

EFFECTS OF MOBILE PHONE COMPATIBLE ACTIVITIES ON VOCABULARY LEARNING IN ENGLISH¹

Elif TOKDEMİR DEMİREL², Muhammet KUL³,
Saye ZİBANDE⁴, Onur DİLEK⁵

Özet: Son yıllarda, Türkiye’de kullanımı yaygınlaşan cep telefonlarının dil eğitimi amaçlı olarak kullanımı henüz yaygınlaşmamıştır. Mobil-öğrenme kavramı üzerine yapılan çalışmalar bu yeni yöntemin öğrenci-destekli eğitimi pekiştirmesi yanında öğrenmeyi sürekli kılarak sınıf dışına taşınması gibi yararlar sağladığına dikkat çekmektedirler. Bu çalışma cep telefonlarının kelime öğrenimi amaçlı kullanılmasının kelime öğrenme üzerindeki etkisini araştırmayı amaçlamaktadır. İngilizce hazırlık programında öğrenim gören, başlangıç seviyesindeki iki sınıf, deney (n=35) ve kontrol (n=31) grubu olarak kullanılmıştır. Çalışmada toplam 384 hedef kelime için cep telefonuna uyumlu aktiviteler tasarlanmıştır. Her aktivitede hedef kelime, kelime ile ilgili görsel, kelimenin içinde kullanıldığı bir cümle ve kelimenin ve cümlenin okunuşunu içeren ses ve video dosyaları yer almıştır. Aktivitelerin hazırlanmasında hedef kelimeler ile görsellerin eşleşmesi, metinlerin ekran üzerinde görünürlüğü, yüklenme hızı ve ses kalitesi göz önüne alınmıştır. Deney grubu, 14 hafta süreyle, araştırmacılar tarafından tasarlanan aktivite dosyalarını cep telefonlarına indirip kullanmışlardır. Kontrol grubu öğrencilerine ise, ders içinde yapılan aktiviteler dışında herhangi bir yardım verilmemiştir. Deney ve kontrol gruplarının ön-test ve son-test sonuçları arasında anlamlı derecede fark görülmüştür. Çalışmanın sonuçları mobil öğrenme uygulamalarının kelime öğrenimine olumlu etkisi olduğunu göstermektedir. Buna ek olarak, görüşme ve anket

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²Yrd. Doç. Dr., Karadeniz Teknik Üniversitesi, Edebiyat Fakültesi, İngiliz Dili ve Edebiyatı Bölümü, elif@ktu.edu.tr

³İngilizce Okutmanı, Karadeniz Teknik Üniversitesi, Yabancı Diller Yüksekokulu, imf61@yahoo.com

⁴Öğretim Görevlisi, Karadeniz Teknik Üniversitesi, Edebiyat Fakültesi, İngiliz Dili ve Edebiyatı Bölümü, sayez@ktu.edu.tr

⁵İngilizce Okutmanı, Karadeniz Teknik Üniversitesi, Yabancı Diller Yüksekokulu, onurdilek@ktu.edu.tr

sonuçları da öğrencilerin cep telefonu ile kelime öğrenmeye karşı olumlu tutumlara sahip olduklarını göstermiştir.

Anahtar Sözcükler: Mobil-öğrenme, Kelime Öğrenme, Cep Telefonu

Introduction

The 21st century has witnessed the rise of wireless technology and handheld portable devices such as ‘smart’ mobile phones which combine various functions. In the field of education, visionary educators have not missed the opportunities offered by wireless technology and have started to investigate ways of incorporating these opportunities into the field of education. This study investigated the effect of contextualized mobile-learning (m-learning) activities on vocabulary learning and retention of university students enrolled in an intensive English program.

The study aimed at exploring the potential for m-learning activities in vocabulary learning, thus paving the way for more inclusion of such activities in English teaching programs. The researchers point to the need for enhancement of vocabulary learning with the capabilities of new technological tools which are not necessarily developed for education but carry a high potential for educational purposes.

Distance learning and e-learning applications which started in the 1980s (Rekkedal & Dye 2009) and utilized computers have later paved the way for m-learning (mobile-learning) which involves the use of portable handheld devices. According to Motiwalla (2007), m-learning will soon become an inevitable component of e-learning but there is also a need for more mature wireless data technology and enhanced user-interfaces. Mobile learning or m-learning has been defined by Attewell and Savill-Smith (2005) as learning by means of wireless technological devices that can be pocketed and utilized wherever the learner’s device is able to receive unbroken signals.

Several advantages of m-learning applications have been touched upon in the growing body of research on m-learning including but not limited to the mobility it provides for learning (Hussein and Cronje, 2010), its potential for creating a constructivist learning environment (Zurita and Nissbaum, 2004), helping students manage their learning (Jong, Specht and Koper, 2010) and facilitating the design of life-long learning activities (Shaples, Corlett and Westmancott, 2002). The growing interest in mobile-learning is also reflected by the international seminars being organized in the 2000s such as MLEARN 2003 (Mobile Learning Conference) in UK, WMTE 2002 (Mobile and Wireless Technologies in Education) in Sweden and emerging associations of research such as ALT (Association for Learning Technology) and IADIS (International Association for Development of the Information Society) (Mohamed, 2009). The key components of m-learning are firstly mobility of the technology, secondly increased learner mobility and thirdly the dynamism of the learning process and the flow of information (Osman and Cronje, 2010).

Traxler (2009) lists categories emerging from studies on mobile learning to be technology-driven mobile learning; miniature, portable e-learning; connected classroom learning; informal, personalized, situated mobile learning; mobile training/ performance support and remote/rural/development mobile learning.

1.1. M-learning and Language Learning

Nowadays students who are equipped with different mobile devices extend the borders of the learning environment to outside of the classroom (Ng, 2010). Kennedy (2010) who studied the accessibility of mobile phones among university students asserts that “We should leverage the technologies and applications in these devices and take advantage of the skills students already possess by building activities and resources around the devices they have 24/7” (Ng, 2010:1). He adds:

...such activities will enable each student to contextualize their learning experiences, providing a unique highly personalized experience. Using these strategies, you get much better student engagement compared to what can happen in a conventional classroom, where students get uniform or similar tasks.

As university instructors educate the future workforce, they should be open to modern methods and incorporate them with traditional ones. In a recent event in Massachusetts Institute of Technology (MIT), Google CEO Eric Schmidt was not far from fact when he asked the question, “Why do we teach the old way since all the world’s information is literally on this phone or equivalent to a phone device that you carry around with you?” (Cited in Brown, 2010, p.3). As foreseen by Schmidt, in the past decade research on the use of mobile technology in language learning has flourished and mobile learning has become a new area of research (Liu and Wang, 2003; Alexander, 2004; Chinnery, 2006; Jean and Kelly-Holmes, 2007).

The application of mobile devices in pedagogical fields makes the learning environment more student-centered, turning the teacher into a ‘facilitator and learning partner’ rather than a ‘didactic’ instructor (Looi, Seow, Zhang, So, Chen, and Wong, 2009). Looi et al (2009) claim that it is challenging to maintain the harmony between the formal setting (i.e., classroom environment) and informal one (where students study outside of the school area). However, the employment of mobile devices assists the instructors to fill the gap between these two settings and motivate students to learn by themselves outside of the classroom. Similarly, Kukulska-Hulme, (2010) mentions the necessity of learner-centered education and points out to the fact that how learners want to learn is a crucial factor in designing the ways to use technology in teaching. She describes learners as innovators and suggests that we can learn from the way they learn. Luckily, she continues, mobile learning is finding its place in foreign language learning with appropriate applications for both learning and practice.

Although it seems like most of those materials are not designed for a truly mobile learning experience, there are some advances too like software for mobile phones and free resources. Jeng et al (2010) investigated the add-on

impact of mobile applications in learning strategies in their article in which they brought together a survey of recent studies on mobile learning. They suggest that the advance of mobile technology helped the development of ‘situated classroom’, which is important in learners’ daily life. Moreover, mobile technology facilitated mobile learners’ learning process.

Learning and retention of vocabulary is one of the major problems in English as a foreign language. Mobile learning, that is the use of portable electronic devices for learning, makes it easier to incorporate contextual clues and visuals into vocabulary learning materials. In the Turkish university context, use of mobile phones have become widespread which is a fact also documented by a study by Uzun and Demir (2010) which found that mobile phones have become a compulsory good for university students. Although there is a limited body of research on m-learning in Turkey, researchers have started to experiment with mobile learning applications in the Turkish university context (Uzun and Demir, 2010; Saran and Seferoğlu, 2010). Saran and Seferoğlu (2010) found that foreign language vocabulary learning could be supported through multimedia messages via mobile phones and that the materials provided by the mobile phones enhanced learners’ vocabulary acquisition. The present study would provide a valuable contribution to the existing literature by exploring the effectiveness of m-learning applications on English vocabulary learning which is a challenging aspect of language learning for Turkish students.

1.2. Research Questions

The study aimed at answering the following research questions:

1. Are mobile-learning activities effective in helping L2 students’ learning and retention of English vocabulary?
2. What are the attitudes of students towards mobile learning activities designed for English vocabulary practice?

2. Method

2.1. Participants

The study investigated the effects of using m-learning activities on vocabulary learning and retention of L2 learners. The setting of the study was KTU SBE (Karadeniz technical University, School of Basic English) where students from various department of the university receive one-year intensive English language instruction. Two beginner level classes were randomly selected for the study and assigned as experimental (n=35) and control groups (n=31). The study was carried out in the context of the beginner reading class and target vocabulary items for the study were selected from the reading course material. The activities covered a period of one semester and contained target vocabulary items from a reading skills book: Facts and Figures Level I (Ackert and Lee, 2005).

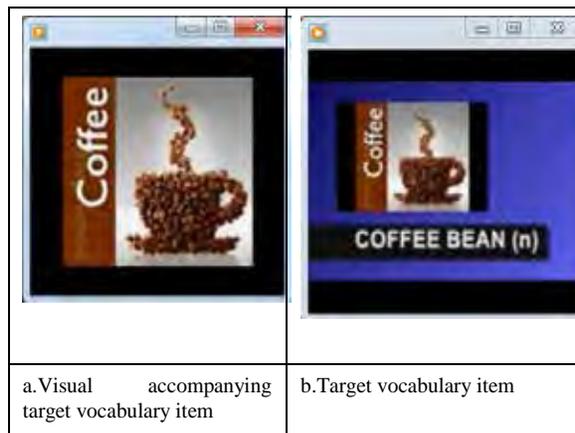
2.2. Tool

Research has found a high correlation between the amount of reading people do

and how much vocabulary they know and that reading is a crucial element of learning a foreign language (Krashen, 1989; Nation, 2001; Schmitt, 2000). Thus, the activities designed for mobile learning for the present project were planned to be in relation with the reading course offered at the intensive English program. Before designing the m-learning materials the students were given a questionnaire to guide this process. The questionnaire enquired the following: language learning background of students, their vocabulary learning strategies, their self-evaluation of own vocabulary learning, types of mobile phones owned by students and applications they provide, students' familiarity with their mobile phones and its applications, their preferences regarding design issues such as music. Depending on the responses from the questionnaire, m-learning materials were designed for vocabulary learning.

The m-learning activities which were designed in order to assist vocabulary learning included a set of target words (10-12 words in each file), a visual image in direct or indirect association with the target word in order to aid comprehension of meaning, an audio file containing the pronunciation of the target word by a native-speaker, a translation of the target word into the native language (in this case Turkish), a sentence in which the target word is used to provide context, soft background music to keep the learner motivated. For each set of target words, video files containing the above mentioned features were prepared. Particular attention was paid to the contextualization of the vocabulary items since one common strategy for language learners has been reported to be the use of contextual words surrounding the unfamiliar word (Parry, 1991).

For the preparation of the video files, Windows Moviemaker 5.1 was used. A screenshot showing a target vocabulary item, its part of speech in parentheses and a visual associated with it is shown on Figure 1.



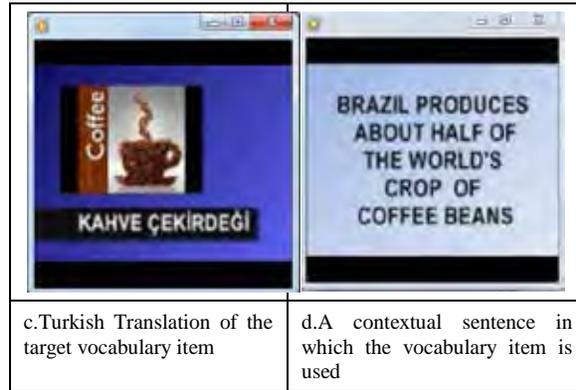


Figure 1. Sample screenshots for the vocabulary item ‘coffee bean’

The files were saved in the 3GP file format to make sending and downloading from mobile phones easier and faster. In the design of the e-learning materials, the following issues were considered:

1. Association between the target word and visuals: The target word and the visual image accompanying it should have an association which would help the learner to remember the meaning of the word.
2. Visibility of text and visuals: The text on the screen of the mobile phone should be large enough to be visible by the learner.
3. Delivery speed: The target word, the picture, the translation of the word and the sentence for context should stay on the screen long enough to let the learner to view them easily.
4. Quality of background music: The background music creates a stimulation for the learner and keeps the learner motivated if it appeals to the learner and is not disruptive.
5. Length of accompanying text: The text used to explain the target word and should not be too long since this may affect the readability of the text.
6. Quality of sound accompanying text: Sound files including the pronunciation of the target words should be of high quality.

It is a well acknowledged fact in vocabulary acquisition that single exposure to avocabulary item leads to very low rates of retention (Coady, 1997; Knight 1994). Nation’s (1990) extensive literature review states that anywhere between 5 and 16 exposures are needed for high retention of newly-learnt vocabulary items. With this in mind, in order to increase students’ motivation for utilizing the m-learning activities for multiple times, they were tried to be made interesting for students with the selection of pictures and background music. In addition, the ease with which the files can be transferred and the practicality of using the files repeatedly provides an optimal environment for the recycling of vocabulary items.

2.3. Procedure

The students in the experimental group were provided the m-learning activities by the teacher either through Bluetooth file transfer or by downloading from the computer and were instructed to use the materials as an extension of classroom learning. The control group students, on the other hand were not given any extra activities other than those carried out in the classroom context.

Prior to the study, the experimental and control group students were given a vocabulary pre-test in order to test their knowledge of the targeted vocabulary items selected from the reading course material for inclusion in the mobile learning activities. The duration of the experiment was a semester of 14 weeks.

After the study, the experimental and control groups were given a parallel vocabulary post-test in order to compare the two groups. Table 1 shows the descriptive statistics for experimental and control groups for the pre-test. Here, it should be noted that some cases had to be excluded from the study since there were missing data in the pre-test and post-test. Scores of students who were not present in both the pre-test and post-test were excluded from the study.

The vocabulary test scores were statistically compared using the t-test procedure on SPSS 18 (statistical package for social sciences). At the end of the semester, eight of the experimental group students were interviewed individually about the experience to gain insights into the students' experience with using m-learning activities for vocabulary learning. He interviews were recorded and transcribed.

3. Results and Discussion

3.1. Pre-test and Post-test Results

The results show an increase in the mean vocabulary test scores of the experimental group students from pre-test to post-test, whereas an opposite pattern is observed for the control group students whose average score decreased from the pre-test to post-test.

Table 1

Descriptive Statistics for pre-test results

	Groups	N	Mean	Std. Deviation	Std. Error Mean	Error
Pretest	Experimental	18	45.2	11.12	2.62	
	Control	26	46.42	12.15	2.4	

In order to test the statistical significance of these differences, two separate independent samples t-tests were computed using SPSS 18 statistical package. Table 2 shows the results of the two-tailed independent samples t-test performed between the pre-test results of the experimental and control groups. As shown in the table, this comparison of the pre-test scores between the experimental and control groups did not yield a significant difference. ($t=-.349$, $p>0.05$). This indicates that prior to the study there was no significant difference between the groups in regards to the knowledge of targeted vocabulary items.

Table 2

Comparison of vocabulary pre-test scores between experimental and control groups

		t-test for Equality of Means		
		t	df	Sig. (2-tailed)
Pretest	Equal variances assumed	-.349	42	0.73
	Equal variances not assumed	-.355	38.74	0.73

After the study, a post-test of vocabulary was administered to the experimental and control group students. Table 3 shows the descriptive statistics for experimental and control groups for the post-test. A comparison of the descriptive statistics reported in Table 1 and Table 3 show a decline in the mean vocabulary score of the control group students, whereas an increase is observed in the mean vocabulary score of the experimental group.

Table 3

Descriptive statistics for post-test results

	Groups	N	Mean	Std. Deviation	Std. Error Mean
Posttest	1.00	18	73.4	10.11	2.4
	2.00	26	37.9	8.5	1.7

In order to see whether these differences were significant, an independent samples t-test was computed between the vocabulary scores of experimental and control group students. The results of the t-test are shown in Table 4.

Table 4

Comparison of vocabulary post-test scores between experimental and control groups

		t-test for Equality of Means		
		t	df	Sig. (2-tailed)
Pretest	Equal variances assumed	12.63	42	.000
	Equal variances not assumed	12.22	32.31	.000

According to the results, the vocabulary post-test scores of the experimental group students have significantly increased when compared to the scores of control group students ($t=12.62$, $p<0.001$). If we interpret these results in relation to the first research question, we can say that the treatment that is the use of mobile learning activities for vocabulary practice were highly effective in helping EFL students learn and remember vocabulary. Traditional classroomteaching and vocabulary practice activities, on the other hand, did not result in long-term learning and retention of vocabulary items.

3.2. Interview Results

After students downloaded and utilized the mobile learning vocabulary activities, eight students were interviewed individually and the interviews were recorded. The interview questions aimed at finding the attitudes of students towards mobile learning activities and their experiences in using them. The views of students have been summarized below in order to comment about the advantages and disadvantages of using mobile vocabulary learning exercises.

Table 5

Comparison of mobile learning vocabulary exercises and traditional study techniques

Feature	Mobile learning	Traditional study techniques (e.g. memorization-study cards)
Practical (can be studied everywhere)	+	-
Visual aids	+	+
Accompanying sound pronunciation	- +	-
Background music while studying	+	+
Remembering words	+	-
<i>Entertainment</i>	+	-

The responses to the interview questions indicated a highly positive attitude towards mobile learning activities on part of the students. Actual student responses are provided in parentheses in relation to the findings. According to responses summarized in Table 5, mobile learning vocabulary exercises have been found to have more advantages over traditional exercises by students since they were more accessible everywhere (Interviewee #8: “I viewed the files while traveling on the bus or while waiting for a friend.”). Visual aids could also be used for traditional activities but in this case students said that the pictures were interesting and they helped them remember the words (Interviewee #3: “For example the word hearing impaired, I would never forget that word,” Interviewee #4: “The picture for family vacation was memorable for me”) (see Figure1 and Figure 2).



Figure 1. The visual used for the vocabulary item ‘hearing impaired’



Figure 2. The visual used for the vocabulary item ‘family vacation’

3.3. Limitations and Recommendations

Usually when the student is studying vocabulary, it is not very practical to play the tape and study pronunciation, but mobile learning activities make this much more practical. Therefore for most of the students, accompanying reading of words and sentences by a native speaker was found to be an advantage (Interviewee #6: Better than normal study, I think, because it is both visual and we can hear, so it is good for pronunciation). Background music was also found to be advantageous since it helped students to keep in focus and keep entertained while studying (Interviewee #3: Music made it more entertaining). Most importantly, mobile learning activities were found to be more effective in remembering words by students as most students said that it was more effective than traditional methods in this respect.

During the interviews students were asked to comment about the weak aspects of mobile learning activities and how they could be improved. The responses pointed to some of the design aspects which had room for improvement. As shown in Table 6, the weak points mentioned generally relate to the content of the mobile learning vocabulary exercises, but they do not criticize the technique in principle.

Table 6*Weak points of mobile learning activities and suggestions for improvement*

Student	Weak points and Suggestions
Interviewee #1	Sentences were easy; they were taken from the book. There could have been more difficult sentences.
Interviewee #2	Pictures could have been more effective. Video could be added. If the sentences were different from the ones in the lesson, it would be more interesting. There could be more than one sample sentence for different meanings. Images could have higher resolution.
Interviewee #4	More interesting sentences could be used. The slides moved too slowly. Sound quality could be better.
Interviewee #6	Some sample sentences were not clear for me. They were too long sometimes.

Discussion

As the results of this study suggests, m-learning activities can be highly effective in enhancing vocabulary learning in higher education institutions. Increased access and popularity of mobile devices among university students provides an opportunity to use m-learning as a tool for learning. It is suggested that systematic inclusion of m-learning activities in the teaching curriculum of intensive language programs would benefit students to a great extent. Particularly for vocabulary learning, m-learning provides advantages in contextualizing and recycling of vocabulary with ease.

The constructive feedback from the students could be used to develop the m-learning activities to make them more effective. The sentences used for contextual clues in this study were chosen from the reading course material. From students' responses, it can be concluded that student wish to see more variety in the sentences and that they would like to see unique sentences which they had not encountered before. They also want the speed and sound to be adjusted. All in all, the criticism shows that if the design meets the needs of students better, the vocabulary activities can become more effective and that students are generally satisfied with the use of these activities but think that they can be made more effective.

In order to make it easier to access m-learning activities, setting up an internet site and making activities downloadable through this site could be suggested. For the present activity, a website has been created at the following address: <http://mobile-learning.ktu.edu.tr>.

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EFFECTS OF MOBILE PHONE COMPATIBLE ACTIVITIES ON ENGLISH VOCABULARY LEARNING

Abstract: Mobile phones which are being widely used in Turkey have not yet become widespread for educational purposes. This study aims to explore the effectiveness of using screens of mobile phones for vocabulary learning outside of class. Two beginner classes studying a Language Preparatory School of at university were used as the experimental (n=35) and control groups (n=31) in the study. In the study, mobile phone compatible activities were designed for 384 target vocabulary items. In each activity, the target word, a visual accompanying the target word, a sentence in which the target word has been used and sound files of the word and sentence were included. In the design of the mobile phone compatible activities, association between the target word and visuals, visibility of texts on screen, download speed and sound quality were considered. Students in the experimental group downloaded and studied mobile phone compatible video files for a period of 14 weeks. The control group students, on the other hand, were not provided any assistance other than activities done in class. A significant difference was observed between the pretest and posttest scores the two groups indicating that mobile learning applications have a positive effect on vocabulary learning. Additionally, results of the interviews and questionnaires show that students have a positive attitude towards learning vocabulary through mobile phones.

Keywords: mobile-learning, vocabulary learning, mobile phone