International Journal of Arts Humanities and Social Sciences Studies
Volume 5 Issue 9 ǁ September 2020
ISSN: 2582-1601
www.ijahss.com

Age and Gender Attitude toward Using Mobile Applications in Learning English Vocabulary

Dr. Talal Ali Abozandah

ABSTRACT: *The purpose of this study was to examine the age and gender attitude of Saudi students utilizing mobile applications for learning English vocabulary. The theoretical framework that guided this study was the technology acceptance model (TAM). In this study TAM theory included two main constructs, namely perceived usefulness and perceived ease of use, to predict an individual's attitude toward using new technology (Davis, 1989). A survey was used to collect data, and the survey consisted of two sections. The first section asked participants for demographic information, and the second section included Likert items pertaining to students' attitudes toward using mobile applications to learn English vocabulary. The sample of this study was drawn from a population of 800 Saudi students in in the United States. Data from 172 Saudi students were used for both descriptive and inferential statistics. The findings of each question are discussed and connected to previous studies.*

The results showed perceived usefulness and perceived ease of use were statistically significant predictors of attitude toward using mobile applications. In addition, the results indicated gender had no statistically significant moderating effect on the relationship among perceived usefulness, perceived ease of use, and Saudi students' attitude toward using mobile applications. The results of this study could be benefit of the Instructional Technology (IT) field.

for developing educational interactions and enhancing human performance. Lastly, future prospects for examining the ways that perceived usefulness and perceived ease of use can be promoted effectively within education are suggested.

Keywords: *Mobile applications, perceived usefulness and perceived ease of use, and English vocabulary*

I. Introduction

Throughout history, second-language acquisition approaches have been developed and technology has been increasingly used in language teaching and learning practices (Warschaur & Meskill, 2000). Over the past few decades, technology and English language education have been related to each other in the educational process development (Singhal, 1997). There are several advantages to applying technology to English language teaching within an educational environment. Singhal (1997) mentioned that "some technology such as tablet computers are capable of providing a language learner with access to necessary learning materials, including references, texts, and audio-video materials" (p. 78). Learning languages, especially foreign languages, with assistance from mobile applications is a model of how new communication technologies can be used to serve learning objectives (Stockwell, 2010). For example, students can easily communicate with their tutors regardless of their location (Bal & Arıcı, 2011). Also, Abozandah (2015) stated that technology has the ability to create many objectives in the educational process: "technologies functionalities aid students to acquire language skills up to advanced levels such as memorizing certain words and training their pronunciation" (p. 652). Mobile applications (apps) have become renowned in the world of technology and have contributed to the development of educational processes. Alanazi (2014) reported that about 158 apps for English learning are categorized as educational applications, such as a dictionary, Google translation apps, Idioms, or other apps. These educational applications have many uses for improving communication skills in a classroom setting.

International students use many types of technology, such as mobile learning. For example, mobile applications can be defined as the use of a mobile device to access and share information, while in the broad sense, according to Westlund (2010), mobile applications are run by computing devices that facilitate access to educational and information resources. Some research on the topic shows that mobile applications have developed as the result of dominant modern technologies that can be applied to education via handheld or palmtop devices, including

devices such as phones, smartphones, handheld PCs, and tablets (Cheon et al., 2012; Dirk & Volker, 2013; Mohamed, 2010).

Currently, mobile phones are being used more frequently for learning vocabulary, and many researchers have found that mobile applications can play a key role in learning English vocabulary (Ameri et al., 2012; Wiwat & Ornprapat, 2015). According to Wiwat and Ornprapat (2015), "Learning vocabulary is the fundamental step to learn a foreign language" (p. 14). Ameri et al. (2012) and Jiaotong (2014) reported that international students who are also ELLs had a strong motivation for learning English vocabulary via mobile learning applications. In addition, mobile technology seems to be an ideal tool to facilitate language learning both in and out of the classroom. Mobile technology provides a suitable learning environment that supports learners' academic performance one that they can access anywhere and at any time. Classroom use of mobile devices has also led to increased engagement, thus facilitating interactive opportunities that motivate passive learners to become active and to engage in cognitive and social learning. (Kukulska-Hulme et al., 2009; Seppala & Alamaki, 2003). Similarly, Başoglu and Akdemir (2010) observed that students using mobile apps to learn English as second language were successful, and they also confirmed that using mobile applications was a valuable teaching method. Başoglu and Akdemir (2010) stated that "mobile technologies were a familiar part of the lives of most teachers and students" (p. 13). Mobile apps play a major part in the education to develop or modify the teaching methods they use to gain the best outcome from the learning process (Ally & Prieto-Blazquez, 2014; Başoglu & Akdemir, 2010). The results of these studies confirmed that students had positive feedback to the use of mobile phones in learning languages. Therefore, teachers and students can utilize mobile applications as supplemental educational tools for different purposes to develop the educational process in multiple ways; an example of this is learning without boundaries. Most mobile-learning applications make it possible for smartphone users to take any course at any speed and at any time. Mobile applications also allow instructors to keep track of various measurements, such as performance assessments, grades, and attendance (Reader, 2013).

Recent empirical studies have demonstrated the importance of using mobile applications to learn English. Many studies have shown that the use of mobile applications positively influences students' activity in the classroom and has a positive effect on learning (Agca & Ozdemir, 2013; Baleghizadeh & Oladrostam, 2011; Taki & Khazaei, 2011; Thomas & Munoz, 2016). Furthermore, a mobile application can create a learning environment in many ways. One of these ways is the ability to share experiences and knowledge for international students to learn English from anywhere via social media apps with the support of a high-speed cellular network (Baleghizadeh & Oladrostam, 2011). According to Tyng (2017), "using mobile apps in language learning is in line with current educational trend. Because the apps are portable and students can use them on their smartphones, it is easy to use without environmental limitation" (p. 279).

II. Statement of the Problem

Despite the fact that several studies have referred to the benefits of using mobile applications for supporting ELLs (Agca & Ozdemir, 2013; Jaradat, 2014; Taki & Khazaei, 2011), a considerable number of studies have not brought significant results (e.g., Abozandah, 2015; Fahad, 2010; Jaradat, 2014). For instance, research conducted by Naray and Mohamed (2013), Seliaman and Turki (2012) and Nassuora (2012) has demonstrated that Saudi students from different backgrounds may face multiple challenges learning English as a foreign language, one of which is learning vocabulary. However, there have been some small-scale studies in Saudi Arabia regarding the use of mobile applications for learning English vocabulary (Narayanasamy & Mohamed, 2013; Nassuora, 2012; Seliaman & Al-Turki, 2012). Thus, this study focused on investigated age and gender attitudes toward using mobile applications to learn English vocabulary. Therefore, further investigation is needed to expand our understanding about English learners' point of view toward using mobile applications to learn English vocabulary.

III. Purpose of the Study

This quantitative study examined Saudi students' attitudes toward using mobile applications to learn English vocabulary using the technology acceptance theory (TAM). This study investigated whether gender has a moderating effect on the participants' attitudes. Applying the constructs of TAM (perceived usefulness and ease of use) as the independent variables for this study yielded information about the dependent variable (students' attitudes) in regard to using such technology.

IV. Research Questions

This study sought to answer the following research questions:

1. To what extent do age and gender predict attitude to use mobile application to learn English vocabulary?

2. To what extent does gender moderate the relationship between 1) perceived usefulness and attitude toward using mobile applications to learn English vocabulary, and 2) perceived ease of use and attitude toward using mobile applications to learn English vocabulary?

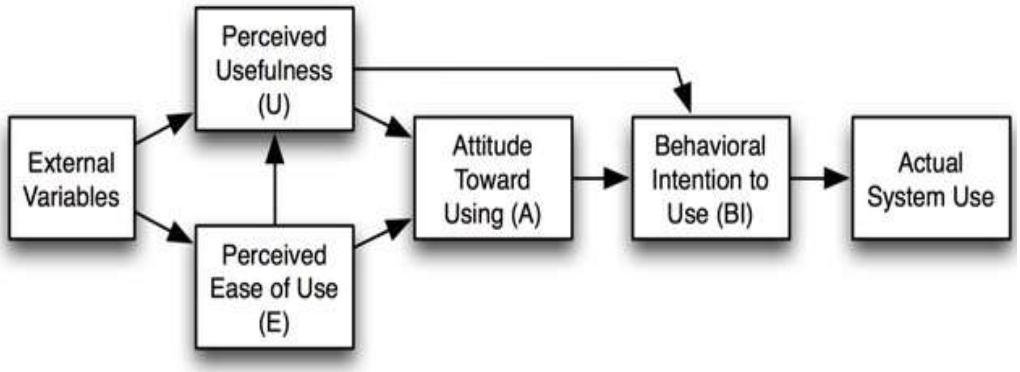
V. Significance of the Study

Research about the attitude of using mobile applications for learning English vocabulary is limited and indirect, although mobile apps methods are currently identifiable and employed in language instruction in several other languages (Al-Fahad, 2009Al-Shehri, 2013; Chinnery, 2013). Therefore, this study examined the use of mobile application technology for enhancing the learning of English vocabulary. This study has implications not only for teachers who use mobile applications in their classrooms but also for companies developing educational applications for instruction to gain the best results from the learning process. Investors might also find this study helpful to inform investments and development of more mobile app technologies for language learning purposes.

Overall, in this study perceived usefulness examined users' perceptions that using mobile apps would enhance their attitudes regarding the use of mobile apps in learning English vocabulary. Perceived ease of use (PEOU) assessed the intrinsic characteristics of mobile apps, such as the perceived ease of use (PEU), ease of learning, flexibility, and clarity of its interface. In other words, it assessed the extent that students could use mobile applications to easily access learning resources for instant text and audio-video material regardless of location, funding, and time available. A mobile phone provided the opportunity to make the educational process more interactive. For example, mobile learning applications afforded flexibility to access learning resources without time and device restrictions (Zervas & Sampson, 2014).

VI. Theoretical Framework

The Technology Acceptance Model (TAM) provided the conceptual framework for this study. TAM was created by Davis in 1993. TAM contains internal variables regarding the actual use of the technology: perceived ease of use (PEU), perceived usefulness (PU), attitude toward using, as defined below (see Figure 1.2).



Overall, in this study perceived usefulness examined users' perceptions that using mobile apps would enhance their attitudes regarding the use of mobile apps in learning English vocabulary. Perceived ease of use (PEOU) assessed the intrinsic characteristics of mobile apps, such as the perceived ease of use (PEU), ease of learning, flexibility, and clarity of its interface. In other words, it assessed the extent that students could use mobile applications to easily access learning resources for instant text and audio-video material regardless of location, funding, and time available. A mobile phone provided the opportunity to make the educational process more interactive. For example, mobile learning applications afforded flexibility to access learning resources without time and device restrictions (Zervas & Sampson, 2014).

VII. Literature Review

The mobile phone has occupied a great role in English language learning (ELL) and in English as a second language (ESL) among the international students (Kukulska-Hulme & Pettit, 2006; Cheon, 2012). Therefore, the purpose of this quantitative study was to examine Saudi students' attitudes toward using mobile app technologies as supplemental tools to improve their English vocabulary learning. In this literature review, the discussion is centered on studies that have been conducted by researchers around the world using mobile features as a learning tool for ESL students (Agca & Ozdemir, 2013; Baleghizadeh & Oladrostam, 2011; Basoglu & Akdemir, 2010; Fahad, 2010; Jaradat, 2014; Kim,Rueckert,Seo,& Joong, 2013; Taki & Khazaei, 2011; Thomas & Munoz, 2016). According to Basoglu and Akdemir (2010), "using mobile phones as a vocabulary learning tool is more effective than the traditional vocabulary learning tools" (p. 1). These studies are synthesized into several main themes: mobile applications for learning English vocabulary, students'

perceptions toward using mobile technology, use of mobile phone in the classrooms, the Technology Acceptance Model theory (TAM), technology tools for language learning, gender and age differences in mobile phone use for language learning, and vocabulary acquisition by International ESL Students.

Gender and Age Differences in Mobile Phone Usage for Language Learning

Mobile phone technology, which has a huge impact on students' lives in the digital age, may offer a new type of learning. The use of effective tools to support learning can be affected by gender and age (Sumak, Hericko, Pusnik, & Polancic, 2011). Therefore, in the last few years, some studies have seen the emergence of mobile phone literature and the development of mobile studies field from the gender and age perspectives (Hilao & Wichadee, 2018; Kline, 2011; Mido & Sunah, 2014). Hilao and Wichadee (2017) reported that "the study could be used as a guideline of how mobile phones can be fully incorporated into the instructional process in order to enhance learner engagement" (p. 112). Likewise, Duarte and Coimbra (2013) showed that among Brazilian students, more than 70% had used mobile phones for more than three years, and they used them mostly at home. In Brazil, the number of male mobile phone users (35.8%) was higher than the number of female users (33.9%). Thus, boys were the most intensive mobile phone users. Also, Duarte and Coimbra (2013) reported that use of a mobile phone was almost equal in both the experimental and control groups. In the control group, only 54.4% of students had their own mobile phone, while in the experimental group, every student had his or her own mobile phone. That means there were existing differences in the use of mobile phones at home. Furthermore, the experimental group participants stated they used mobile phones almost daily, while the control group participants reported that they used mobile phones only one to six times per week. The researchers stated that there were no statistically significant differences between students of different genders in relation to ownership of a mobile phone (Duarte & Coimbra, 2013). The majority had access to a mobile phone, including 92% of females and 93.3% of males. Over half of the male students had access to a mobile phone at home more than one day a week (one or two days, 28.9%; three or four days, 26.2%). The researchers found that females showed a high rate of mobile phone use at home (one or two days, 32.6%; three or four days, 32.6%), but the results showed that males were more likely to use a mobile phone daily compared with females. However, no statistically significant differences were found between females and males in terms of mobile phone usage (Duarte & Coimbra, 2013). In another study, Mido and Sunah (2014) examined the effects of mobile phone access on American third- and fifth-grade students from several racial and linguistic groups. The researchers compared groups of students, which were the African American and Hispanic groups, the English language learner (ELL) groups, Caucasian and Asian groups, and the English-speaking groups (Mido & Sunah, 2014). The researchers found that the effects of mobile phone use on English students were positive, but for the ELL students, they were negative. For the African American and Hispanic students, mobile phone use rates were lower compared to the rest of the groups. Mido and Sunah (2014) noted that "the study found that a mobile phone indicated differential effects on the science performance of students from various racial and linguistic groups" (p. 45). In addition, previous studies (Hilao & Wichadee, 2017; Mido & Sunah, 2014) found that the mobile phone is an egalitarian technology, contrary to other technologies, in which gaps still remain around gender and age use of mobile phones in terms of learning English.

Saghir's (2018) study examined the behavioral intention of faculty members regarding the use of webinars as a tool to receive professional development content at the Institute of Public Administration in Saudi Arabia. Moreover, gender was investigated to see whether this demographic characteristic related to faculty members' behavioral intentions to use webinars and whether it moderated the predictive relationships between perceived usefulness/ease of use and behavioral intention. The sample were 768 faculty members working in an IPA in Saudi Arabia. Saghir found that gender did not have a moderating effect on the relationship between the three TAM constructs (i.e., perceived usefulness, perceived ease of use, and faculty members' behavioral intentions to use webinars). On the contrary, the goal of the Lewis et al.'s (2013) study was to test theoretical explanations from UTAUT in the context of higher education through the development of a set of hypotheses predicting the conditions under which classroom technology use is likely to emerge. Lewis et al. stated that males represented 69% of the sample. The average age was 53 years old. Male professors described their teaching styles primarily as either the facilitator or the expert, while most females identified with the facilitator teaching style. The majority of the sample, 30%, taught management classes, with 15% teaching accounting, 15% information systems, 13% marketing, and 13% quantitative methods classes. Lewis et al. reported that gender did moderate the relationship between performance expectancy and effort expectancy as predictors, and behavioral intention as an outcome.

Lee, Yeung, and Cheung (2019) identified the moderating effects gender had in relation to perceived usefulness, perceived ease of use, and attitudes towards the use of mobile applications. They completed a correlational study that investigated learner perceptions and technology use between adolescent English learnings located in Hong Kong. Collecting data from 193 participants between the ages of 13 and 16 from three Hong Kong secondary schools, the researchers found that the adolescents' general attitudes, perceptions, and self-efficacy

were generally positive; it was concluded that although older adolescents tended to favor mobile learning when studying English, gender effects were insignificant and therefore not worth mentioning. There are specific issues that need to be addressed in both these studies to demonstrate how conclusions can be made that both contradict and support this current study. For example, Lee et al. (2019) defined the term mobile device to be any device that included cell phones, personal digital assistants (PDAs), smartphones, pads, pods, netbooks, media-players, and in-car satellite navigation.

Oz (2015) completed a study that investigated English preservice teachers' perceptions of mobile assisted language learning, hoping to better understand whether any perceptions differed by gender, grade level, and grade point average. Collecting data from 201 participants enrolled in an EFL department at a major state university, the participants completed the Mobile Learning Perception Scale. The results of the study highlighted that gender and grade levels moderated the effects of the measured constructs regarding their perceptions on the use of mobile applications when it came to learning English. For example, Oz found that the results that focused on gender went against previous research that highlighted how males were more apt to agree that mobile applications were excellent ways to learn English vocabulary skills (Broos, 2005; Uzunboylu & Özdamlı, 2011; Wang et al., 2009). However, in Oz's study, third grade females had higher levels of positive perceptions of mobile learning applications when it came to studying languages. Likewise, Nikolopoulou's (2018) study investigated secondary school students' perceptions regarding mobile device usage and mobile learning acceptance. A questionnaire was administered to 530 students aged 12–18 years old, in Greece. The study revealed that a mobile phone was the predominant device, which is used daily by almost all students; 83% of the sample goes online via a mobile device several times per day; 65% of the sample described themselves as advanced mobile device users, and 11% perceived themselves as experts. Students expressed positive perceptions indicating mobile learning acceptance. The higher the grade (or age group), the higher the frequency of going online via a mobile device, and the more the years of using a mobile device, the more positive were students' perceptions.

Effectiveness of Mobile Phones in the Classrooms

Over the past decade, mobile learning has become a major part of the education sector (Ally & Prieto-Blazquez, 2014). Furthermore, mobile technologies are "a familiar part of the lives of most teachers and students in the classroom" (Facer, 2004, p. 1). Many mobile apps were developed to enhance the level of knowledge in learning foreign languages inside and outside the classroom. Kim, Rueckert, Seo, and Joong (2013) and Baleghizadeh and Oladrostam (2011) conducted their studies to examine the effectiveness of the use a mobile phone in the classroom to learn English language. The results showed that students expressed positive attitudes while learning new phrase via mobile phones. Kim and Kayli (2013) conducted the study to focus on how students perceive the use of mobile application to learn English language outside the classroom. The study focused on Teaching English to Speakers of Other Languages (TESOL) using personal mobile applications as learning tools. Similarly, Kim and Kayli (2013) reported that 90.3% of the participants enjoyed learning through using mobile devices. The findings of this study suggest that mobile technologies have the potential to provide a new learning experience to students in many different ways, such as social media, communication, and watching YouTube videos. Other studies also found that m-learning was an efficient tool in the learning process among instructor and learners. Furthermore, Baleghizadeh and Oladrostam (2011) addressed the issue of improving a grammatical accuracy of Iranian EFL students. This study focused on several aspects of English language learning, including oral communicative activities in the classroom. The study was conducted by comparing two groups. In Group A, students recorded their voice on their own mobile phone for two or three minutes in the classroom to enhance pronunciation skills. Group B received the traditional grammar instruction and conversation. This study found a significant difference between the two groups. Students who used their mobile phones to record their voices improved their grammatical accuracy more than the students who used the traditional methods. Thus, previous studies have confirmed the effectiveness of using mobile phones to increase the grammatical ability of students. Further, mobile phone use allowed enhancement of performance of students working as a group or individually in the classroom (Baleghizadeh & Oladrostam, 2011; Kim & Kayli, 2013).

VIII. METHODOLOGY

This purpose of this quantitative study was to examine Saudi students' attitudes toward using mobile applications to learn English vocabulary. This study investigated the relationship between the perceived usefulness and ease of use of mobile applications to learn English vocabulary. Alao, this study also investigated whether age and gender have direct effects on student attitudes as well as the moderating effects of gender on the relationship between perceived usefulness, perceived ease of use, and student attitudes toward the use of mobile applications.

Research Questions

This study had the following research questions.

1. To what extent do age and gender predict attitude to use mobile applications to learn English vocabulary?
2. To what extent does gender moderate the relationship between 1) perceived usefulness and attitude toward using mobile applications to learn English vocabulary and 2) perceived ease of use and attitude toward using mobile applications to learn English vocabulary?

IX. Research Design and Approach

The research was a quantitative study that used multiple regression to address the above research questions. Quantitative research aims to collect quantifiable information and analyzes the collected data using statistical methods in an unbiased manner (Clark & Creswell, 2010). The study employed the Technology Acceptance Model (TAM) survey Because this study intended to examine the students' attitudes and how they relate to the independent variables (perceived usefulness, perceived ease predict, age, and gender) at one point in time, cross-sectional design was the suitable survey research design (Creswell, 2012). The TAM survey allowed the participants to self-report their attitudes and opinions about mobile application (app) use. The TAM survey consisted of 17 items exploring the providers' acceptance of mobile apps.

X. Participants

The population of this study was Saudi students who were studying in the United States and who are non-native speakers of English. Convenience sampling was used as the sampling method because the participants were willing and available to be studied (Creswell, 2015). The sample size of this proposed study was determined using power analysis. The total sample size of the study was (N = 108) age range 20-45 years, with both genders (male and female students). Alpha = 0.90, the effect size 0.15, and power 0.90.

XI. Data Collection

After receiving all approvals from both parties, the Northern Illinois University IRB and the Saudi Arabian Cultural Mission, and pilot testing the survey items, the researcher sent the survey to the Saudi Arabian Cultural Mission, which then shared the survey link with the Saudi students. The participants also received one email containing a request for informed consent and then four to five weekly reminders in the next four weeks to increase the participation rate, as described by Dillman, Smyth, and Christian (2009). The researcher included a cutoff date for survey acceptance in the emails. At the beginning of the survey the researcher sent the potential participants a personalized message, and at the end of the survey, the researcher sent the participants a personalized thank you message. All data were secured within "Qualtrics NIU" Survey.

XII. Data Analysis

The data gathered from the participants were analyzed using SPSS, employing descriptive and inferential statistics. Descriptive statistics provided information about the sample, which allowed examination of the different characteristics among the participants (Creswell, 2012). This study used the TAM. Research questions sought to examine the relationship between the TAM concepts usefulness and ease of use, with students' attitudes about using English-teaching mobile apps. I used SPSS software (version 24) to perform a descriptive analysis of the demographic variables. As mentioned earlier, I used a 5-point Likert-type scale in the survey instrument to assist in the analysis process. Quantitative data analysis methods included multiple regression and descriptive statistics.

XIII. Study Findings

This section presents the findings of the above mentioned research questions using Statistical Package for the Social Sciences (SPSS) software to output data in a format for both descriptive and inferential statistics. The chapter commences with demographic information and proceeds to address each research question.

Gender

The first survey item identified the gender of participants. As mentioned earlier, after deleting cases with missing values, a total of 172 participants provided usable data to the survey. From this total, 134 (77.9%) were male and 38 (22.1%) were female (see Table 4.1).

Table 4.1
Gender Distribution

Gender	Frequency	Percent
Male	134	77.9%
Female	38	22.1%
Total	172	100.0%

Age

As shown in Table 4.2, 26 (15.1%) of the participants were between 19 to 25 years of age. A total of 99 (57.6%) of the participants were between 26 to 35 years of age, which represents the largest group. Of the total, 34 (19.8%) participants were 36 to 40 years of age, and 13 (7.6%) were older than 40 years old, which represented the smallest group (see Table 4.2).

Table 4.2
Age Distribution

Age	Frequency	Percent
19 – 25 Years	26	15.1%
26 – 35 Years	99	57.6%
36 – 40 Years	34	19.8%
More than 40 Years	13	7.6%
Total	172	100.0%

Research Question 1 Results

This section shows the results related to research question 3: To what extent do age and gender predict attitude to use mobile applications to learn English vocabulary? To address this question, multiple linear regression was applied to assess the relationship between the predictor variables (age and gender) and the outcome variable (attitude to use mobile applications to learn English vocabulary). Prior to analysis, gender was dummy coded as 0 = male and 1 = female. In addition to assessing the effects of age and gender, hierarchical multiple regression analysis was carried out using gender and age as predictors in block 1, usefulness and ease of use were entered in block 2, to assess the effects of the latter predictors when controlling for age and gender. Before the hierarchical multiple regression analysis was performed, the predictor variables were examined for collinearity. VIF and Tolerance statistics indicated no evident problem with multicollinearity.

Tables 4.13 and 4.14 provide the results for the regression of attitude to use mobile applications to learn English vocabulary on the set of predictors. As these results indicated, gender and age did not significantly predict students' attitudes F (2,169) = .70, p = .50). Only 0.8 % of the variance in the outcome variable can be explained by these two predictors. When perceived usefulness and perceived ease of use were added to the model, 60.3% of the variance in the outcome was explained, which was statistically significant $F(4,167) = 63.5$, $p < .001$). Additionally, the increase in R^2 that occurred with addition of these two predictors was statistically significant ($R^2 = .603$, $R^2_{adj} = .59$, $p < .001$) That is, controlling for gender and age, perceived usefulness and perceived ease of used significantly predicted attitude toward mobile technology to learn English vocabulary.

Table 4.13
Regression Model Summary Predicting Attitude from Gender, Age, Perceived Usefulness, and Perceived Ease of Use (N = 172)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change
1	.09	.008	.00	.72	.008
2	.77	.603	.59	.46	.595

a. Dependent Variable: Attitude
a. Independent Variable: gender, age, perceived usefulness, and perceived ease of use.

Table 4.14
ANOVA for Regression Model Predicting Attitude from Gender, Age, Perceived Usefulness, and Perceived Ease of Use (*N* = 172)

Model	Source	*SS*	*df*	*MS*	*F*	*p*
1	Regression	0.73	2	0.36	0.70	0.50
	Residual	87.53	169	0.51		
	Total	88.26	171			
2	Regression	53.2	4	13.3	63.5	.001
	Residual	35.00	167	0.21		
	Total	88.26	171			

a. Dependent Variable: Attitude
b. Independent Variable: gender, age, perceived usefulness, and perceived ease of use.

Examination of the significance of the individual predictors (Table 4.15) indicated that age (β = .04, p = .554) and gender (β = -.07, p = .313) showed no statistically significant relationship with students' attitudes to use mobile application to learn English vocabulary.
.

Table 4.15
Summary of Regression Coefficients for the Regression of Attitude on Gender, Age, Ease of Use, and Usefulness

Predictor	Unstandardized Coefficients		Standardized Coefficients		
	b	*SE*	*β*	*t*	*p*
Constant	4.09	0.23		17.60	<.001
Age	0.04	0.07	0.04	0.59	.554
Gender	-0.13	0.13	-0.07	-1.01	.313
Constant	1.12	0.24		4.68	<.000
Age	0.01	0.04	0.01	0.38	.699
Gender	-0.20	0.08	-0.11	-2.42	.016
Ease of use	0.42	0.07	0.42	5.56	<.001
Usefulness	0.37	0.06	0.40	5.36	<.001

a. Dependent Variable: Attitude

Examination of a histogram (Figure 4.10) and normal P-P plot of residuals (Figure 4.11) showed a close-to-normal distribution of residuals.

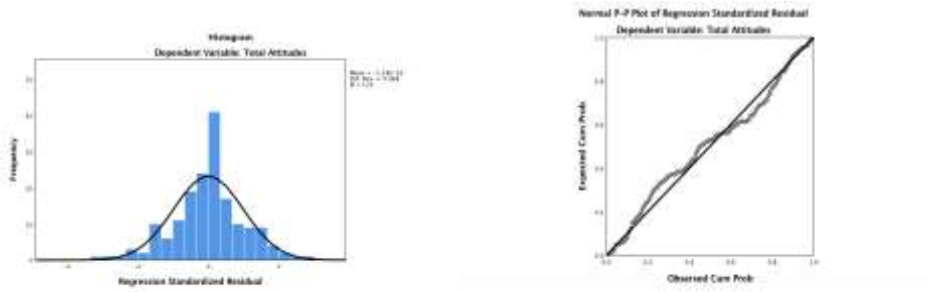


Figure 4.10: Histogram of the residuals and normal P-P plot of residuals for regression of student attitude on gender, age, perceived usefulness, and perceived ease of use.

A scatter plot of the residuals on the predicted values showed that the residuals were homoscedastic (see Figure 11).

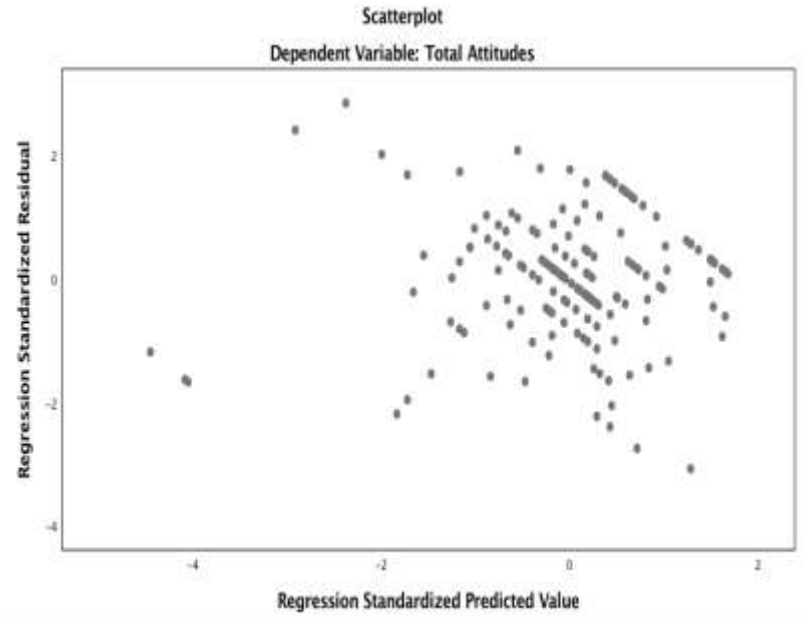


Figure 4.11: A scatterplot of standardized residuals on predicted values.

Research Question 2 Results

This section presents the results related to research question 4: "To what extent does gender moderate the relationship between 1) perceived usefulness and attitude towards using mobile applications to learn English vocabulary and 2) perceived ease of use and attitude towards using mobile applications to learn English vocabulary?" To address this question, multiple linear regression was applied. Before carrying out the regression, the researcher created mean-centered variables for usefulness and ease of use. Then the interaction terms were created for perceived usefulness × gender and perceived ease of use × gender.

The results (see Table 4.16) indicate that the regression model with the full set of predictors significantly predicted the outcome, $F(5, 166) = 51.28$, $p < .001$; $R^2 = .60$, $R^2_{adj} = .59$. A total of 60 % of the total variability in students' attitude is explained by the direct effects and the moderation effects.

Table 4.16
Regression Model Summary Predicting Attitude from Perceived Usefulness, Perceived Ease of Use, Gender (N = 172)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate

1	.78	.60	.59	0.45

When predictors were examined individually, however, no statistically significant moderation effects of gender were observed on 1) the relationship between usefulness and attitude (β = -.130, p = .196) or 2) the relationship between perceived ease of use and attitude (β = .100, p = .282).

Table 4.17

ANOVA Table for the Prediction of Students' Attitudes from Perceived Usefulness, Perceived Ease of Use, Gender, Perceive Usefulness × Gender, Perceived Ease of Use × Gender (N = 172)

Model	*SS*	*df*	*MS*	*F*	*p*
Regression	53.57	5	10.92	51.28	< .001
Residual	34.68	166	0.21		
Total	88.26	171			

Figure 4.12 presents a histogram of the standardized residuals that showed no marked departure from normality. Equivalently, a normal P-P plot of the residuals indicated a close-to-normal distribution.

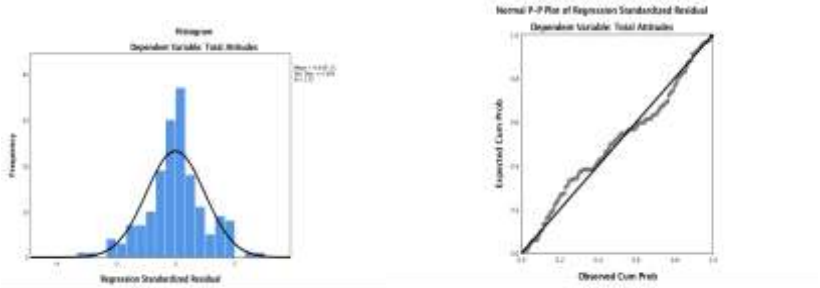


Figure 4.12: Histogram and P-P plot of the residual values.

A scatter plot of the residuals on the predicted values (Figure 4.9) showed that the residuals were homoscedastic (see Figure 4.13).

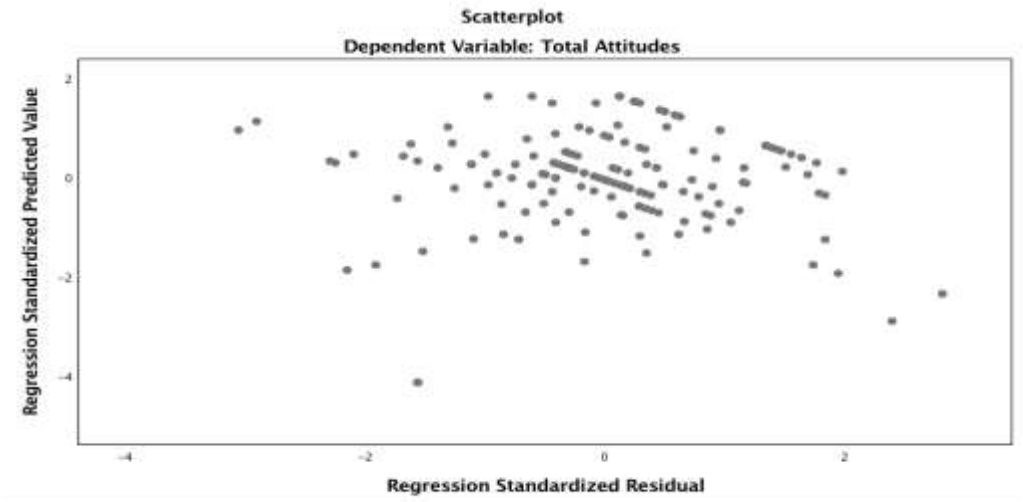


Figure 4.13: A scatterplot of residuals on predicted values.

The values of variance inflation factor (VIF) statistic were below 10 and, equivalently, each tolerance value was greater than .10. This indicates that no problems with excessive multicollinearity were evident.

Table 4.18

Regression Coefficients for the Prediction of Attitude from Perceived Usefulness, Perceived Ease of Use. Gender,
Perceived Usefulness × Gender, Perceived Ease of Use × Gender

Predictor	Unstandardized Coefficients		Standardized Coefficients		
	b	*SE*	*β*	*t*	*p*
Constant	0.90	.022		4.10	<.001
Gender	-0.21	0.08	-.12	-2.52	<.013
Perceived Ease of Use	0.34	0.72	.37	4.78	<.001
Perceived Usefulness	0.46	0.07	.45	5.82	<.001
Perceived Ease of Use × gender	-.031	0.24	-.13	-1.29	.196
Perceived Usefulness × gender	0.24	0.22	.10	1.07	.282

Note: Because several outliers were observed in the data, the analyses pertaining to RQ1-RQ4 were repeated with these outliers removed. No notable differences in results were noted.

XIV. DISCUSSION

This chapter will discuss the findings in relation to existing research as well as recommendations based on the research findings. Furthermore, this chapter also provides implications for instructional practice and suggestions for future research, while discussing possible advantages of integrating mobile devices in language learning. This chapter will include the following sections: discussion, implications, limitations, and recommendations for future research, followed by the conclusion of the study.

Research Question 1
To what extent do age and gender predict attitude to use mobile applications to learn English vocabulary?

This question was analyzed by conducting multiple regression analysis – to analyze whether age and gender influence students' attitude to use mobile applications to learn English vocabulary. When examining the influence of each predictor individually, the results showed that both the age and gender variables did not significantly predict students' attitude. This finding is consistent with Al-Emran et al. (2016) in which they found that gender had no moderating effect on the relationship between age/ gender and behavioral intention to use mobile learning. Also, the finding of the current study is partially supported by Wang et al. (2009), in which age had no moderating effect on the relationship between the three TAM constructs and students' behavioral intention to use e-Learning.

On the other hand, two earlier studies reported contradictory findings (Nikolopoulou, 2018; Oz, 2015). Oz (2015) investigated English preservice teachers' perceptions of mobile assisted language learning to better understand whether perceptions differed by gender and grade level. The results of the study found that gender moderated the effects of the measured constructs regarding teachers' perceptions of the use of mobile applications when it came to learning English. Oz found females to have higher levels of positive perceptions of mobile learning applications when it came to studying languages. However, it should be noted that despite gender differences, the majority of participants agreed that using mobile applications to learn languages came from positive perceptions, as long as the mobile application was convenient, provided prompt access to the materials that were being taught and allowed for effective communication and discussion of objectives.

Other studies similarly highlighted positive relationships among gender, age, and students' perceptions to use Mobile learning. Nikolopoulou (2018) study investigated secondary school students' perceptions regarding mobile device usage and mobile learning acceptance. A questionnaire was administered to 530 students aged 12–18 years old in Greece. Nikolopoulou found a relationship among the three variables (i.e., gender, age, mobile learning acceptance). The contradictions between the current study and the previous studies could be due to the particular type of technology and participant characteristics. Specifically, Nikolopoulou's study focused solely on 530 secondary school students of two public (state) schools in in Greece and participants were between 12–18 years old. However, in the current study, participants were educationally diverse including those pursuing bachelor, master, and doctoral degrees, and 23% were over 36 years of age. It is possible that difference in education level may have played a role in their attitude toward technology use. According to Wang, Wu, and Wang (2009), "gender, age has been found to be a demographic variable that, to a certain

extent, may influence the perception, adoption and use of technology among older and younger users" (p. 98). In their study it was expected that mobile apps would be less appealing to older students and that younger student, especially who have been brought up with technology, would be more comfortable and express less concerns when it comes to using technology and the Internet.

Although this study found that age and gender did not predict a user's attitude toward mobile application use when learning English vocabulary, more research is recommended to account for potentially confounding variables such as familiarity, comfortability with using a mobile device or application, and preconceived notions about how technology can be used in learning environments, including whether all participants have access to a functional mobile device and a working network.

Research Question 2

To what extent does gender moderate the relationship between (a) perceived usefulness and attitude toward using mobile applications to learn English vocabulary, and (b) perceived ease of use and attitude toward using mobile applications to learn English vocabulary?

To assess this assumption, several predictors applied (i.e., students' attitudes, usefulness, ease of use, gender, perceived usefulness × gender, perceived ease of use × gender) and were included in the multiple linear regression model to investigate whether gender moderated the relationship between usefulness, ease of use, and students' attitude to use of mobile applications to learn English vocabulary. The multiple linear regression model showed that the complete set of predictors did not statistically significantly predict students' attitude toward use of mobile applications to learn English vocabulary. Also, when moderating effects of gender were examined, no statistically significant moderating effects were detected in the relationship between usefulness / ease of use and the outcome variable (students' attitude). This finding is consistent with research studies conducted by Saghir (2018) and Hilao et al. (2018), both of whom examined international students studying a variety of educational fields in the United States, which is similar to the sample in the current study. Similar to the current study, both Saghir and Hilao et al. studies were based on TAM theory. Consistent with findings of the current study, Saghir found that gender did not have a moderating effect on the relationship between the three TAM constructs (i.e., perceived usefulness, perceived ease of use, and faculty members' behavioral intentions to use webinars). Likewise, such findings related to this research question are consistent with Hilao et al. also who found that gender had no moderating effect on the relationship between attitude and performance to use mobile phone.

There have been, however, studies that found gender to significantly moderate intention to use and attitude about technology use (Lee et al., 2013; Lewis et al, 2013). Examining the moderation effect of gender on participants' adoption of new technologies in higher education in the USA, Lee et al. (2013) found gender to moderate the effects of perceived usefulness and perceived ease of use, on behavioral intention to use technologies. In their study, the effect of both perceived usefulness and perceived ease of use on behavioral intention was slightly stronger for males. Similarly, Lewis et al. (2013) reported that gender did moderate the relationship between performance expectancy and effort expectancy as predictors, with behavioral intention as an outcome. The study indicated that performance expectancy and effort expectancy had greater effects for male teachers with regard to behavioral intention to use technology in classroom. Considering the discrepancy of these findings with the current study, such inconsistencies could relate to the types of research conducted, sampling characteristics, and cultural background of the participants. For example, participants in my study were Saudi students in the United States who varied in terms of age, technology proficiency and experience, and level of education (i.e., bachelor's, master's, doctoral seeking degrees). Participants in the Lewis et al.'s (2013) study were instructors majoring in business. Because of their background, it is possible that those participants had greater resources, knowledge, and skills related to technology proficiency compared to the participants in the current study whose academic major varied. Consequently, it is possible that such may have potentially affected perceived usefulness and attitude toward using mobile applications to learn English vocabulary, and perceived ease of use and attitude toward using mobile applications to learn English vocabulary.

Given differences in findings reported in published literature and the current study regarding gender as a moderator of attitude and perceptions about ease of using mobile applications to learn English vocabulary, additional research in this area is recommended. Although research has included gender as a demographic and descriptive variable related to technology use and attitude, it has not always been a main investigative focus of control. Consequently, future research should examine the role of gender, specifically and directly, within the problem statement, research questions, study purpose, procedure, and analysis is recommended for more critical attention. Additionally, it is recommended that future studies investigate the relationship of gender to mobile learning devices in particular rather than technology use in general (Lewis et al., 2013). As mentioned in research questions 1 and 2, the prevalence of mobile devices is unique and a subset of technology use. Both

should align with similar definitions to that of mobile devices. As demonstrated in the discussion of previously published studies, the researchers utilized operational definitions that differed when it came to mobile devices. It would stand to reason that a population is being studied by using the same device can aid in increasing any further validity or reliability of the data being collected.

XV. Limitations

The limitations of this research provide the foundation for future research to improve the understanding of factors potentially effecting student acceptance of mobile technology for learning. This research was conducted under certain assumptions and as a consequence is subject to the following limitations. The first limitation may have been the content of the survey tool (Davis, 1989) following translation from English to Arabic. Although this process underwent translation-back-translation to review and validated the Arabic version because some English words or terms are not directly translatable to Arabic, such translation may not have communicated the specific concept or idea as in the original English version. This process might have affected the meaning of certain survey items, which may have resulted in participants' misinterpretation thereby potentially resulting in a response that was different from their attitudes or perceptions.

A second study limitation was the small sample size. Large sample sizes coupled with considerable statistical power and effect sizes can yield more statistically significant results (Awuah, 2012). Because of the small sample size, this study may have missed important differences that actually existed. For example, there were fewer males in this study than is proportionate to Saudi Arabic female students in the United States. Consequently, a small sample size, particularly with regard to females, could affect the generalizability of this study to the population.

XVI. Implications

The current study provides findings about the moderation effect of gender on the relationship between perceived usefulness, perceived ease of use, and students' attitudes toward using mobile applications to learn English vocabulary. Hence, there are implications of this study that could benefit educational and corporate decision makers, instructional designers, and other institutions looking to incorporate mobile applications into the educational development of their stakeholders (e.g., students, educators). The results of this study are consistent with the notion that learning a foreign language via mobile technologies allows learners to have more freedom to control their own learning and have their teachers facilitate the processes of their learning. For instance, the findings of the current study showed that the mobile application is portable and allows participants to develop and practice daily learning habits. Mobile applications may positively add to student learning because with its ease of access vocabulary in the target language can be reviewed at any time. For example, mobile applications allow participants to search for vocabulary terms and obtain their meaning instantly. Implementing mobile applications in education activities could encourage students to access to additional materials and resources for improving their language learning skills. Finally, this research study can add to the body of literature in the area of using mobile devices to enhance instructional practice and student learning, particularly when learning a second language.

Recommendations for Future Research

There are recommendations for future research that should also be discussed, including replicating this study with a larger sample size. This appeared as a limitation in this study, as large sample sizes coupled with considerable statistical power are more likely to lead to statistically significant results (Awuah, 2012). Because of the small sample size, this study may have missed important differences that actually existed; therefore, this study should be replicated with a larger sample size. Additionally, future research could also concentrate on gender by itself, and from a qualitative perspective. The majority of research has focused on gender as a variable in conjunction with other factors such as age, educational setting, etc. Completing a qualitative study that focuses on gender and usefulness and ease of use on students' attitude when using a mobile application to learn English vocabulary. This will allow participants of both sexes to better describe their experiences and perceptions in greater detail, as they will answer open-ended questions and be in better control about what information to provide to the researcher (Creswell & Creswell, 2017).

Conclusion

The chapter also focused on determining the implications of the study. This study examined the influence of the TAM model's two predictors: usefulness and ease of use on students' attitude. the study found that (age and gender) did not statistically predict students' attitudes toward using mobile applications to learn English vocabulary. Similarly, gender and age had no statistical moderating effect on the relationship between any individual predictor and the outcome. This chapter discussed these findings in light of previous studies and presented the implications and recommendations for future studies followed by the limitations and conclusion.

REFERENCES

[1]. Agca, R. K., & Özdemir, S. (2013). Foreign language vocabulary learning with mobile technologies. *Procedia-Social and Behavioral Sciences*, *83*, 781-785.

[2]. Akin, A., & Seferoglu, G. (2004). Improving Learners' Vocabulary through Strategy Training and Recycling the Target Words.*Hacettepe University Journal of Education*, *27*, 1-10.

[3]. Al-Adwan, A. D A., & Smedley, J.E. (2013). Exploring students' acceptance of e- learning using mobile acceptance model in Jordanian universities. *International Journal of Education and Development using Information and Communication Technology (IJEDICT)*, *9*(2), 4-18.

[4]. Albaaly, E., & Higgins, S. (2012). The impact of interactive whiteboard technology on medical students' achievement in ESL essay writing: An early study in Egypt. *Language Learning Journal*, *40*(2), 207-222.

[5]. Al-Emran, M., Elsherif, H. M., & Shaalan, K. (2016) Investigating attitudes towards the use of mobile learning in higher education. Computers in Human Behavior, 56, 93-102

[6]. Al-Fahad, F. N. (2009). Students' attitudes and perceptions toward the effectiveness of mobile learning in King Saud University, Saudi Arabia. *Turkish Online Journal of Educational Technology*, *8*(2), 218-234.

[7]. Arıcı, N., & Bal, Y. (2011). Mobil Öğrenme Materyali Hazırlama Süreci. *International Journal of Informatics Technologies*, *4*(1), 7-12

[8]. Basoglu, E. B., & Akdemir, Ö. (2010). A comparison of undergraduate students' English vocabulary learning: Using mobile phones and flash cards. *Turkish Online Journal of Educational Technology*,*9*(3), 51-67.

[9]. Bower, M. & Hedberg, J. (2010). A quantitative multimodal discourse analysis of teaching and learning in a web-conferencing environment - the efficacy of student-centered learning designs. *Computers & Education*, *54*(2), 462-478.

[10]. Buchanan, T., Sainter, P., & Saunders, G. (2013). Factors affecting faculty use of learning technologies: Implications for models of technology adoption. *Journal of Computing in Higher Education*, *25*(1), 1-11.

[11]. Buxton, E.C., Burns, E.C. & De Muth, J.E. (2012). Instructional Design and Assessment: Professional Development Webinars for Pharmacists. *American Journal of Pharmaceutical Education*, *76*(8), 155.

[12]. Braul, B. (2006). *ESL teacher perceptions and attitudes toward using computer-assisted language learning (CALL): Recommendations for effective CALL practice.* Unpublished Master's thesis, University of Alberta, Edmonton, Alberta, Canada

[13]. Can, Z., Yildiz, O., Sahin, H., Turumtay, E. A., Silici, S., & Kolayli, S. (2015). An investigation of Turkish honeys: their physico-chemical properties, antioxidant capacities and phenolic profiles. Food Chemistry, 180, 133-141.

[14]. Chen, K. T. C. (2015). Exploring college students' usage experiences, perceptions and acceptance of mobile English learning in Taiwan. The International Technology Management Review, 5(4), 162-171. Chen, K. T. C. (2015). Exploring college students' usage experiences, perceptions and acceptance of mobile English learning in Taiwan. The International Technology Management Review, 5(4), 162-171.

[15]. Chen, K. T. C. (2015). Exploring college students' usage experiences, perceptions and acceptance of mobile English learning in Taiwan. *The International Technology Management Review*, *5*(4), 162-171.

[16]. Cole, M., & Miyake, N. (2006). Remembering Giyoo Hatano. *Journal of the Learning Sciences*, *15*(3), 429-430.

[17]. Creswell, J. W., & Clark, V. L. P. (2007). *Designing and conducting mixed methods research.* California: San Diego.

[18]. Education at a Glance. (2008). *OECD indicators.* Retrieved July 2, 2014, from http://www.uquebec.ca/observgo/fichiers/88022_4.pdf

[19]. Elyas, T., & Picard, M. (2010). Saudi Arabian educational history: Impacts on English language teaching. *Education, Business and Society: Contemporary Middle Eastern Issues*, *3*(2), 136-145.

[20]. Lee, C., Yeung, A. S., & Cheung, K. W. (2019). Learner perceptions versus technology usage: A study of adolescent English learners in Hong Kong secondary schools. Computers & Education, 133, 13-26.

[21]. 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), 22

[22]. Fabry, D. L. (2009). Designing online and on-ground courses to ensure comparability and consistency in meeting learning outcomes. *Quarterly Review of Distance Education*, *10*(3), 253.

[23]. Hilao, M. P., & Wichadee, S. (2017). Gender differences in mobile phone usage for language learning, attitude, and performance. Turkish Online Journal of Distance Education, 18(2), 68-79.
[24]. Hung, W., & Jeng, I. (2013). Factors influencing future educational technologists' intentions to participate in online teaching. British Journal of Educational Technology, 44(2), 255-272.
[25]. Gall, M. D., Gall, J. & Borg, W. (2007). *Educational research: An introduction* (8th Ed.). New Jersey: Pearson Publishing.
[26]. Iromuanya, C. (2012). *Novice teachers and their preparedness to integrate educational technology into the classroom (Doctoral dissertation).* Retrieved from ProQuest Dissertations and Theses database. (UMI No. 1508953)
[27]. Narayanasamy, F. S., & Mohamed, J. B. K. (2013). Adaptation of mobile learning in higher educational institutions of Saudi Arabia. *Age*, *18*(10), 3.
[28]. Nassuora, A. B. (2012). Students' acceptance of mobile learning for higher education in Saudi Arabia. *American Academic & Scholarly Research Journal*, 4(2), 24-30.
[29]. Nikolopoulou, K. (2018). Mobile learning usage and acceptance: perceptions of secondary school students. Journal of Computers in Education, 5(4), 499-519.
[30]. Omede, J., & Achor, E. (2015). Gender dimensions in the use of mobile phone SMS on note taking and comprehension of audio-taped lecture materials in Kogi State of Nigeria. *Research Journal of Educator, 1*(1), 8–14.
[31]. Oz, H. (2015). An Investigation of Preservice English Teachers' Perceptions of Mobile Assisted Language Learning. *English Language Teaching*, *8*(2), 22-34.
[32]. Park, S. (2009). An analysis of the Technology Acceptance Model in understanding university students' behavioural intention to use e-learning. *Education Technology & Society*, *12*(3), 150-162.
[33]. Radović-Marković, M. (2010). Advantages and disadvantages of e-learning in comparison to traditional forms of learning. *Annals of the University of Petrosani, Economics*, *10*(2), 289-298. Retrieved from http://upet.ro/annals/economics/pdf/2010/20100227.pdf
[34]. Reader, K. (2013). *Does equipping academic staff with a mobile device help them to better understand, prepare for and adopt mobile technologies in the classroom?* In World Conference on Educational Multimedia, Hypermedia and Telecommunications (Vol. 2013, No. 1, pp. 2239-2246).
[35]. Rose, D. M. (2012). *An examination of preferences for social presence in online courses with regard to personality type learning* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses Database. (UMI No. 3538128)
[36]. Saghir, A. (2018). Determinants related to faculty members' intention to use webinars for professional development purposes (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 3344745)
[37]. Shadiev, R., Hwang, W. Y., & Liu, T. Y. (2018). Investigating the effectiveness of a learning activity supported by a mobile multimedia learning system to enhance autonomous EFL learning in authentic contexts. Educational Technology Research and Development, 66(4), 893-912.
[38]. Sheikhi, M. E., & Al-Turki, M. S. (2012). Mobile learning adoption in Saudi Arabia. *World Academy of Science, Engineering and Technology, 69*, 356-358.
[39]. Stockwell, G. (2007). Vocabulary on the move: Investigating an intelligent mobile phone-based vocabulary tutor. *Computer Assisted Language Learning, 4*, 365-383.
[40]. Soleimani, E., Ismail, K., & Mustaffa, R. (2014). The acceptance of mobile assisted language learning (MALL) among post graduate ESL students in UKM. Procedia-Social and Behavioral Sciences, 118, 457-462.
[41]. Tabatabaei, O., & Goojani, A. (2012). The impact of text messaging on vocabulary learning of Iranian EFL learners. *Cross Cultural Communication, 8*(2), 47–55.
[42]. Tai, Y. (2012). Contextualizing a MALL: Practice design and evaluation. *Educational Technology & Society, 15*(2), 220–230.
[43]. Twarog, L. I., & Pereszlenyi-Pinter, M. (1988). Telephone-assisted language study at Ohio State University: A report. *Modern Language Journal*, *72*(4), 426-434.
[44]. Uzunboylu, H., & Ozdamli, F. (2011). Teacher perception for m-learning: Scale development and teachers' perceptions. *Journal of Computer Assisted Learning, 27*(6), 544-556
[45]. Warschauer, M. (1996). Computer assisted language learning: An introduction. In S. Fotos (Ed.), Multimedia language teaching (pp. 3-20). Tokyo: Logos International.
[46]. Warschauer, M., & Kern, R. (2000). *Network-based language teaching*: Concepts and practice: New York, NY: Cambridge University Press.
[47]. Warschaur, M., & Meskill, C. (2000). *Technology and second language teaching*. In J. W.Rosenthal (Ed.), Handbook of undergraduate second language education (pp. 303-318). Mahwah, NJ: Lawrence Erlbaum.

[48]. Waters, J. K. (2007). The universal language: The number of immigrant students in US schools has more than doubled in the past 15 years. in response. teachers are broadening their ESL programs with the one tool that translates in all dialects-computer technology. *Journal (Technological Horizons in Education)*, *34*(1), 34.

[49]. Westlund, O. (2010). Convergent mobile news media: Tranquility awaiting eruption? *Palabra Clave*, *13*(1), 99-110

[50]. Yoo, S. J., Huang, W. H., & Lee, D.Y. (2012). The impact of employee's perception of organizational climate on their technology acceptance toward e-learning in South Korea. *Knowledge Management & E-Learning: An International Journal*, *4*(3), 359-378.

[51]. Yousafzai, S. Y., Foxall, G. R., & Pallister, J. G. (2007). Technology acceptance: a meta-analysis of the TAM: Part 1. *Journal of Modelling in Management*, *2*(3), 251-280.

[52]. Zervas, P., & Sampson, D. G. (2014). Facilitating teachers' reuse of mobile assisted language learning resources using educational metadata. *IEEE Transactions on Learning Technologies*, *7*(1), 6-16. doi:10.1109/TLT.2013.39

[53]. Zoumenou, V., Sigman-Grant, M., Coleman, G., Malekian, F., Zee, J. M., Fountain, B. J., & Marsh, A. (2015). Identifying best practices for an interactive webinar. *Journal of Family & Consumer Sciences*, *107*(2), 62-69.