرم الجامعي يُعتمد عليها. | | | | | |
| **الدوافع من حيث المتعة** | | | | | | |
| 39 | استخدام تكنولوجيا الأجهزة المحمولة ممتع. | | | | | |
| 40 | استمتع باستخدام تكنولوجيا الأجهزة المحمولة في تدريس اللغة الإنجليزية كلغة أجنبية. | | | | | |
| **القيمة مقابل السعر** | | | | | | |
| 41 | أسعار تكنولوجيا الأجهزة المحمولة معقولة. | | | | | |
| **التعود** | | | | | | |
| 42 | أصبح استخدام تكنولوجيا الأجهزة المحمولة في تدريس اللغة الإنجليزية كلغة أجنبية عادة بالنسبة لي. | | | | | |
| 43 | أستخدم تكنولوجيا الأجهزة المحمولة بصورة تلقائية في تدريس اللغة الإنجليزية. | | | | | |
| **النوايا السلوكية** | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 44 | أنوي الاستمرار مستقبلاً في استخدام تكنولوجيا الأجهزة المحمولة لتدريس اللغة الإنجليزية كلغة أجنبية. | | | | | |
| 45 | احاول دائماً تدريس اللغة الإنجليزية كلغة أجنبية عبر تكنولوجيا الأجهزة المحمولة. | | | | | |

**القسم الرابع: استخدام تكنولوجيا الأجهزة المحمولة لتدريس اللغة الإنجليزية كلغة أجنبية**

الغرض من العبارات التالية تحديد معدل استخدامك لتكنولوجيا الأجهزة المحمولة لتدريس اللغة الإنجليزية كلغة أجنبية أو من أجل الدعم. للإجابة يجب عليك اختيار المربع المناسب (على مقياس مؤلف من 4 نقاط كما هو موضح أدناه) الذي يقدم أفضل تعبير عن وجهة نظرك أمام كل عبارة.

**المقياس:**

1= مطلقاً، 2= نادراً، 3= أحياناً، 4= كثيراً

| م | العناصر | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|
| 46 | أستخدم تطبيقات تجارية لتدريس اللغة الإنجليزية | | | | |
| 47 | أستخدم تطبيقات تم تطويرها من قبل القسم أو الكلية أو الجامعة لتدريس اللغة الإنجليزية | | | | |
| 48 | أستخدم مواقع الويب للوصول إلى مواد للمحاضرات لتدريس اللغة الإنجليزية | | | | |
| 49 | أستخدم خدمات الرسائل القصيرة لتدريس اللغة الإنجليزية | | | | |
| 50 | أستخدم الخدمات متعددة الوسائط لتدريس اللغة الإنجليزية | | | | |
| 51 | أستخدم البريد الإلكتروني ووسائل التواصل الاجتماعي لتدريس اللغة الإنجليزية | | | | |

**شكراً لكم على التكرم بالمشاركة.**

# Appendix 3: The Interview Participant Information Sheet


**THE INTERVIEW PARTICIPANT INFORMATION SHEET**

**School/Faculty**: Liverpool Business School

**Researcher Name:** Nouf Almofadi

**Title of Research:** Investigating the Experience of Lecturers in Using Mobile Technology in Teaching English at Saudi Universities.

**Dear Participant,**

You are being invited to take part in a research study into the use of mobile technology when teaching English. Before you decide to participate, it is important that you understand ethical approval has been received from Liverpool John Moores University to carry out this study, also to understand why the research is being done and what it involves. Please take time to read the following information. If there is anything that is not clear, or if you would like more information, please feel free to contact me or my supervisor. Our contact details are provided at the end of this form.

**Who can participate in this study?**

Any lecturer who teaches English at a state university in Saudi Arabia.

**What is the purpose of the study?**

This study aims to investigate the experience of lecturers toward the use of mobile technology in English language at state universities in Saudi Arabia

This study will contribute to knowledge in the field of applied linguistics and TEFL (teaching English as a Foreign Language)

**Do I have to take part?**

Your participation in this study is entirely voluntary so it is up to you to decide whether or not to take part in it. If you do, you will be asked to sign a consent form. However, even after signing the consent form you are still free to withdraw at any time and without giving a reason.

**What will happen to me if I take part?**

Should you decide to participate you will be asked to take part in an interview. The interview will take approximately one hour. After obtaining verbal permission to record the interviews, they will be conducted and recorded through Skype before being transcribed. Finally, a member check will be conducted with the participants to make sure that you agree with the transcripts created. You will be asked questions about your experience (or inexperience) of using such technology to teach English.

**Are there any risks / benefits involved?** There are no known or expected risks for involvement in this study.

**Will my taking part in the study be kept confidential?**

No personal information such as name, date of birth, etc, is required to be declared. Therefore, all data will remain anonymous and will be kept confidential on a Liverpool John Moores University computer that is protected with a user name and password known by the researcher only.

All information collected about you during the course of the research will be kept strictly confidential. Any information about you will not be disclosed to anyone. Pseudonyms will be used in transcripts and through coding to help protect the identity of individuals and organisations.

Thank you for your valuable assistance and your co-operation are highly appreciated.

If you have any concern regarding your involvement in this research please discuss these with the researcher in the first instance. If you wish to make a complaint, please contact researchethics@ljmu.ac.uk and your communication will be re-directed to an independent person as appropriate.

This study has received ethical approval from LJMU's Research Ethics Committee (17/LBS/001))

Contact details:
Name of Researcher: Nouf Almofadi
Email: N.A.Almofadi@2016.limu.ac.uk

Name of Supervisor: Dr. Amanda Mason (Senior Lecturer PhD, MA, BSc, TEFL Diploma) Email: A.Mason@ljmu.ac.uk

Address: Liverpool Business School, Faculty of Business and Law, Liverpool John Moores University, Redmonds Building, Clarence Street, Liverpool, L3 5UG, United Kingdom.

# Appendix 4: Interview Consent Form


**INTERVIEW PARTICIPANT CONSENT FORM**

**School/Faculty:** Liverpool Business School

**Researcher's Name:** Nouf Almofadi

**Title of Research:** Investigating the Experience of Lecturers in Using Mobile Technology in Teaching English at Saudi Universities.

1. I confirm that I have read and understand the information provided for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and that this will not affect my legal rights. ☐
3. I understand that the interview will be audio-recorded and direct quotes used, however, these will be anonymous ☐
4. I understand that any personal information collected during the study will be anonymised and remain confidential ☐
5. I agree to take part in the above study ☐

All information collected about you during the course of the research will be kept **strictly confidential.**

Name of Participant Date Signature

Name of Researcher Date Signature

# Appendix 5: The Interview Schedule

The quantitative analysis of the survey data informed the development of the interview questions. Interviews are structured and allowed for open ended responses. The overall objective of the interview questions was designed to collect in-depth responses to the items on the survey instrument and to solicit both positive and negative responses to mobile learning, and to help in understanding a fuller picture of the process in the context of the participants work life.

By virtue of the research model, the interview protocol was developed containing questions that intended to deepen the exploration of the seven main constructs: performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), hedonic motivation (HM), habit (H) and price value (PV) that are used as guides in the formation of the interview questionnaire in predicating teachers' behavioural intention and use of mobile learning technology. However, attention was paid to identify barriers to using mobile devices for learning.

Therefore, interview instrument consists of three segments:

**A) Section one**

Section one focuses on gaining insight and information on lecturers' general use of mobile devices for teaching. When participants replied in the negative or positive, follow up questions were asked to better understand their choice and degree of access to mobile devices:

1. *Do you own a smart phone or other mobile device with email capabilities, Internet connection and/or the ability to add applications to it?*

2. *Do you use mobile devices, such as smart phone or tablet etc.? If so, in what ways do you use them, and why? If no, why not?*

**B) Section two**

Section two focuses on gaining insight into the use and perceptions of using mobile devices for academic purposes according to component in the conceptual framework (UTAUT):

**1- Performance expectancy (PE)** Convenience Perceptions-Support Learning. According to the performance expectancy component in the conceptual framework (Venkatesh et al., 2012), lecturers may be motivated to use mobile devices for teaching because it can improve performance, Therefore, with regard to perceptions-support teaching, lecturers were asked two types of questions, questions regarding their perceptions of mobile device use for academic learning and communication; and questions asking how they utilize mobile devices for teaching. The following two questions were asked to determine how participants used mobile devices for academic purposes:

**PE 1.** *How do you maintain and improve your own professional skills using mobile technologies?*

**PE 2**. *Has the use of mobile technology helped you significantly in improving your professional skills in teaching English?*

**PE 3.** *Tell me about an instance when you tried to use your cell phone or mobile device to help you teach something related to your teaching.*

**PE 4.** *What are some other situations where you might use your cell phone or mobile device to help support your academic teaching?*

**2- Effort expectancy** (EE) Ease of Use. The effort expectancy component in the conceptual framework (Venkatesh et al., 2012) implies that it is more likely that a lecturer will use mobile learning if it is easy to learn and/or easy to use the mobile device in daily life.

**EE 1.** *How easy or difficult you would find learning to using mobile device for information seeking or teaching?*

**EE 2.** *Does teaching by using mobile learning technology help you to manage your teaching time effectively? Why or why not and how?*

**3- Social influence (SI)** Encouragement and Expectations. According to the social influence component in the conceptual framework (Venkatesh et al., 2012), lecturer will more likely use mobile devices for teaching if he or she feels that important people, such as faculty, promote their use, utilize the devices themselves, or encourage to use mobile devices for teaching.

**SI 1.** *Who encouraged you to use mobile learning technology in your teaching? Why?*

**SI 2.** *How supportive have your friends or people who are close to you in your use of a mobile device for teaching?*

**4- Hedonic motivation (HM)** Enjoyment and Exploration. According to the hedonic motivation component in the conceptual framework (Venkatesh et al., 2012), it is more likely that a lecturer will use mobile devices for teaching if he or she finds the interaction intrinsically enjoyable or interesting.

**HM 1.** *What do you enjoy in using mobile technology in your teaching and why?*

**5- Facilitating conditions (FC)** Library resources. According to the facilitating conditions of the conceptual framework (Venkatesh et al., 2012), if lecturers believe organizational and technical infrastructure exists to support use of mobile learning and knowledge sharing, they will more likely use mobile devices for learning.

**FC 1**. *Do you think you have the efficient support to use mobile learning technology in your teaching? Why or Why not?*

**FC 2.** *What do you think about your university's responsibilities regarding the integration of mobile learning in teaching English as global language for example, should there be incentives? Should the university provide mobile technology to instructors and students to enhance the process of language learning?*

**6- Habit (H)** refers to individual's automaticity in performing the required behaviour in order to use a specific technology.

**H1.** *Do you intend to use mobile learning in your teaching and why?*

**7- Price value (PV)** refers to the individual cost of using or buying specific technology.

**PV1.** *What do you think about the cost of mobile devices and internet connections? Do you think that this cost impact your use of technology in your teaching and in what way?*

**B) Section three**

Section three focuses on device and barriers to using mobile devices for learning. To identify barriers to using mobile devices for teaching, the researcher asked participants:

1- *Is there anything that makes you reluctant or unwilling to use your device in your academic teaching?*
2- *Do you have any concerns about using mobile technologies in your teaching, regarding the content delivery, or your students?*

**Interview guide:**

Script prior to interview:

I'd like to thank you once again for being willing to participate in the interview aspect of my study. As I have mentioned to you before, my study is to investigate the perception and experience towards the use of mobile technologies for English language teachers in state universities in Saudi Arabia.

You completed a consent form indicating that I have your permission (or not) to audio record our conversation. Are you still ok with me recording (or not) our conversation today? ___Yes ___No

If yes: Thank you! Please let me know if at any point you want me to turn off the recorder or keep something you said off the record.
If no: Thank you for letting me know. I will only take notes of our conversation.

Before we begin the interview, do you have any questions?
If any questions (or other questions) arise at any point in this study, you can feel free to ask them at any time. I would be more than happy to answer your questions.

The main research questions of the study and interview questions:

| **Main Research Questions** | **Explanation Question** | **Key interview questions and follow up questions** |
|---|---|---|
| 1-What are the Saudi university lecturers' experience of using mobile technology to teach the English language at the state universities in KSA? | Section one focuses on gaining demographic information about the participants and insight about lecturers' use of mobile devices for teaching in general.<br>It starts with easy question to relax the participants. | *- How long have you been teaching?*<br>*- Do you own a cell phone or other mobile device with email capabilities, Internet connection and/or the ability to add applications to it?*<br>*Do you use mobile devices, such as smart phone or tablet etc.? If so, in what ways do you use them, and why? If no, why not?* |
| 2- What are the factors that related to the Saudi university lecturers' perceptions on the adoption of mobile technology to teach the English language at the state universities in KSA? | Section two focuses on gaining insight into the use and perceptions of using mobile devices based on the finding from the component in the conceptual framework (UTAUT) of the quantitative phase:<br>Performance expectancy (PE)<br>Effort expectancy (EE)<br>Social influence (SI)<br>Facilitating conditions (EC)<br>Hedonic motivation (HM)<br>Habit (H)<br>Price Value (PV) | *PE1- How do you maintain and improve your own professional skills using mobile technologies?*<br>*PE 2- What are some other situations where you might use your cell phone or mobile device to help support your academic teaching?*<br>*PE3- Has the use of mobile technology helped you significantly in improving your professional skills in teaching English?*<br>*PE 4- Tell me about an instance when you tried to use your cell phone or mobile device to help you teach something*<br>*EE 1- how easy or difficult you would find using a mobile device for information seeking or teaching?*<br>*EE 2- Does teaching by using mobile learning technology help you to* |

| | | |
|---|---|---|
| | | *manage your teaching time effectively. Why or why not and how?*<br>*SI 1- Who encouraged you to use mobile learning technology in your teaching? Why?*<br>*SI 2- How supportive have your friends or people who are close to you in your use of a mobile device for teaching?*<br>*FC1- Do you think you have the efficient support to use mobile learning technology in your teaching? Why or Why not?*<br>*FC 2- What do you think about your university's responsibilities regarding the integration of mobile learning in teaching English as global language for example, should there be incentives? Should the university provide mobile technology to instructors and students to enhance the process of language learning?*<br>*HM1- What do you enjoy in using mobile technology in your teaching and why?*<br>*H1- Do you intend to use mobile learning in your teaching and why?*<br>*PV1- What do you think about the cost of mobile devices and internet connections? Do you think that this cost impact your use of technology in your teaching and in what way?* |
| 3- What are the challenges that | Section three focuses on device and barriers to using | |

| | | |
|---|---|---|
| English language lecturers at the state universities in KSA might face in using mobile technology and how these challenges might affect their usage of mobile technology in their teaching? | mobile devices for learning. To identify barriers to using mobile devices for learning | - *Is there anything that makes you reluctant or unwilling to use your device in your academic teaching?*<br>- *Do you have any concerns about using mobile technologies in your teaching, regarding the content delivery, or your students?* |
| | Closing Questions | - *Before we conclude this interview, is there something about your experience in this college/university that you think influences your teaching that we have not yet had a chance to discuss?* |

# Appendix 6: Approval from the Head of Higher Education

بسم الله الرحمن الرحيم

المملكة العربية السعودية
وزارة التعليم
جامعة الجوف
إدارة الإبتعاث والتدريب
رمزه (٥١/٣/٩)

جامعة الجوف
Al Jouf University

رؤية VISION 2030
المملكة العربية السعودية
KINGDOM OF SAUDI ARABIA

جامعة الجوف
Al Jouf University

جامعة الجوف
Al Jouf University
رقم الصادر: 3/40/62385
تاريخ الصادر: 1440/6/13
المرفقات: 1

3/40/62385

**سعادة الملحق الثقافي السعودي في المملكة المتحدة** **حفظه الله**

**السلام عليكم ورحمة الله وبركاته،**

إشارة الي طلب باحثة الدكتوراه المبتعثة / نوف بنت احمد بنت مفضي المفضي، سجل مدني رقم (١٠٥٩٨١١١٧٢) الباحثة في جامعة (Liverpool John Moores University) في المملكة المتحدة، بشأن الإشراف عليها لأغراض بحث الدكتوراه والذي بعنوان (استطلاع آراء أعضاء اللغة الإنجليزية في استخدام تكنولوجيا الجوال في تدريسهم اللغة الإنجليزية وإجراء مقابلات مع عينة البحث) فإن جامعة الجوف لا مانع لديها من تسهيل مهمتها وتمكينها من الاطلاع على كل ما تحتاجها لأغراض بحثها.

وتقبلوا سعادتكم خالص تحياتي،

**وكيل الجامعة للدراسات العليا والبحث العلمي**
**رئيس اللجنة الدائمة للابتعاث والتدريب**

**أ.د. نجم بن مسفر العصيني**

ص.ب ٢٠١٤ – الجوف – سكاكا – هاتف ٠٤٦٢٤٢٢٧١ – فاكس ٠٤٦٢٤٧١٨٣
E-MAIL: RECTOR@JU.EDU.SA: البريد الالكتروني P.O.BOX 2014.AL-JOUF.SKAKA. TEL.04 6242271 . FAX.046247183

# Appendix 7: Themes, Sub-Themes and Codes from the Qualitative Analysis

| Themes | Sub-Themes | Codes |
|---|---|---|
| **Performance expectancy** | 1- Application use | Ask them to watch clip I sent in telegram |
| | | I always use twitter to encourage students post comments. |
| | | Cambly application improve their speaking |
| | | WhatsApp |
| | 2- Productivity | Willing to participate more than ….either text books or desktop. |
| | | More engaging than chalk and talk |
| | | Improvement of teachers thinking |
| | | Learn from others online |
| | | Using mobile technology make them disturbing |
| | | Open to the world searching what other teachers are using. |
| | 3- Usefulness | I do not think MT is a replacement for well-planned lesson. |
| | | Additional tool |
| | | Part of everyday life not only for us ……but also for our students digital natives. |
| | 4- Distraction | Students might be out of control. |
| | | I think using mobile technology inside the classrooms sometimes distract the students. |
| | | Online connection may distract the students. |
| | | I noticed students are busy and do not follow the lesson. |
| **Effort expectancy** | 5- Mobility and accessibility | Light to carry |
| | | Practical |
| | | Accessible |
| | | portability |
| | | You cannot get help.. you can use smart phone. |
| | 6- Ease of use | Pop up on their phones so quickly and write massage |
| | | Very easy |
| | | Not everyone know how to work a blog |

| | | |
|---|---|---|
| | | Easy to reach scholars in your specialist. |
| | 7- Time management | Feel more comfortable if I had more time with my students |
| | | Search an information very quickly |
| | | Teachers depend on mobile technology in order to have less effort |
| | | Practical outside classrooms. |
| **Social influence** | 8- Encouragement | Faculty discourage.. individual attempts |
| | | Myself I am aware of the potential of MT |
| | | Friends are conscious about MT they need more encouragement. |
| | | I believe faculties want us to use it but they don't care if we don't use it in practice |
| | | I didn't see any of my friends using it …not a big deal. |
| | | Everything around.me encouraging. |
| | 9- Support | No available resources for every one |
| | | There are some resources but they are not enough |
| | | Lack of support from the university. |
| **Hedonic motivation** | 10 - Enjoyment | Easy and fun |
| | | I feel so excited |
| | | Enjoyable …freedom |
| | | Kind of entertainments. |
| | 11- Security safe | Media awareness |
| | | Miss using mobile inside classroom |
| | | Assure they are not twitting |
| | | Can she not being filmed and post on |
| | | No confidentiality |
| | | Enthusiasm |
| **Facilitating conditions** | 12- No defined plan | No clear plan how to use this technology. |
| | | The use of technology was optional but never required. |
| | | How it can be utilize officially and sufficiently. |
| | | The objectives of mobile techniques in TEFL must be defined. |
| | | Lecturers do not know how to make use of mobile phone devices in teaching. |
| | | There is no clear policy or plan to follow. |
| | 13- Internet connection | The university's internet has problem. |
| | | There were weak readily available resources such as Wi Fi connection. |
| | | Difficulty of not having quick network. |
| | | The university cannot afford adequate internet connection |
| | | The internet connect ion is vary poor |
| | | Devices are available, the university provide internet connection but it is hardly connect always poor. |

| | | |
|---|---|---|
| | 14- Training | There is some seminars but this training was held in the summer and the attendance was optional |
| | | I have not heard of training programmes |
| | | Some ELTs need more training to have this ability. |
| | | I do not need to wait till they find me a place of workshops training I can learn independently. |
| | | We take a compulsory courser on technology use but…is not an emphasize. |
| | | I did a training course….. but the problem was in the difficulty of application.. |
| | | Training courses always theoretical and far from classrooms reality. |
| | 15- The number of students | The number of students is 30+ which makes it hard to manage. |
| | | The number of students in the classes is large |
| | 16- Knowledge | The biggest concern is not having the knowledge base. |
| | | I believe most of the teachers themselves do not know how to use technology in teaching. |
| | | To easy when you practice it continuously. |
| | | Many teachers reluctant…because of lake of familiarity and the fare of having a new experience. |
| **Habit** | 17- Willingness | This gave me motivation to use mobile technology in my class. |
| | | I never use mobile technology in my teaching but it is a new technique and I am curios to use it. |
| | | Despite the fact that I am not sure how to use it but in this century I think we need a technological well-educated learners and teachers |
| | | I believe of the potential of MT but I do not think it is part of the curriculum. |
| | | We have desire but we are not supported enough. |
| **Price** | 18- Cost | Affordable price. |
| | | It is available not for teachers all my students have smart phones. |
| | | Little pit pricy but affordable most of my students have the newest model of iPhone. |
| | | Both are affordable but there is no role of the university of it is personal matter. |

# Appendix 8: P-P Plot