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Mobile-Assisted Vocabulary Learning: A Review Study

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Abstract

Mobile phones are becoming more acceptable toolkits to learn languages. One aspect of English language which has been subject to investigation in mobile-assisted language learning (MALL) is vocabulary. This study reviewed some of the studies conducted in various contexts on the effect of MALL on vocabulary learning. We investigated some of the most prominent databases such as Science Direct, Wiley, Scopus and Oxford to find these studies; believing that this study can have pedagogical implications for future researchers and language teachers. We attempted to select studies from different contexts, i.e., Malaysia, Taiwan, Korea, China, Japan, Iran, Saudi Arabia, Turkey, etc. Thirty studies were selected purposively in this way. Some of the main features of these studies are elaborated on in the discussion section. Pedagogical implications are discussed.

Keywords: mobile phones, mobile-assisted language learning (MALL), mobile applications, vocabulary learning (VL),

1. Introduction

The compatibility of mobile devices brings along numerous learning opportunities for language learners. Mobile technology is fast; therefore it provides the language learners with instant feedback. It can also situate learning in a meaningful context by giving the learners the opportunity to interact and share ideas (Brown, 2000). In this way mobile phones also foster collaborative learning (Kukulska-Hulme, 2010). Kukulska-Hulme (2006) believed that the role of mobile phones in learning language is a mediating one, as language learners, teachers and even content can all interact by using mobile phones. This justifies the growing trend in using mobile phones in ESL/EFL settings.

The use of mobile phones in vocabulary learning (here and after referred to as VL) and teaching processes has had a rapid growth, and many scholars hold the same opinion about the role of mobile phones in VL. Isazadeh, Makui, and Ansarian (2016) believed that technology in general has had a positive effect on VL. Geddes (2004) defined mobile learning in very simple words. In his opinion mobile learning meant learning anywhere or anytime with the technology of mobile phones. Sharples (2006) viewed this mobile learning as a personalized learning activity which is flexible and compatible with one's needs. Laurillard (2007) argued that in order to make the best of mobile devices in learning environments the activities (tasks) to use these devices should be clarified; meaning that attention should be accorded to the pedagogical aspects of the process rather than the technological parts. This was a reaction to the focus on technology rather than pedagogy in education. Therefore, the terms mobile-assisted language learning (MALL) was coined. As stated by Sharples (2006) "Mobile assisted language learning characterizes the use of personal, portable devices that enable new ways of learning, emphasizing continuity or spontaneity of access and interaction across different contexts of use" (p.24).

Technology has been involved in learning for many years. The use of cassette players or videos in language classes is an example, but mobile applications have a unique feature which is mobility (Kukulska-Hulme & Bull, 2008). In order to develop MALL, They also stated that researchers should investigate learners' perception, cognition, psychological and affective factors.

One aspect of this query is VL through MALL. Vocabulary is significant because at least some vocabulary knowledge is required for effective VL (Wilkins, 1972). Zhang, Song, and Burston (2011) posited that while studying VL strategies and approaches, the researchers' focus is usually on perspective of mnemonic devices. Some might prefer to focus on the effect of reading on learning vocabulary, as well as the effect of syntax and theme. Though technology can offer more than these issues and can facilitate the process. Ellis (1995) also believed that technology can provide tests and drills for learning vocabulary which facilitates the process. Therefore, MALL has multiplied the chance of learning vocabulary. Empirical evidence also advocates this notion (Chen & Li, 2010).

The role of MALL in VL made it inevitable for the researcher to review some of the recent studies that have investigated this issue. Reviewing these studies could familiarize the readership with the impact of MALL on knowledge of vocabulary and the design of these studies; therefore, the results can be useful to both language teacher and researcher in the field. It should be stressed that a similar study was conducted by Burston (2012), however that study had covered studies conducted between 2009 and 2012. Considering that technology has a fact pace, we felt the need for a new study in this regard. Our sampling method was purposive, as we could not include all studies conducted in this paper. Therefore, we attempted to use valid databases to select the previous studies, and make reference to the most innovative and mostly cited ones.

2. Empirical Studies

Many studies have investigated the effect of MALL on VL. This section represents some of these studies in various contexts.

Ou-Yang and Wu (2017) believed that MALL is an adaptive process: Language learners' proficiency level, perceptual learning style and learning behavior play a role in the process. Thus, a system names MyEVA was developed by the researcher to employ mixed-mode VL on mobile phones. Using this application to teach vocabulary, they could understand how learning style and learning behavior could affect VL.

Lin and Yu (2016) believed that many studies have focused in the combination of picture and text rather than sound and text with regard to MALL and VL. Therefore, they designed a study to confirm the findings of the previous studies which integrated mobile technology with language learners' cognition. They used 32 language learners and began representing vocabularies to them on mobile phones. They used different modes of presentation, i.e., text in isolation, a combination of text and picture, a combination of text and sound, and finally merging all modes to gether. After using each mode to teach vocabulary an immediate vocabulary test along with a cognitive load questionnaire was given to the participants. In addition a delayed posttest was given to the participants after 2 weeks. The results of the study revealed that audio representation of the words reduced the cognitive load and increasing the chances of retaining the words.

Agca and Özdemir (2013) integrated multimedia content into learning materials and gauged its effect on VL. They also delved into the students' ideas about this new learning environment. To this end, they used 40 students from Gazi University. They divided the participants into two random groups. They selected 84 vocabularies from the students' course book. The content was presented to the participants through mobile-phones using 2 dimensional barcodes. This study lasted for 2 weeks. After 2 weeks, it was revealed that MALL had considerable effect on language learners' VL.

Wu (2014) attempted to find out whether smart phones could help college students learn vocabulary. The researcher designed a program for learning vocabulary which contained the words' pronunciation, synonym, antonym, part of speech, and example. To pursue the purpose of this study, 50 students were divided equally into two cohorts, i.e., an experimental one and a control one. The experimental group participants did considerably better than control group participants.

Nikoopour and Kazemi (2014) evaluated the advanced EFL learners' gain of vocabulary in two distinct situations: using digital and non-digital flashcards. They assigned 3 groups of university students who went through paper flashcards, mobile flashcards, and online flashcards. The study lasted for 10 weeks and 70 words were covered during the treatment. The findings of the study indicated that using digital flashcards is more effective than paper flashcards.

Recently, a study was conducted by Jafari and Chalak (2016) on the effect of using WhatsApp on learning vocabulary among Iranian language learners at high school. The researchers made use of a mixed-mode research design. Sixty language learners formed an experimental group with 30 learners and a control group with the number of participants. The experimental group learners received 4 sessions of vocabulary instruction in every week through WhatsApp, whereas the control group learners were taught same vocabulary using a text book. This process lasted for 6 weeks. The findings of the study revealed that both groups benefited from different modes of instruction; however, the difference between the posttest scores was not substantial. In addition, the experimental group learners revealed a positive view towards learning vocabulary through WhatsApp.

An Iranian study conducted by Alemi, Sarab, and Lari (2012) investigated how short message service (SMS) could affect learning vocabulary. This treatment phase of the study lasted for 16 weeks. Twenty eight university students participated in this study in form of the experimental group (n=17) and the control group (n=11). The experimental group learners received messages on their cell phones containing head words. The control group participants practiced the same words using dictionaries. Although both group improved on the posttest, the experimental group did better control group significantly.

A Canadian study was conducted by Ally, Tin and Woodburn (2011). They focused on learning French by using iPhones and by making use of web-based grammar and vocabulary lessons. They selected 5 lessons and asked the

participants (N=22) to attempt to learn the lessons using internet and their iPhones. They also delved into the perception of the participants. Not only did this approach have a positive effect on grammar and VL of the learners, but also the participants revealed a positive perception toward the new mode of learning.

One of the approaches mobile phones are used to learn the new language is forming communities. Al-Shehri (2011) conducted a study in Saudi Arabia using mobile phones and Facebook. It was done to create a forum for L2 English learners. This study, which lasted for 16 weeks, made use of 33 university students. These participants were asked to share their personal life experiences through photos, videos, or texts. The participants gave feedback about their peers' status, photos or videos. this study revealed that the students enjoyed using their cellphone to learn English. In addition, it was observed that this method can have a positive effect on learning English.

Mobile phones have also been used to learn idioms. A study was conducted by Amer (2010) who designed an application named "Idiomobile" which contained both games and quizzes. This application was trailed for 1 week. As the application dealt with playing games, the number of hours the participants spend using it was rather high (about 7 to 14 hours weekly). The analysis of the scores gained by the participants in this study revealed that the participants' scores were increased as they continued to play the games. In addition, the participants expressed a positive view about the application.

Attewell (2005) reported 3 of the projects which were funded by European Union (EU) for learning Italian through mobile phones. The participants who enrolled in this study were 16 to 24 years old. SMS was used in this study to teach an elementary Italian course to two groups of learners, i.e., non-italians (n=20) and Italian dialect speakers who did not use standard Italian (n=37). The other study focused on English literacy in Sweden and the third one used this method to teach English to Polish speakers. The results of these studies were all congruent and reported that using MMS and SMS services can affect learning the second language (L2).

Another study was conducted in Iran by Azabdaftari and Mozaheb (2012) who focused on learning English vocabulary by university students through a cellphone application named "Space Repetition System" (SPS). Eighty university language learners took part in this study (40 experimental group learners and 40 control group learners). The participants in the experimental group used the application on their cellphones and the control group learners used flashcards to learn the vocabulary. In this study as well, the experimental group learners outperformed the ones in the control group.

Another application which was used to learn vocabulary is Mobile Phone-based Flash Card Application (ECTACO). Basolgu and Akdemir (2010) investigated the effect of using this application on learning vocabulary by Turkish non-native English Learners. Thirty university students took part in this study in form of the experimental group, and 30 learners participated in form of the control group. The findings of the study suggested that using this application for learning vocabulary is more effective than using flashcards (used in the control group).

Not all studies dealing with MALL have investigated the positive effect of technology on learning the foreign language. For example, Brown (2012) studied both advantages and disadvantages of the use of tablet devices in language classes. The focus of this study was on video tasks. The findings of this qualitative study revealed that students need to have knowledge of technology to be able to learn language through devices such as tablets. Thus, using technology does not always guarantee the success of a program.

In another Taiwanese study Chen and Chung (2008) designed a system for learning vocabulary of the English and investigated its effect on learning vocabulary. The theory used in this study was Item Response Theory algorithms and a learning memory cycle. The software worked by using PDAs which were connected to three database agents. This databases generated tests, and assessed participants' performance. The findings of this study which employed 15 university students revealed a modest improvement in learning vocabulary through this application.

Another study which investigated the effect of cellphone applications on learning vocabulary was conducted in Korea by Choi and Jeong (2010). Their study focused on the effect of Long Message Service (LMS) on learning L2 vocabulary. Seventy two language learners participated in this study in form of 3 different groups. Some of them used LMS without interaction. Some others used LMS lessons with teacher-student interaction through messages, and finally, the control group participants who used paper materials. This study revealed that LMS lessons were more effective than paper materials for VL; however, interaction did not have a considerable role in this effect.

In a Korean study Chun (2011) attempted to explore how two different types of VL applications on smart phones lead to learning vocabulary by the learners. To this end, 32 language learners used these two mobile applications for a week. As stated by the participants, they used the application while they were commuting and this helped them use their time more sufficiently to learn vocabularies and to memorize words. In addition, positive effect on VL mobile applications was reported in the study.

Fisher, Pemberton, Sharples, Ogata, Uosaki, Edmonds, Hull and Tschorn (2009) focused on 3 modes of learning vocabulary, i.e., paper books, E-books, and through a software named "ELMO". This study continued for 6 weeks with 3 cohorts of participants. There were 13 language learner in each group. The findings of the study through the interview showed that the students who used paper books read 3 pages or less on the average, but the participants who used technology to learn studies more pages due to availability of the materials to read.

Another study was conducted by Gabarre and Gabarre (2009) in Malaysia. During a two-week intervention, the researchers checked the effect of mobile phones on learning communicative speaking and writing in French. The

participants in the experimental group (n=18) took photos with their mobile phones and added written comment to it and sent it to other peers. They also produced dialogues for the photos. They used MMS to send and receive the files. The results of the study indicated that experimental group learners outperformed the participants in the control group.

Kukulska-Hulme and Bull (2008) believed that one of the underlying theories used in MALL is the Noticing Hypothesis. Thus, they designed a study in accordance with the Noticing Hypothesis in which the participants were asked to write diaries. This was done according to the electronic capture of examples of language. The participants were asked to reflect on how they learnt the language. The participants' diaries revealed that they prefer to be encouraged to notice language usage. They also wanted the educators to abide their language learning goals

A study was conducted by Levy and Kennedy (2005) in Australia on the effect of using SMS to promote vocabulary knowledge among high-intermediate university level L2 students who studied Italian. The study lasted for 7 weeks. During this time the target words along with the definitions and examples were sent to the participants through SMS. The participants also received messages on grammar, news, and literature which contained the targeted vocabulary. The results of this study revealed that the participants were motivated to learn vocabulary through SMS. Moreover, it was observed that this approach has a significant positive effect on learning vocabulary by the students.

In a Taiwanese paper, Lin, Liu, and Niramitranon (2008) focused on the effect of sketches drawn by hand which made use of Group Scribbles application on web-linked tablet PCs. This was done to create a collaborative VL atmosphere. The system was used by twenty participants in the study, and proved to have positive effect on VL of the participants. In addition, it increased the participants' motivations and fostered their interactions.

Liu and Chu (2010) used a different mobile application (Hello) and gaiuged its effect on VL of language learners. This study lasted over the period of 2 months in 8 sessions and was conducted using seventh grade language learners. Thirty two language learners participated in this study. HELLO had 3 types of tasks among which the game was mostly preferred by the participants. finally, the positive effect of the software on learning vocabulary among the participants was observed.

A study was conducted by Martin and Beckmann (2011) in Australia which evaluated the effect of Academic Podcasting Technology (APT) on learning Spanish by university students. Not only did the participants give a very positive feedback to the program, but also they became proficient Spanish speakers. This program was also praised for its sound model.

Miyakoda, Kaneko, and Ishikawa (2011) designed a language learning application for mobile phones which allowed users to create their own flash cards for learning vocabularies. They investigated the effectiveness of this application with 99 participants in form of an experimental group (n=50) and a control group (n=49). Contrary to the expectations of the researchers, there was not any significant difference between the mean score of the experimental group learners and control group learners on the posttest of vocabulary.

Another study on the effect of SMS on VL was conducted by Motallebzadeh, Beh-Afarin, and Daliry Rad (2011). They also compared the effect of SMS to printed paper on the rote learning of L2 English collocations. This study lasted for 5 weeks. The participants were all university students and the classes were held twice weekly. This study had a between subject design and compared experimental group learners who received SMS and control group learners who used printed papers to learn collocations. In this study as well, the experimental group learners outperformed the counterpart group.

Tabatabaei and Goojani (2012) measured the effect of using SMS compared to printed book on learning L2 vocabulary. They conducted a study for 16 sessions in which 50 targeted word were sent to the participants in the experimental group (n=34) through SMS. The control group participants practiced the same words by using printed books. The results of the comparison revealed that SMS is a more effective approach for learning English vocabulary compared to printed books.

One of the issues that has been investigated through scientific research is the students' attitude about learning by using technology. In a Korean study, Nah (2011) investigated this issue in terms of learning the listening skill. the students (n=30) who participated in a 12 week study which employed internet to improve the listening skill revealed positive effect in all types of attitude, i.e., neutral, positive and negative attitudes. However, the greatest improvement was seen in neutral attitude. They also stated they were not content with internet connection limitations and restrictions imposed by mobile phones technology.

3. Discussion and Conclusion

The review of studies with regard to MALL and VL reveals how researchers have made use of various tools and softwares to conduct their studies (e.g., HELLO application, Watsapp application. SMS, MMS, LMS, researcher-made softwares etc.). Two of the often referred to theoretical assumptions used in these studies were the Noticing Hypothesis (e.g. Kukulska-Hulme & Bull, 2008) and Item Response Theory (e.g., Chen & Chung, 2008). One of the mostly used services used to learn vocabulary, however, has been SMS. In addition, most of these studies have used a between subject design in which they have compared the effect of MALL and conventional situations on VL. It should also be noted that in most cases, the experimental group outperformed the control groups. These studies also varied in length. They had lasted for a few sessions up to few years (e.g., Martin and Beckmann, 2011). Needless to mention that these studies were not confined to English language, similar studies were conducted on learning French (Ally, Tin and

Woodburn, 2011); Polish and Italian (Attewell, 2005). Different forms of presentation were used in these studies, i.e., text, text and picture, text and audio, and a combination of all (e.g., Lin & Yu, 2016).

3.1 Pedagogical Implications

Two groups of educators may desire to use the findings of this study. One is the language teachers and the other is researchers in the field. Researchers can use examples in this study to design and conduct new studies. Reading this paper would also aid them to discuss the effect of Mall on VL. Language teachers, on the other hand, can find out how they can implement MALL in their classes to teach vocabulary, as either the main VL task or a supplementary one.

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