eefdergi
Cilt 19 Sayı 2 Erzincan Üniversitesi Eğitim Fakültesi Dergisi
e-ISSN 2148-7510
http://dergipark.gov.tr/erziefd
Doi numarası: 10.17556/erziefd.330085

Examining the Perceptions of Elementary Level EFL University Students Regarding the Use of Smartphones in Learning EFL Vocabulary*

Turgay HAN, Meriç GÜRLÜYER*****

Received date: 19.07.2016 **Accepted date:26.07.2017**

Abstract

Smartphones have undeniably taken a pivotal role in our daily lives. With their outstanding features, these smart devices have a highly varying application infrastructure. Considering language learning, the use of this application infrastructure has opened new doors of opportunities for both instructors and students. The aim of this 4 week-long study was to examine the impact made by the use of smartphones on the students' perceptions with regards to EFL vocabulary learning. A quasi-experimental research design was implemented to find the changes in the perceptions of the students. The results revealed that the use of smartphones can aid EFL vocabulary learning. Further, the students' perceptions were positive.

Keywords: EFL vocabulary learning, mobile application, smartphones, students' perceptions

**Ordu University, Faculty of Science and Letters, Department of English Language and Literature, Ordu, Turkey; turgayhan@yahoo.com.tr
***Ardahan University, Department of Foreign Languages, Ardahan, Turkey; mericgurluyer@ardahan.edu.tr

İngilizcede Başlangıç Düzeyindeki Üniversite Öğrencilerinin İngilizce Kelime Öğreniminde Akıllı Telefonların Kullanımına Yönelik Algılarının İncelenmesi *

Doi numarası: 10.17556/erziefd.330085

Turgay HAN **, Meriç GÜRLÜYER***

Geliş tarihi: 19.07.2016 **Kabul tarihi:26.07.2017**

Öz

Akıllı telefonlar, yadsınamayacak derecede günlük hayatımızda çok önemli bir rol almıştır. Öne çıkan özellikleri ile bu akıllı cihazlar son derece değişken bir uygulama altyapısına sahiptir. Dil öğrenimi göz önüne alındığında, bu uygulama altyapısının kullanılması hem eğitmenler hem de öğrenciler için yeni kapılar aralamıştır. Dört hafta süren bu çalışma, EFL kelime öğrenimi açısından akıllı telefonların kullanımının öğrencilerin algıları üzerindeki etkinliğini incelemeyi amaçlanmıştır. Öğrencilerin algılarındaki değişimlerin bulunması amacıyla yarı deneysel bir araştırma deseni uygulanmıştır. Elde edilen sonuçlar, akıllı telefonların kullanılmasının EFL kelime öğrenimine yardım edebileceğini göstermiştir. Ayrıca, öğrencilerin algıları olumludur.

Anahtar Kelimeler: Akıllı telefon, EFL kelime öğrenimi, mobil uygulama, öğrenci algısı

** Ordu University, Faculty of Science and Letters, Department of English Language and Literature, Ordu, Turkey; turgayhan@yahoo.com.tr
*** Ardahan University, Department of Foreign Languages, Ardahan, Turkey; mericgurluyer@ardahan.edu.tr

1. Introduction

Within educational research, smartphones are gradually emerging as a new educational environment (Woodcock, Middleton & Nortcliffe, 2012). Smartphones should not be considered only as a device for communication, they also enable people to share pictures, videos and audios for academic purposes. Several secondary schools and higher education institutions are now attempting to embrace the use of smartphones to enrich learning settings (Johnson, Becker, Freeman & Estrada, 2014; UNESCO, 2013). Developments in Information and Communication Technologies (ICT) have been put into use to remove classroom barriers, solving problems such as a lack of attention and of non-verbal cues in the process of learning and the difficulty of keeping learners in pace with their knowledge levels. Thus, with these developments, learners can overcome classroom barriers, recognize the existence of various learning pathways and explore and discover how to articulate the knowledge at their own level (Loveless, 2003). ICT can provide teachers with creative and interactive classes, thus improving student attendance and concentration (Ciroma, 2014). Especially, smartphones that include smart teaching applications such as smart-word placed on Android or IOS platforms may present learners with an important opportunity in terms of learning ubiquitously. The 3G and 4G generations of smartphones provide facilities that offer multiple features that increase the learners' enjoyment and activate their inner-drives to satisfy needs (Claudill, 2007).

There has been a dramatic shift from computers to mobile devices in terms of language learning and teaching over the last two decades. The prevalence and utilization of such devices has guided to Mobile Assisted Language Learning (MALL). MALL "differs from CALL from the point of its use of personal, portable devices that enable new ways of learning, emphasizing continuity or spontaneity of access across different contexts of use" (Kukulska, Hulme & Shields, 2008, p.273). On the grounds that learning through a smartphone is essentially unfamiliar in traditional classes, mobile learning has developed as a new field (Sharples, 2000). MALL has flourished in the promotion of students' language learning because of the availability of mobile technologies such as smartphones, PDAs and iPads. Several studies have put forward the importance of mobile devices in supporting language learning (Lan et al., 2007; Nah et al., 2008). MALL has led to the awareness that mobile devices establish a bridge from the formal acquisition of knowledge of the classroom environment to informal acquisition of knowledge outside the classroom (Kukulska-Hulme, 2009). Oblinger (2004) points out that learners that are digitally canalized expect mobility and permanent accessibility in the scope of learning. With MALL, students have the opportunity to reach quality instructional materials and make contact with their teachers and peers without limitations of time and place. Kukulska, Hulme and Pettit (2006) stated that the fact that mobile learning embraces more flexible arrangements than traditional classroom situations can be accepted as a key advantage of mobile learning. Students' inability to activate themselves in learning English in the stressful environment of the classroom may have a negative impact on their confidence and enthusiasm (Tuttle, 2013). Thus, smartphones seem to create an ideal environment supporting learning. They may provide private, stressless environments which enable unrestricted trials until learners feel confident.

It seems that several studies in the literature have tended to center the focus on using mobile devices particularly smartphones in vocabulary learning. However, until very recently, perceptions of MALL use in EFL vocabulary learning among undergraduate freshman students whose proficiency in English is at the elementary level have been less researched (Jalalifarahani, 2014; Liu, 2016; Mcconatha, Praul, & Lynch, 2008; Nalliveettil & Alenazi, 2016; Wu, 2015), indicating a need to understand the perceptions of this population towards mobile device use in vocabulary learning. This paper, therefore, sets out to examine students' perceptions towards

the use of mobile phones in vocabulary teaching. The following research questions guided this study:

1. To what extend do the perceptions of freshman students change after the EFL vocabulary learning through using smartphones experience?

2. How do the students feel about the learning experience with smartphones?

Literature Review

There are several studies in the literature investigating possible ways of integrating smartphones into schools regarding cognitive, affective and behavioral learning processes. The studies below were conducted with different means such as emails, SMS and game applications.

Smartphones present learners with circumstances that make self-directed learning possible and the removal of time and location limitations allows ubiquitous learning (Joiner, Nethercott, Hull & Reid, 2006). For instance, Huang, et al. (2012) examined the effectiveness of a ubiquitous English vocabulary learning (UEVL) system. The goal was to support students in the process of gaining vocabulary learning in which they learn vocabulary via mobile phones everywhere at the same time. In addition, video clips were used as material. The results showed that this learning system had a significant positive effect on the attitudes of all students.

Smartphones are devices that have the potential to involve students in significant learning activities wherever they are (Traxler, 2009). The features and functions of devices simplify content formation (Hartnell-Young, Vetere, 2008), provide students with more active, collaborative (Corbeil, 2007) and authentic forms of learning (Brown, 1996), and ease evaluation and reflection (Markett, Sanchez & Weber, 2006). In 2010, Wong and Looi explored vocabulary learning in terms of the authenticity of content creation and making meaning in a social way that was mobile-assisted. The study showed that student-generated vocabulary was closely connected to the daily lives of students. The study found that it was language learning by meaning-making through students' preposition-context or idiom-context associations and that the students were active and collaborative. Learners should encounter with the words and identify them while reading, writing, listening and speaking. This coincidence can further the progress of the formation of a permanent memory concerning the words (Hulstijn, 2001). In the course of time, after sufficient subjection, activation and familiarization begin to be comparatively automatic and that is one of the objectives of foreign language learners (Genesee, 2000). Therefore, mobile learning can be regarded as a well-designed learning system which fulfils these activation and familiarization ne-eds.

The literature on language learning has presented positive evaluation of SMS usage on smartphones in mobile learning. (Kennedy & Levy, 2008; Zhang, Song & Burston, 2011). In a study by Kennedy and Levy (2008), it was found that students were able to recognize the full implications of the message content prepared and sent by teachers, and benefited from the experience. Similarly, Lu (2008) examined how mobile phones can affect vocabulary learning via their SMS function. The results showed that students thought positively about learning vocabulary via smartphones. Students could identify more vocabulary after reading SMS (Short Message Service) lessons. In another study, Çavuş and İbrahim (2009) implemented a mobile device to examine the utilization of wireless technologies in acquiring knowledge of English words by using SMS. The results revealed that students stated positive attitudes when they learned new words via smartphones. In a similar study, Hayati, Jalilifar and Mashhadi (2011)

examined the function of SMS in terms of teaching English idioms. They concluded that SMS can be an appropriate tool in teaching and learning English idioms. Yousefzadeh (2012) investigated the advantageous side of collocation learning based on a mobile tool compared with traditional paper-based collocation learning and found that the mobile-based group accomplish remarkably better than the paper-based group. In the same year, Alemi, Sarab and Lari (2012) investigated the impact of SMS on the vocabulary learning of Iranian university students and retention. The researchers examined whether there was any difference between university students' retention of instructional vocabulary items presented with SMS and of those learned by using a hardcover dictionary. The research results confirmed the practicability of SMS in this regard. The results can be helpful and fruitful for language instructors and language institutions as it presents them with a readily accessible tool to support students while improving their theoretical or practical understanding vocabulary. In another study, Suwantarathip and Orawiwatnakul (2015) investigated the effectiveness of vocabulary exercises with mobile-assistance (SMS) over paper-based exercises in the process of vocabulary acquisition of first-year students and found that mobile-based vocabulary activities had a noteworthy influence on the vocabulary ability of the students.

Smartphones can be used in many ways in the learning and teaching of English. Chen and Chung (2007) carried out a study on a learning system of English vocabulary that was designed to meet individual requirements by putting English words into use which were appropriate to the learners. The research results showed that this sys-tem increased the efficiency and interest of students due to its effective processing. The following year, in 2008, Song and Fox examined the improvement level of undergraduate students and accelerate their English vocabulary learning while using a dictionary application in their mobiles. The results indicated that mobile devices can be utilized flexibly and in an extended way for EFL vocabulary learning in higher education, considering student needs and circumstances. In the same year, Saran, Cagiltay and Seferoglu (2008) showed that EFL learners presented positive attitudes to the advantages of smartphones in language learning and that they were pleased to use educational materials such as vocabulary applications on their smartphones. The results revealed that the applications on smartphones boost the gaining of vocabulary. In 2009, these researchers examined the importance of mobile-based language learning in terms of English pronunciation and investigated the effectiveness of using multimedia messages via smartphones to boost learners' pronunciation of words. The study revealed that using smartphones affected students' learning process positively in terms of pronunciation. This study suggested that using smartphones in educational settings may help learners, as these devices are considered to be a motivational tool, enabling teachers to handle the difficulties of motivating their students to start studying.

In addition, some studies regarding the use of smartphones to access the Internet (Madden et al., 2013) and use text messaging (Lenhart, 2012; Plester, Wood, & Joshi, 2009; Santos & Ali, 2012; Thomas & Orthober, 2011) have demonstrated encouraging results for educational environments. Tasks that are performed by the learners together, involving simultaneous interaction with each other increase both the effect of group learning and the quality of this reciprocal action in the process of learning of the language (Lan, Sung, & Chang, 2007). Therefore, the use of mobile devices is beneficial in terms of collaborative learning (Chuang, 2015). The existence of several sources that include a rich seam of information, particularly internet resources and computer-based connection between people, boosts the development of learning, thus allowing constructive learning (Akhras & Self, 2002).

Constructivism is related to modern advances in technology. Constructivism and technology have a close relationship, as the former points out that learning occurs in contexts, while the latter applies to the engagement of learners in the designs and environments. In this respect, as

Gee (2007) put forward, technological advances in smartphones have provided learners with easier and more useful methods, and therefore have given rise to more profound EFL vocabulary learning. For instance, Hasegawa, Koshino and Ban (2015) investigated the effectiveness of an application in terms of English vocabulary learning to maintain the learner's motivation by the application of typical elements of game playing and intelligent techniques using the characteristics of smartphones. In another study, Lankshear and Knoble (2011) argued that motives in people such as creativity result in the movement and expansion of learning settings from the classroom into the outdoors. Outside the classroom, learners can have several e-books related to the English language such as novels, stories and poetry in their smartphones (Taleb & Sohrabi, 2012). In this case, the learners benefit from these e-books to maximize their knowledge about English language use. On the other hand, Wu (2015) investigated the design and effectiveness of a smartphone application to teach and learn EFL vocabulary. The application was also examined from the pedagogical aspect in a natural environment for teaching/learning vocabulary. The study showed that smartphones are influential tools in learning English vocabulary from the aspects of convenience, accessibility and technological functions. In the same year, Wu (2015) explored the impact of smartphones as a learning tool in gaining English vocabulary naturally. The hypothesis was that the participants with an application installed on their smartphones might have more incidental encounters with a certain set of vocabulary due to its ubiquitous availability at any time. The study showed a significant result from the aspects of suitability and accessibility; the other aspect was the technological functions in the application that made the skills of learning, testing and reviewing simple. In the following year, Huang, Yang, Chiang and Su (2016) developed a plan that comprised of 5-phase vocabulary learning and used a mobile learning tool in an environment of situational English vocabulary learning and specified the effectiveness of this plan on the learning motivation and performance of EFL students. The research results revealed that both the motivation and the learning performance of the students using 5-step vocabulary learning with a mobile learning tool were higher than those of students with the same plan but traditional learning tools.

As for the Turkish context, there are some studies which are related to the mobile learning of EFL vocabulary. Başoğlu and Akdemir (2010) examined the use of vocabulary learning programs in smartphones in terms of learning of English vocabulary. The results showed that using smartphones can be more effective as a vocabulary learning tool. In another study, Çelik (2013) conducted a study to de-fine the perceptions and views of Turkish university-level EFL instructors by investigating the relationship between the internet and pedagogical purpose. The results revealed that while the use of the inter-net by EFL instructors is intensive and leads to positive perceptions regarding their teaching, improvements need to be made through professional programs focused on internet assistance in language learning and teaching. In 2015, Çakir examined the use of smartphones in a context where English was utilized as a tool to instruct by prospective teachers. The results of the study indicated that the participants perceived the use of smartphones positively for educational purposes when they became teachers of English. In 2016, Başal et al investigated the effectiveness of WhatsApp, a mobile application, in learning figurative idioms from the Michigan Corpus of Academic Spoken English (MICASE). The results revealed that the participants in the experimental group scored significantly higher, indicating the effectiveness of mobile application on vocabulary learning. Recently, a study by Han and Keskin (2016) examined the effects of using WhatsApp activities in EFL speaking classes on alleviating foreign language speaking anxiety (FLSA). The results indicated a significant reduction in the anxiety levels of the students.

As these studies reveal, mobile language learning has arrived at a point where it is beginning to move out of the classroom and into the real world, enabling learners to have several opportunities in terms of learning and being taught languages anywhere and anytime. Through smartphones, creating an appropriate learning environment for learners has become a reality.

However, there is obviously still the lack of inclination to try out new mobile technologies. Activities may last longer on smartphones in comparison with traditional methods. Nonetheless, this situation does not necessarily reduce the value of smartphones in terms of their usefulness. Learners can take advantage of various vocabulary applications in smartphones, enabling them to boost their vocabulary knowledge based on their individual needs.

2. Methodology

2.1. Research Design

This study was conducted with a quasi-experimental design to investigate Turkish undergraduate level students' perceptions of MALL use in EFL vocabulary learning. The participants took English classes for two hours during a week. Before the study, the main aim of the research was meticulously described to the participants. For four weeks, they used a mobile vocabulary application both inside and out-side the classroom and had the opportunity to tap the screen to listen to the pronunciations of the words time and again. In this sense, target vocabulary was selected and incorporated into the smartphone application. At the beginning of the study, the researcher checked whether the learners had smartphones. It was seen that all students had smartphones and spent most of their time using these devices for different aims. Before the use of the application, a pre-test (the same items as for the post-test) was administered to investigate the perceptions of the participants towards smartphones. Later, orientation on how to use the application was provided to eliminate any novice effect and the students were asked to participate in the experiment. For four weeks, a set of 120 elementary level word-items -30 words for each week- was presented to students. Then, at the end of the experiment, the students completed the same questionnaire as the post-test. The aim was to compare students' perceptions towards the usage of smartphone in learning EFL vocabulary before and after the experience. Finally, five open-ended questions were directed to the students, after the post-test, to learn more about their experiences.

2.2. Participants

The participants were selected from the Faculty of Economics and Administrative Sciences at a state university in Turkey by adopting a purposive convenience sampling strategy. The number of participants was 49 (20 males and 29 females). Their ages ranged between 18 and 24. All the students were from the first year at the university.

Table 1 and Table 2 show demographic information regarding the participants.

Table 1 Demographic information regarding the participants

		Age Ranges					Age
		18-19	20-21	22-23	24-25	Total	Percent
Genders	Female	12	13	2	2	29	59,2
	Male	4	12	4	0	20	40,8
Total		16	25	6	2	49	100

Table 1 shows that the proportion of female participants was higher than that of males. The age-profile of the majority of the participants lay in the 20 to 21 band. The age profile with the highest number of participants is between 18 and 19. The rest of the participants are 22 and over, and constitute the minority.

Table 2 : Frequency and percentage of daily usage of smartphone and usage of smartphone while learning English

	Never		Rarely		Sometimes		Often		Always		Total	
	f	%	f	%	f	%	f	%	f	%	f	%
How often do you use your smartphone in daily life?	1	2.0			5	10.2	34	69.4	9	18.4	49	100
How often do you use your smartphone while learning English?	14	28.6	12	24.5	13	26.5	9	18.4	1	2.0	49	100

Table 2 shows that a high percentage of the participants “often” use their smartphones. Those who describe their smartphone use as “sometimes” or “always” form more than one quarter of the population. Only one participant is seen as “never” using a smartphone. As regards the frequency of the use of a smartphone in learning English, nearly half of the participants use their smartphone “either rarely or never”. While one quarter “sometimes” use their smartphones for learning English, only 20% of the population can be regarded as active users of a smartphone.

2.3. Data Collection

2.3.1. Data Collection Tools

The questionnaire was adapted from the study of Çavus and İbrahim (2009) and included 15 items. The content validity was evaluated by educational application, assessment and measurement experts from the field of education, and the results were found acceptable. The same questionnaire was utilized in both the pre-test and the post-test process. Reliability is defined in terms of the degree of consistency of the measures. Cronbach’s Alpha presents a value range from .0 to + 1.0. Higher values introduce a higher degree of consistency. The value of Cronbach's Alpha here is .881. This value is regarded as a high in terms of reliability. Students were asked to complete the questionnaire at the end of the process to determine their final perceptions regarding the use of the smartphone. The 15 items were given in L1, in the form of 5-point Likert scale type questions (5 = strongly disagree and 1 = strongly agree). Each question was put into a particular form of words so that strongly agree represents a positive response to the items. The questionnaire results were analyzed with SPSS. Further, a data collection tool including open-ended questions was utilized together with the post-test, providing a deeper understanding of the participants’ perceptions towards the use of smartphones as an educational tool.

2.3.2. About the Application: “Busuu”

In the application, pictures related to each word are shown; each word is pronounced; gapfill and matching questions are completed to check and achieve retention. The application opens with the section “A1, Level 1, Beginner English”, which includes various units such as greetings, emotions and foods. The next step in the application is to look at the word on the screen, to listen to its pronunciation and to recognize it from the picture near the word. Subsequently, mixed words are given in the target language with a certain picture demanding a certain English word; above this picture is the translation of this word in Turkish. Learners, in this phase, are required to choose the correct word from mixed ones. Finally, students have to write a certain

part of a phrase, two-words or a sentence via a keyboard on the screen. Each correct answer is scored. A gapfill exercise is placed at the end of every unit. During the courses, the students began to attend to the first step of elementary vocabulary section in the application. In the classes at the faculty, 20 minutes were allowed to students to use the application. Participants had the opportunity to use the application outside the classroom. In using the application, on the one hand, they practiced the new words and their pronunciations, and on the other, the meanings of the words on the screen were in their mother tongue and second language as well. (See Appendix A)

2.4. Results

A series of descriptive and non-parametric analyses were used to interpret the data.

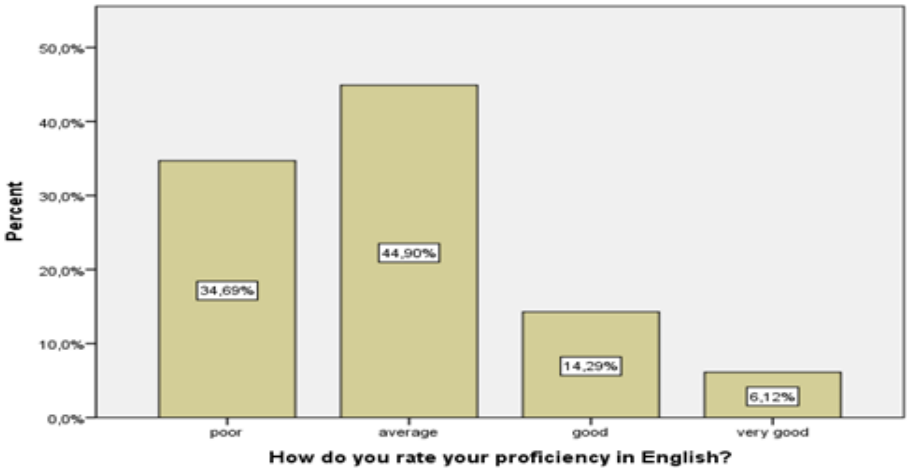

Figure 1: *How do you rate your proficiency in English?*

Figure 1 indicates that over 40% of the participants rate their proficiency as average. Nearly one-third of the participants point out that they are poor at English. On the other hand, those who consider themselves to have a good or very good level of proficiency in English constitute a minority of the population.

Table 3 : Descriptive Statistics of Questionnaire Items

	Pre-test Results				**Post-test Results**			
	N	M	Std.	Variance	N	M	Std.	Variance
1. I found the smartphone enjoyable.	49	4.12	.75	.57	49	4.41	.54	.29
2. I think all my friends who used the smartphone are happy about it.	49	3.96	.93	.87	49	4.27	.76	.57
3. I can recall the words without difficulty that I received on my smartphone.	49	3.63	.97	.95	49	4.00	0.79	.63
4. The words I learned with the smartphone have promoted my vocabulary.	49	3.65	.99	.98	49	4.16	.62	.39
5. I would like a similar system to be used in all of my other lessons.	49	3.63	1.09	1.20	49	4.22	,87	.76

6. With the help of smartphone, I learned new words easily.	49	3.73	1.06	1.12	49	4.27	.60	.37
7. Smartphone helped me correct the meanings of words I knew wrongly.	49	3.88	1.09	1.19	49	4.39	.73	.53
8. Using the current technology with the smartphone has provided me with a motive.	49	3.90	.98	.97	49	4.31	.65	.43
9. Utilizing a new learning tool has motivated me	49	4.00	.91	.83	49	4.33	.75	.56
10. As I am very occupied during class hours, learning new words becomes more difficult for me. However, I can learn and remember new words easier during my leisure time.	49	3.76	1.11	1.23	49	4.16	.80	.64
11. It would be nice if the smartphone supported "searching" in terms of searching for a new word	49	4.14	.96	.92	49	4.43	.74	.54
12. It would have been more effective if I could use two-way communication with the smartphone	49	4.04	.93	.87	49	4.27	.76	.57
13. I would prefer to see the words' pronunciation in a written form	49	4.08	.89	.79	49	4.27	.76	.57
14. I would like to see the smartphone to be used in every semester.	49	3.76	.85	.73	49	4.00	.76	.58
15. I found learning new words with the smartphone very effective.	49	3.76	1.01	1.02	49	4.43	.71	.50

Table 3 shows the descriptive statistical results of the items in the questionnaire in the pre and post-tests. The results reveal that the mean scores in the post-test are relatively much higher than those in the pre-test. Items 4#, 5#, 6#, 7#, 8#, 10# and 15# show a remarkable change in this sense. According to Bland and Altman (1996), if there is a low standard deviation, this shows that the data have a certain close characteristic to the mean; however, in the case of a high standard deviation, identifiable elements in a data set are spread out on values in a wide range. Standard deviations are low on the table, which indicates that all of the participants in the post-test have much the same responses. Their ideas for each item have become similar to one another. Compared to those in the pre-test, the mean scores in the post-test indicate a positive approach towards MALL use in EFL vocabulary learning.

Table 4: Mann-Whitney U-Test results of pre and post- test by gender

	Gender	N	Mean Rank	Sum of Ranks	U	P
Pre-test	Female	29	26.47	767.5		
	Male	20	22.88	457.5	247.5	.387
	Total	49				
Post-test	Female	29	29.31	850		
	Male	20	18.75	375	165	.011
	Total	49				

Table 4 shows the results of the Mann-Whitney U–Test conducted to determine whether there was any significant difference between the results of the pre-test and those of the post-test by gender. A statistically significant difference was found in the post-test results in terms of gender.

Table 5 : One-Way ANOVA results of pre-test and post-test

		How often do you use your smartphone while learning English?					*How do you rate your proficiency in English ?*				
		Sum of Squares	df	MS	F	Sig.	Sum of Squars	df	MS	F	Sig
Pre-test total	Between Groups	50.32	4	12.58	.14	.97	200.83	3	66.94	.81	.50
	Within Groups	3891.60	44	88.45			3741.09	45	83.14		
	Total	3941.92	48				3941.92	48			
Post-test total	Between Groups	72.56	4	18,14	.39	.82	291.64	3	97.21	2.36	.08
	Within Groups	2073.93	44	47.14			1854.86	45	41.22		
	Total	2146.49	48				2146.49	48			

Table 5 shows that there is a slight difference about the use of a smartphone by the participants while learning English. It can be seen that the participants' use of a smartphone while learning English has increased to a small degree. On the other hand, on the table, the participants' rating of their proficiency in English has increased significantly. This result indicates that the ideas of the participants about their proficiency in English have substantially changed.

Table 6 : Wilcoxon Signed Rank results for difference between pre-test and post-test total points

		N	Mean Rank	Sum of Ranks	Z*	p
Post-test total – Pre-test total	Negative Ranks	9[a]	21.83	196.50		
	Positive Ranks	38[b]	24.51	931.50	3.892	.000
	Ties	2[c]				
	Total	49				

* Based on negative ranks.

postotal < pretotal

postotal > pretotal

postotal = pretotal

Table 6 demonstrates the results of the Wilcoxon Signed Rank test which was carried out to establish exactly whether there was any significant difference between the pre-test and post-

test. According to the results, MALL use in EFL vocabulary learning significantly impacted Turkish undergraduate level students' perceptions ($z = -3{,}892$, $p < 0.05$). The use of smartphones can be considered as effective for these students in terms of their perception of vocabulary learning.

2.4.1. Results of Qualitative Data Analysis

This section presents an exploration of the open-ended questions answered by the participants to determine their attitudes towards smartphones in terms of learning of words. The data collected through open-ended questions from 49 participants were analyzed qualitatively to support the quantitative data. After the procedure of reporting, the data were interpreted as follows:

The idea of using the smartphone application as an educational tool

The participants stated that the use of the smartphone application as an educational tool made their learning process more practical. All of them could find any subject relating to their course lessons wherever they were. For learning English, the majority of them could study and memorize words easily through their smartphones. Therefore, nearly all of the participants thought that smartphones were efficient, convenient and fruitful, and presented an environment in which they could improve and learn new dimensions of their present knowledge.

The advantages of smartphone application as an educational tool

The majority of the participants pointed out that the application with its great advantages increased their belief in vocabulary learning through a mobile device. The participants, in general, stated that it had presented them with a great opportunity of learning new vocabulary anytime and anywhere. They could save time thanks to the smartphone application while learning EFL vocabulary. With the help of the pictures in the application, they could increase the retention of vocabulary in their memory. The following excerpts from the student responses to the open-ended questions were translated by the researchers of this study.

Özge: "*I think that this smartphone application will provide more stable vocabulary knowledge. Without using any pencil, paper or book, I can learn anything via my smartphone*."

Meltem: "*I recognized that I saved a lot of time while using my smartphone in learning EFL vocabulary. I could reach more resources for English without any time limitation*."

The disadvantages of smartphone application as an educational tool

Some of the participants remarked that there were certain limitations. These include small screen size, limited battery life and limited memory size. Some others indicated that a dependence on technology might occur and their connection with the social life around them might be interrupted.

Ceren: "Actually I do not see any disadvantage, however, a technology dependence may emerge. "

The effects of using the smartphone application as an educational tool on learning

The majority of the participants thought that the use of the smartphone application provided convenience while studying EFL vocabulary. They could reinforce what they learned at various times. Several of the participants drew attention to the fact that they used the words which they learned through their smartphones in the dialogues, hence their vocabulary knowledge becomes permanent by repeating.

Eren: "*I have the opportunity to read the words in my smartphone and to remember them later. I confront with the words I studied in the application and quickly I understand them. I can improve my pronunciation with the sounds of words in the application and I con-sider it possible to bring more words together to make a sentence*."

The majority of the participants expressed the view that many more applications for learning EFL vocabulary and grammar should be used in the course lessons. Some of the participants pointed out that they wished to watch videos and see dialogues related to vocabulary.

4. Discussion and Conclusion

EFL vocabulary learning has widely been considered a pivotal factor in building a strong knowledge of English language. Baker, Simmons and Kameenui (1995) argued that when the meanings of words are taught directly, this does not efficiently fill the gap in students' poor knowledge of vocabulary, as the size of the gap is at a higher level. Therefore, it can be argued that students should acquire vocabulary using different techniques and methods in various dimensions (Baker et al., 1995). In this context, in the current study, the results showed that there were significant differences between the pre-test and post-test perceptions of the participants towards the use of a smartphone application for vocabulary learning as a different technique. As the participants always have their smartphones on them, they adopt these devices to learn vocabulary more readily and familiarly (Stockwell, 2010; Zhang et al., 2011).

In regards to the first and second research question, the use of smartphones was found to generate positive perceptions and feelings in freshman EFL students in terms of EFL vocabulary learning. In other words, it can be considered that the participants found EFL vocabulary learning through smartphones effective, practical and enjoyable. As Table 3 above shows, the descriptive statistical results for the items in the questionnaire in the pre and post-tests reveal that the mean scores in the post-test are relatively much higher than those in the pre-test. Especially, items 4#, 5#, 6#, 7#, 8#, 10# and 15# present a remarkable change from this aspect. Liu and Chu (2010) indicated that ubiquitous technology can both present students with circumstances that make language learning possible and allow them to participate in entertaining experiences while learning languages. Thus, this presents an important consideration for the instructors who plan to make use of smartphones in their classes. The research findings suggest that the Turkish undergraduate level students perceived the potential benefits and eventual contributions that smartphones might represent for EFL vocabulary learning.

As Chang, Chen and Hsu (2011) asserted, students' perception toward the use of smartphones can serve a crucial function in establishing exactly the effect of this technological device for educational aims. In accordance with the results of a study by Steel (2012), this study showed that the participants recognized the worth of the flexibility and suitability of using a smartphone to satisfy their needs for EFL vocabulary learning. Having mobility and accessibility, a smartphone application may be more appealing than a paper word list, and language learners today are more accustomed to smartphones (Al-Hinnawi, 2012).

Technology dominates people' lives to a great extent in modern times. After the invention of the smartphone, it has quickly and inevitably become an essential part of life. With the continual development, the smartphone now carries several functions of the computer. Therefore, the younger generation spends a considerable proportion of its time on this device. When considered from this point of view, mobile-assisted language learning presents several remarkable benefits by using a smartphone as a learning tool (Abbasi & Hashemi, 2013; Mehta, 2012; Muhammed, 2014; Rahimi & Miri, 2014). One of them is that learners have the opportunity to learn, study and promote their EFL vocabulary knowledge without any limitations of time and space. The focus of this study is on assessing undergraduate level

students' perceptions of MALL use in EFL vocabulary learning. The research findings revealed that the use of smartphones can be considered to have a positive effect regarding the perceptions and feelings of freshman EFL students in terms of learning EFL vocabulary. These results emphasized the impact of MALL and highlighted its features. Moreover, the study showed that the students indicated their desire to utilize smartphone applications for learning vocabulary as this is facilitated by mobility, accessibility and convenience of these devices. It can be inferred that the use of smartphone may promote EFL vocabulary acquisition.

In the study, there are two limitations. First, the study lasted for four weeks, limiting the time to define all aspects the students' ref-lection on their knowledge of vocabulary. Second, due to the small size of the population, the results of the study may not be generalized. Several more studies are therefore needed to measure the effects of smartphone applications on learners' perceptions in more depth and detail.

REFERENCES

Abbasi, M. & Hashemi, M., (2013). The impact/s of using mobile phone on English language vocabulary retention. *International Research Journal of Applied and Basic Sciences, 4*(3):541-547.

Alemi, M., Sarab, M. R. A., & Lari, Z. (2012). Successful learning of academic word list via MALL: Mobile Assisted Language Learning. International Education Studies, 5(6), 99-109. http://dx.doi.org/10.5539/ies.v5n6p99

Akhras, F. & Self, J. (2002). Beyond intelligent tutoring systems: Situations, interactions, processes and affordances. *Instructional Science, 30*, 1-30. http://dx.doi.org/10.1023/A:1013544300305

Al-Hinnawi, A. N. (2012). The effect of the graphic organizer strategy on university students' English vocabulary building. *English Language Teaching, 5*(12), 62-69. http://dx.doi.org/10.5539/elt.v5n12p62

Altman D.G. & Bland J.M. (1996). Detecting skewness from summary information. *British Medical journal,* 313 (7066), 1200. http://dx.doi.org/10.1136/bmj.313.7066.1200

Baker, S. K., Simmons, D. C., and & Kameenui, E. J. (1995). Vocabulary Acquisition: Synthesis of the research (Technical Rep. No. 13). Eugene: University of Oregon National Center to improve the tools of educators, College of Education, University of Oregon.

Basal, A., Yilmaz, S., Tanrıverdi, A., & Sari, L. (2016). Effectiveness of Mobile Applications in Vocabulary Teaching. *Contemporary Educational Technology, 7*(1), 47-59.

Basoglu, E. B. & Akdemir, O. (2010). A comparison of undergraduate students' English vocabulary learning: Using mobile phones and flash cards. *Turkish Online Journal of Educational Technology-TOJET, 9*(3), 1-7.

Brown, D. (1996). Kids, computers and constructivism. *Journal of Instructional Psychology, 23* (3), 189- 196.

Cavus, N., & Ibrahim, D. (2009). M-Learning: An experiment in using SMS to support learning new English language words. *British Journal of Educational Technology, 40*(1), 78-91. http://dx.doi.org/10.1111/j.1467-8535.2007.00801.x

Cakir, I. (2015). Opinions and Attitudes of Prospective Teachers for the Use of Mobile Phones in Foreign Language Learning. *Contemporary Educational Technology,* 6(3), 239-255

Celik, S. (2013). Internet-assisted technologies for English language teaching in Turkish universities. *Computer Assisted Language Learning, 26*(5), 468-483

Chen, C. M. & Chung, C. J. (2008). Personalized mobile English vocabulary learning system based on item response theory and learning memory cycle. *Computers & Education, 51,* 624-645. http://dx.doi.org/10.1016/j.compedu.2007.06.011

Ciroma, Z. I. (2014). ICT and education: issues and challenges. *Mediterranean Journal of Social Sciences, 5*(26), 98-100. http://dx.doi.org/10.5901/mjss.2014.v5n26p98

Chang, C. S., Chen, T. S., & Hsu, W. H. (2011). The study on integrating WebQuest with mobile learning for environmental education. *Computers & Education*, 57-(1), 1228–1239

Chuang, Y. T. (2015). SSCLS: a smartphone-supported collaborative learning system. *Telematics Inform, 32*-(3), 463–474. http://dx.doi.org/10.1016/j.tele.2014.10.004

Claudill, J. (2007). The growth of M-learning and the growth of mobile computing: parallel developments. *The International Review of Research in Open and Distance Learning, 8*(2), 1-13.

Corbeil, M. E. (2007). Are you ready for mobile learning? *EDUCAUSE Quarterly, 30*(2), 51-58.

Gee, J. P. (2007). What Video Games Have to Teach Us About Learning and Literacy. NewYork: PalgraveMacMillan.

Genesee, F. (2000) Brain research: Implications for second language learning. ERIC Digest. EDO-FL-00-12. Retrieved from http://escholarship.org/uc/item/58n560k4

Han, T. & Keskin, F. (2016). Using a mobile application (WhatsApp) to reduce EFL speaking anxiety. *Gist Education and Learning Research Journal*, 12, 29-50.

Hartnell-Young, E., & Vetere, F. (2008). A means of personalizing learning: Incorporating old and new literacies in the curriculum with mobile phones. *Curriculum Journal, 19*(4), 283-292. http://dx.doi.org/10.1080/09585170802509872

Hasegawa, T., Koshino, M. & Ban, H. (2015). An English vocabulary learning support system for the learner's sustainable motivation. *SpringerPlus, 4,* 99. DOI: 10.1186/s40064-015-0792-2. http://dx.doi.org/10.1186/s40064-015-0792-2

Hayati, A., Jalilifar, A., & Mashhadi, A. (2013). Using Short Message Service (SMS) to teach English idioms to EFL students. *British Journal of Educational Technology, 44*(1), 66-81. http://dx.doi.org/10.1111/j.1467-8535.2011.01260.x

Huang, C. S. J., Yang, S. J. H., Chiang, T. H. C., & Su, A. Y. S. (2016). Effects of situated mobile learning approach on learning motivation and performance of EFL students. *Educational Technology & Society, 19* (1), 263-276.

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. useful-ness/ease-of-use. *Computers & Education, 58,* 273-282. http://dx.doi.org/10.1016/j.compedu.2011.08.008

Hulstijn, J. H. (2001). *Intentional and incidental second language vocabulary learning: a reappraisal of elaboration, rehearsal and automaticity*. In Cognition and Second Language Instruction (ed P. Robinson), pp. 258–286. Cambridge University Press, Cambridge. http://dx.doi.org/10.1017/CBO9781139524780.011

Jalalifarahani, M. (2014). Learning vocabulary via mobile phone. *International Journal of Information Technology & Computer Science*, 14(2), 26-29. Retrieved from http://ijitcs.com/volume%2014_No_2/Maryam.pdf

Johnson, L., Adams Becker, S., Estrada, V., & Freeman, A. (2014). *NMC horizon report: 2014 higher education edition.* Austin, Texas: The New Media Consortium.

Joiner, R., Nethercott, J., Hull, R., & Reid, J. (2006). Designing educational experiences using ubiquitous technology. *Computers in Human Behavior, 22*(1), 67-76. http://dx.doi.org/10.1016/j.chb.2005.01.001

Kennedy C. &, Levy M. (2008). L'italiano al telefonino: Using SMS to support beginners' language learning. *ReCALL, 20*(3), 315-330. http://dx.doi.org/10.1017/S0958344008000530

Kukulska-Hulme, A., (2009). Will mobile learning change language learning? *ReCALL, 21*(2), 157-165. http://dx.doi.org/10.1017/S0958344009000202

Kukulska-Hulme, A., & Pettit, J. (2006) *Practitioners as innovators: Emergent practice in personal mobile teaching, learning, work and leisure.* Paper presented at Mlearn'06 conference, Banff, Canada, 23-25 October 2006.

Kukulska-Hulme, A., & Shield, L. (2008). An overview of mobile assisted language learning: from content delivery to supported collaboration and interaction. *ReCALL, 20*(3), 271-289. http://dx.doi.org/10.1017/S0958344008000335

Lan, Y. J., Sung, Y. T., & Chang, K. E. (2007). A mobile-device-supported peer-assisted learning system for collaborative early EFL reading. *Language Learning & Technology, 11*(3), 130-151.

Lankshear, C., & Knobel, M. (2011). *New literacies.* New YorkK: McGraw Hill.

Lenhart, A. (2012). Teens, smartphones and texting. PewResearch Center Internet & American Life Project. Retrieved from http://www.pewinternet.org/Reports/2012/Teens-and-smartphones.aspx.

Loveless, A. (2003). Making a difference? An evaluation of professional knowledge and pedagogy in art and ICT. *Journal of Art and Design Education, 22*(2), 145-154. http://dx.doi.org/10.1111/1468-5949.00350

Lu, M. (2008). Effectiveness of vocabulary learning via mobile phone. *Journal of Computer Assisted Learning, 24,* 515-525. http://dx.doi.org/10.1111/j.1365-2729.2008.00289.x

Liu, P. L. (2016). Mobile English vocabulary learning based on concept- mapping strategy. *Language Learning & Technology*, 20 (1), 128–140. Retrieved from http://llt.msu.edu/issues/october2016/liu.pdf

Liu, T. Y., & Chu, Y. L. (2010). Using ubiquitous games in an English listening and speaking course: impact on learning outcomes and motivation. *Computers & Education, 55*(2), 630–643. http://dx.doi.org/10.1016/j.compedu.2010.02.023

Madden, M., Lenhart, A., Cortesi, S., Gasser, U., Duggan, M., Smith, A., et al. (2013). *Teens, social media, and privacy*. Berkman Center for Internet & Society. Retrieved from http://pewinternet.org/Reports/2013/Teens-Social-Media-And-Privacy.aspx.

Markett, C., Sanchez, I. A., & Weber, S. (2006). Using short message service to encourage interactivity in the classroom. *Computers and Education, 46,* 280-293. http://dx.doi.org/10.1016/j.compedu.2005.11.014

Mcconatha, T., Praul, M., & Lynch, M. J. (2008). Mobile learning in higher education: An empirical assessment of a new educatıonal tool. *TOJET*, 7(3), 15-21.

Mehta N. K. (2012). Mobile phone technology in English teaching: Causes and concerns. *The Modern Journal of Applied Linguistics, 2*(4), 82-92.

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, 104-108. doi: 10.1016/j.sbspro.2014.05.297. http://dx.doi.org/10.1016/j.sbspro.2014.05.297

Nah, K. C., White, P., & Sussex, R., (2008). The potential of using a mobile phone to access the Internet for learning EFL listening skills within a Korean context. *ReCALL*, 20, 331-347 doi:10.1017/S0958344008000633

Nalliveettil, G. M., & Alenazi, T. H. (2016). The impact of mobile phones on English language learning: Perceptions of EFL undergraduates. *Journal of Language Teaching and Research*, 11(2), 264-272. doi: http://dx.doi.org/10.17507/jltr.0702.04

Oblinger, D.G. (2004). The next generation of educational engagement. *Journal of Interactive Media in Education*, 2004 (8), 1-18. DOI:http://doi.org/10.5334/2004-8-oblinger

Plester, B., Wood, C. and Joshi, P. (2009). Exploring the relationship between children's knowledge of text message abbreviations and school literacy outcomes. *British Journal of Developmental Psychology*, 27, 145–161. doi:10.1348/026151008X320507

Rahimi, M., & Miri, S.S. (2014). The impact of mobile dictionary use on language learning. *Procedia - Social and Behavioral Sciences, 98*, 1469-1474. doi: 10.1016/j.sbspro.2014.03.567 http://dx.doi.org/10.1016/j.sbspro.2014.03.567

Santos, I. M., & Ali, N. (2012). Exploring the uses of mobile phones to support informal learning. *Education and Information Technologies*, 17, 187-203. doi:10.1007/s10639-011-9151-2

Saran, M., Cagiltay, K., & Seferoglu, G. (2008). *Use of mobile phones in language learning: Developing effective instructional materials*. 5th International Conference on Wireless, Mobile and Ubiquitous. http://dx.doi.org/10.1109/wmute.2008.49

Sharples, M. (2000). The design of personal mobile technologies for lifelong learning. *Computers & Education, 34*(3/4), 177-193. http://dx.doi.org/10.1016/S0360-1315(99)00044-5

Song, Y., & Fox, R. (2008). Using PDA for undergraduate student incidental vocabulary testing. *European Association for Computer Assisted Language Learning, 20*(3), 290-314.

Steel, C. H. (2012). *Fitting learning into life: Language students' perspectives on the benefits of using mobile apps.* In M. Brown, M. Hartnett & T. Stewart (Eds.), Future challenges, sustainable future, Proceedings of Ascilite conference Wellington 2012. (pp. 875-880).

Stockwell, G. (2010). Using mobile phones for vocabulary activities: Examining the effect of the platform. *Language Learning & Technology, 14* (2), 95–110.

Suwantarathip, O., & Orawiwatnakul, W. (2015). Using Mobile-Assisted exercises to support students' vocabulary skill development. *Turkish Online Journal of Educational Technology, 14*(1), 163-171.

Taleb, Z., & Sohrabi, A. (2012). Learning on the move: the use of mobile technology to support learning for university students. *Procedia Social and Behavioral Sciences. 69,* 1102-1109. http://dx.doi.org/10.1016/j.sbspro.2012.12.038

Thomas, K., & Orthober, C. (2011). Using text-messaging in the secondary classroom. *American Secondary Education*, 39(2), 55-76

Traxler, J. (2009). *Current state of mobile learning*. In M. Ally (Ed.), Mobile learning: Transforming the delivery of education and training (pp. 247–264). Edmonton, Alberta, Canada: Athabasca Press.

Tuttle, H. G. (2013). *Improving students' modern language speaking skills through mobile learning.* In Z. L. Berge & L. Y. Muilenburg (Eds.), Handbook of mobile learning (pp. 524-533). New York: Routledge.

United Nations Educational, Scientific and Cultural Organization, (2013). Policy guidelines for mobile learning. Paris: France. Retrieved from http://unesdoc.unesco.org/images/0021/002196/219641e.pdf on October 20, 2016

Woodcock, B., Middleton, A., & Nortcliffe, A. (2012). Considering the Smartphone Learner: an investigation into student interest in the use of personal technology to enhance their learning. *Student Engagement and Experience Journal, 1*(1), 1-15. http://dx.doi.org/10.7190/seej.v1i1.38

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*, 421-433. http://dx.doi.org/10.1111/j.1365-2729.2010.00357.x

Wu, Q. (2015). Designing a smartphone app to teach English (L2) vocabulary. *Computers &Education, 85*, 170-179. http://dx.doi.org/10.1016/j.compedu.2015.02.013

Wu Q (2015). Pulling Mobile Assisted Language Learning (MALL) into the Main-stream: MALL in Broad Practice. *PLoS ONE 10*(5): e0128762. http://dx.doi.org/10.1371/journal.pone.0128762

Yousefzadeh, M. (2012). Mobile-based learning vs. paper-based learning and collocation words learning. J*ournal of Educational and Instructional Studies in the World, 2*(3), 216-220.

Zhang, H., Song, W., & Burston, J. (2011). Reexamining the effectiveness of vocabulary learning via mobile phones. *The Turkish Online Journal of Educational Technology, 10*(3), 203–214.

APPENDIX A (Some patterns from “Busuu Application”)