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Examining the Effectiveness of Utilizing Mobile Technology in Vocabulary Development for Language Learners

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Abstract

The misuse of mobile phones in class frequently irritates language teachers. Instead of banning this mobile technology and considering it as a nuisance, teachers can take the advantage of this technology to help their students achieve their goals. Therefore, this paper is targeted toward the most recent technological devices that have an influence on how people learn and communicate with each other these days. It attempts to discover how far mobile devices are being used to support language learning by shedding light on its contribution to assisting vocabulary development. To do so, a review of the current existing publications that are related to mobile assisted language learning (MALL) was undertaken. The findings show that mobile technology assist vocabulary development for second language learners such as using short message serve(SMS), mobile based games, and mobile based flashcards. They also show that students have positive attitudes toward using mobile technology in learning new vocabularies. The article displays some of the limitations that are associated with utilizing mobile technology in vocabulary development for language learners. It also calls for further research that examine the impact of social media applications, such as Twitter, Facebook, and Instagram on vocabulary development.

***Keywords*:** MALL, m-learning, mobile based flashcards, mobile based games mobile phones, SMS (Short message service), vocabulary development.

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No one can deny that mobile technology is rapidly attracting new users, offering increasing capacity, and tolerating complex use. This, of course, has an impact on users' life styles by affecting their social relationships and opening windows to new learning contexts. Many years ago, it was already being declared that, "at least in the UK, cell phones were a familiar part of the lives of most teachers and students" (Hulme & Shield, 2008, p. 271), which means cell phones become a familiar and essential parts in people life. Also, an analysis of mobile learning projects that was done by Pęcherzewska & Knot (2007) and funded by the European Union from 2001 to 2007 indicated that mobile phones are the most frequently utilized devices in these projects (Ducate & Lomicka, 2013). Pęcherzewska & Knot's analysis implies that mobile phones have become popular among users, and they have been used more than any other devices. In addition to that, Wang's (2013) article showed that "a study that was done by the United Nations on 2013 claimed that out of the world's estimated 7 billion people, 6 billion have access to mobile phones. Far fewer — only 4.5 billion people — have access to working toilets" (p. 1). Wang claimed that the United Nations' study indicates that most of the people in the world are cell phone owners, which means cell phones are becoming popular among users, and the numbers of people owing mobile phones are increasing.

As English language educators, we can realize this fact through monitoring our classrooms. Last year, the author of this paper worked at California State University, East Bay as a graduate teaching assistant for three consecutive quarters teaching English composition for international freshmen students. She has noticed that all of my students own at least one smartphone, and they were really attached to it. They used it to schedule reminders for their assignments, look up new words, or sometimes to chat with friends or family members. Instead of banning cell phones in her classes, which some instructors may do, she started to think about taking advantage of using cell phones in teaching English. So, she decided to look for an overview of the current research on mobile phones as an educational tool, and that is what she thinks most English instructors need. Just as Hulme (2009) said, "to a certain extent, by dint of their ubiquity, mobile devices are already influencing how people learn; on the other hand, educators need to do more than just watch it happen." (p. 158). Therefore, this paper aims to give an overview on the effectiveness of utilizing mobile technology in vocabulary development for language learners by examining some of the current, existing, and related research studies.

What is mobile learning?

Before digging deeply in reviewing the current research studies on mobile assisted language learning, it would be helpful to define the term "mobile learning". It has been argued that mobile learning may include the use of any transportable learning materials such as books, CDs, radios, or DVD players. However, this identification does not apply to what this paper is arguing. The focus of this paper is targeted toward the most recent technological devices that have an influence on how people learn and communicate with each other these days. Mobile devices that this research paper addresses can be defined as "any device that is small, autonomous and unobtrusive enough to accompany us in every moment" (Trifanova, Knapp, Ronchetti, & Gamper, 2004,p. 3). Trifanova et al.'s definition involves any kind of handheld mobile devices such as cell phones, personal digital assistants (PDAs), smartphones, pads, or pods, whereas laptops may be excluded from this context. In addition to defining the devices that are used in

mobile learning, the term "mobile learning" itself can be defined also as being available ""anywhere, anytime" (Hulme & Shield, 2008). Thus, the key term, "mobile learning", is defined by both the used tools and the constant availability of those tools anywhere and at anytime. Therefore, for the purpose of this research paper, mobile learning refers to the capacity of obtaining or providing educational knowledge through using portable small devices such as PDAs, smartphones, and mobile phones anywhere and at anytime. It is a new learning context that does not have a specific time or place.

Mobile Assisted Language Learning (MALL): An overview

Since the main thesis of this paper is to examine the contribution of mobile technology in facilitating vocabulary development for language learners, I will give a brief overview about mobile assisted language learning, and provide some examples.

Mobile assisted language learning (MALL) is similar to the term, CALL, which stands for "computer assisted language learning". Computer assisted language learning refers to the computer's potential impact on facilitating the language learning process, and how computer technology affects the way people get access to knowledge. Similarly, MALL stands for mobile assisted language learning, which refers to the influences that portable devices have to support learning a target language. Shield and Hulme indicated (as cited by Hulme, 2009) that "there are important differences between CALL and MALL; in particular, mobile technology can assist learners at the point of need and in ways that fit in with their mobile lifestyles"(p. 162). This means the easy access to the mobile phones and their portable feature makes them different than the computer technology. Shield & Hulme (2008) argued that the personal and portable features of the mobile phones allow them to have more potential impact in assisting language learning and providing language learners with a new learning context that does not have limited time or location. They also indicated that mobile phones have the advantage of continuity access to the target language content and allows students to be easily involved in collaborative interaction among language learners. People have access to their portable devices in different settings like while they are in bed, in bus, waiting in a line or at a doctor office; however, they cannot have access to their computers in such setting. That is what makes difference between the access to mobile devices and computers.

Many researchers have done studies to examine the impacts of mobile-based tasks on learning a target language. A good source that provides an overview of the current empirical studies, which were published during the period 2007-2012 and focused on the effectiveness of MALL in second and foreign language, is Viberg & Grönlund's (2012) paper. Viberg & Grönlund made a great job in examining the empirical studies that were published in 2007-2012, and they did a fascinating, deep, and extensive analysis of those studies by examining the methodological, theoretical, and linguistic knowledge that those empirical research studies have. The findings of this well developed literature review indicated that "studies of mobile technology use in different aspects of language learning support the hypothesis that mobile technology can enhance learners' second language acquisition"(p. 1). That means mobile technology has a potential impact in facilitating and assisting the language learning process, which is a good indication for language educators who are eager to use such tools in their classrooms. They also found out that most of the studies they examined are " experimental, small-scale, and conducted within a short period, and most theories and concepts are used only in one or a few papers"(p.1).

Mobile technology and vocabulary development

After defining the key term, "mobile learning", and giving a brief overview about mobile assisted language learning, the discussion has to be narrowed down for the focus of this paper, which is examining the effectiveness of utilizing MALL in vocabulary development for language learners.

Learning vocabulary is very fundamental for developing the four language skills; reading, writing, speaking and listening. Developing vocabulary makes language learners acquire the target language effectively since vocabulary knowledge facilitate the learning process for language learners and help them to understand the text they read or the speech they heard. In addition, language learners cannot express themselves in writing or speaking without having enough vocabulary knowledge. Agca &Özdemir (2013) indicated that " "if a student's vocabulary knowledge is richer, then s/he can better understand the structure of the foreign language" p. (782). This emphasizes the important of vocabularies development for the language four skills. However, second and foreign language learners sometimes find vocabulary development to be "complex and gradual process" (Agca & Özdemir, 2013). Therefore, teachers need to use various activities and different approaches to facilitate the learning process for their students. Technology with its increasing innovations is a great source and facilitator for language teachers even if it may has some problems.

Therefore, teachers can take the advantage of mobile technology features to facilitate the vocabulary development process for their students since it is one of the current innovations that attract users, and keep them engaged in the learning process. However, before that, teachers have to test the mobile technology features they aimed to incorporate or at least read the related research studies that have already examined the selected feature to make sure that it will work well for their classroom. Fortunately, several studies that examined the use of mobile phones in vocabulary development have already appeared in the literature, and they have different activities and various focuses. Reading such studies can support teachers' approaches and enrich their classrooms with interesting activities.

Many of the existing and related studies have argued for the effectiveness of incorporating mobile phones in learning the target vocabularies, and some of them will be discussed later in this paper. For example, Motallebzadeh & Ganjali's (2011) study argued that mobile phone is an effective tool that facilities language development and helped students learn the target language easily and keep their motivation to follow up with their study at home. They indicated that the findings of their study and other studies "imply that from now on, the teachers will not have to begin their teaching with "Please switch your mobiles off"; instead, they can begin with "Switch your mobiles on, please"(p.1114). The results of Motallebzadeh & Ganjali's study led them to give this strong recommendation for employing mobile phones as an effective learning tool that assist vocabulary development.

Current examples of Mobile learning in vocabulary development

Since examples of successful mobile learning projects facilities understanding the perceived value of mobile learning, this section will focus on three features of mobile technology, which contribute to vocabulary development. They are the use of short message service (SMS), mobile-based flashcards, and mobile-based games in vocabulary development. The order of these three

examples is based on the period they appear in, from the earlier to the recent. To give a better overview of those three features, the following subsections are going to provide examples from the current research studies that investigate the effectiveness of those three mentioned above features. They will also do so by examining some of the related empirical studies and showing how and why most researchers are arguing and inviting teachers to incorporate mobile phones in vocabulary development. Cavus, & Ibrahim's (2009) study, for instance, argued that incorporating the short text message (SMS) in vocabulary learning is an effective tool for vocabulary development and all participants in their study expressed enjoyment of learning vocabulary out of classroom environment. It also helped teachers to keep their students motivated and interested in studying the target vocabulary. Further examples will be examined in the following subsections.

1. SMS and Vocabulary development

Most of the current research studies that were dedicated to examining the effectiveness of utilizing mobile technologies in developing a target language vocabulary aimed to explore the function of the short message service (SMS). To show give explicit examples the following studies are examined.

First, Lu's (2008) study attempted to examine the effectiveness of SMS in helping second language learners acquire new words. He compared the post-test results of two groups, one received two words daily via SMS while the other got a list of 14 printed words each week. The results of his study showed that "students recognized more vocabulary during the post-test after reading the regular and brief SMS lessons than they did after reading the relatively more detailed print material" (p. 515). Students in Lu's study could develop English vocabulary more effectively through SMS than studying them by using the printed material as indicated in a two-week post-test. One of the reasons that SMS students did well on the post-test may be because the short message service allows students to study the target vocabulary in short chunks. In addition, Lu's study indicated that the grade of one of the students have been among the top three in the class. This is because she is the only student who sent back two sentences that she created and asked for feedback. This means the interaction feature that SMS allows for language learners is very effective in helping students learn the target vocabulary by developing their own sentences and receiving feedback.

Similarly, Zhang, Song, & Burston's (2011) study proved that SMS helped students to do better in an immediate post-test. They indicated that this is might be due to the students' easy access to the SMS anywhere and anytime, which provides students with repeated exposure to the target words. Students can study the words while they are waiting in a line, riding a bus, or in bed. An example from their students' refection on such experience is shown below:

> Currently I had myself more exposed to the words that I had to memorize than I had done before. Everyday when I was on my way to the canteen in the mornings and to the classroom, as well as on my way back to the dormitory, I always read and memorized the words via my mobile phone. This improved frequency of exposure has led to enhanced vocabulary learning fairly naturally. (p. 208)

This student emphasized that the easy access to the target language and the portable feature of the SMS provided him with extensive exposure to the target words, and this affected his

vocabulary development process positively.

Although Lu's (2008) & Zhang et al's (2011) study both argued that SMS has a significant impact on vocabulary development in short-term memory but not the long term one, Alemi, Sarab & Lari's (2012) study has a debate with them. Alemi et al's (2012) study argued that SMS influences vocabulary development in long-term memory. They argued that SMS is an effective way that helped students retain vocabularies in their long-term memory. That is because the results of their study showed that students in the experimental group, who received new vocabularies via SMS, did better in a delayed post-test. This suggests that SMS is a good tool for foreign language development and teachers may consider utilizing such a tool.

Last but not least, it is noteworthy to indicate that some researchers have argued that SMS is a beneficial tool by indicating that it has some advantages, which make researchers recommend it for vocabulary development. Examples of SMS' advantages are, as Lomine & Buckingham (2009) indicated below, saying that SMS:

- is quick, discreet, to the point and inexpensive
- can improve student motivation and retention
- can involve students more actively/interactively
- can contact any group or individual immediately
- enable Students to text in for help and advice
- does not require familiarization or training. (p. 5)

What Lomine & Buckingham`s (2009) said above suggests that SMS is a useful educational tool because it motivates students and helps them to be involved in the learning process. Their argument also means that SMS supports interactions, and allows students to ask for help if needed. In addition to that, teachers do not have to train their students to use SMS because it is well known for its easiness and quick use.

2. Mobile based Flashcards

Another component that mobile technology can provide to English language learners and teachers is the easy and cheap access to mobile-based flashcards. Generally speaking, flashcards are effective tool for vocabulary development, and it has been proved that flashcards, either paper-based or online format, succeed in attracting students' attentions, and are good tools to meet different learners' types (Anaraki, 2008). Howard Gardner's multiple intelligence theory reminds teachers that there are different types of learners in every single classroom they teach and teachers should aim to appeal to all the various learner types within their classrooms (Gardner & Hatch, 1989). So, flashcards can be a good activity that helps teachers meet most of their students' various leaning types. To examine the effectiveness of utilizing mobile-based flashcards for vocabulary development purposes, the following studies are examined below.

First, Başoğlu & Akdemir's (2010) study aimed to investigate the effectiveness of mobile-based flashcards use in vocabulary learning. To do so, they designed a piece of research to examine the vocabulary development of 60 students, who are in two groups. The first group, thirty students, was assigned to study English vocabulary through utilizing a mobile phone application, which is called ECTACO Flash Cards. The other thirty students were assigned to study English words through the traditional paper based flashcards. A mixed methods approach,

pre-task test, post task test, and afterwards interviews, were used to collect data, which were analyzed later. The analysis of the collected data showed that students in both groups improved the acquisition of vocabulary learning. However, the experimental group, which utilized the mobile phone flashcards application, showed more significant improvement than the other group. This means that the mobile-based flashcards are very effective and practical tools for vocabulary development. In addition, mobile-based flashcards allow students to have continuity access to the target words, which contribute to students' vocabulary development as the study showed.

Another study by Anaraki (2008) investigates the impact of mobile-based flashcards on English proficiency skills by developing a flash-based mobile learning system. Twelve mobile English lessons were developed, in which language learners can listen to native speakers, read text, learn spelling, understand grammar rules, and practice some exercises. To investigate the effectiveness of this system, university students at Assumption University had to try out this system using their mobile devices for four weeks, and a pretest, posttest, and surveys were utilized. The results of the study showed that the flash-based mobile learning system helped students to develop their English proficiency skills as shown in the diagrams below. The diagrams showed the difference between learners' English skills before and after trying out the flash-based mobile learning system. If you examine the diagrams, you will notice that the students developed their English proficiency skills after trying out the flash-based mobile learning system.

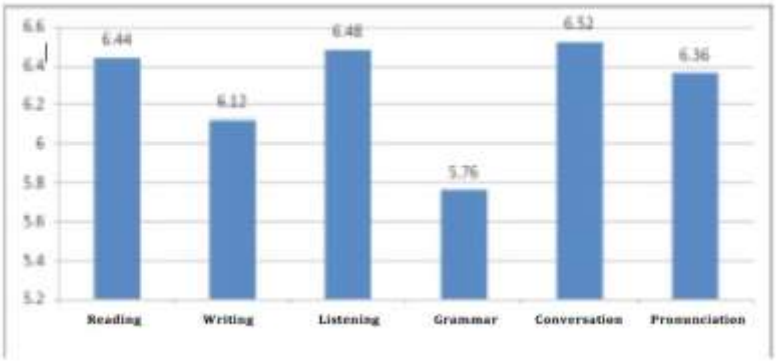

Figure.1 . Ranking of English Proficiency Skills Before Trying Ou

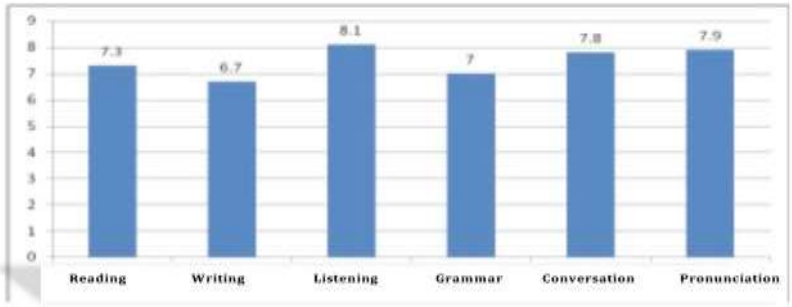

Figure.2. Ranking of English Proficiency Skills After Trying Out

As seen in figure 1 and 2, the flash-based mobile learning system that Anaraki (2008) incorporates in his study had a significant impact on students' English proficiency skills, and it helped them develop more than one skill, which the paper-based flashcards usually do. It is also clear that the most significant impact of the flash-based mobile has been on leaners' grammar skills, followed by listening skills, pronunciation skills, and conversation although there are influence on all of learners' proficiency skills.

If we look carefully at the results of Anaraki's (2008) research study, we will notice that they proved that the advantage of mobile-based flashcards outweigh the advantages of paper-based flashcards because of the multimedia capability that is involved with mobile-based flashcards. This is because mobile-based flashcards enable language learners to read the target vocabulary in a text, learn how to use the new words, and listen to the text spoken by a native speaker anywhere and anytime. This multimedia feature cannot be found in the paper-based flashcards, and it should encourage English teachers to employ such programs if they want to help their students achieve their goals effectively.

3. Mobile based games for vocabulary development

Mobile technology can provide language learners and teachers with new techniques for vocabulary development, and one of those innovative techniques is learning vocabulary through mobile-based game applications. Several studies have pointed out that games are effective tools for language learning and vocabulary development. For example, Lee noted, (as cited by Uberman, 1998) that, "most language games make learners use the language instead of thinking about learning the correct forms, and games should be treated as central not peripheral to the foreign language teaching program" (p. 20). Lee's argument here is supporting the idea of incorporating language games while teaching a target language since language games help learners utilize the target language and the target vocabularies in context. Similarly, Uberman (1998) indicated that several researchers believed that using games in language learning could lower students' anxiety, and make the vocabulary acquisition more likely. He also indicated that language games are highly motivating, entertaining and good tools for involving shy students in practicing the target language and expressing their own feelings and opinions. Language games proved to be effective tools for learning the target language as stated above. To give a sense of how mobile-based games work in developing students' vocabulary knowledge, the following studies are given as examples.

First, Ulfa's (2012) study aimed to examine the effectiveness of a prototype mobile game in promoting second language vocabulary acquisition. The prototype mobile game includes animals and fruits vocabulary images with a total of 20 words, which enable students to play the game by clicking on the image and write the French equivalent word. To examine the effect of this game on students' vocabulary development, thirty students were divided into two groups, and engaged in learning 20 words. The experimental group used the prototype mobile game for studying their vocabularies, whereas the control group used word lists to review the same target words. The results of a post-test showed that the experimental group had higher scores than the control group. This means the prototype mobile game has a significant impact on students' vocabulary acquisition. It was also interesting to know that students in this study realized the significant benefits they got from utilizing the prototype mobile game in reviewing the target vocabulary, and they think it was a motivating and interesting game. For instance, a student from

the experimental group showed that the prototype mobile game helped them to learn the words saying: "I could memorize the words in French language easily, because the words were represented by images. Also, using mobile game was more interesting for me and I had been motivated to learn the new words " (Ulfa, 2012, p. 6). This student expressed that the prototype mobile game is helpful for memorizing the target words and it facilitated the process.

Another study by Yipa, Alvin & Kwan (2006) investigated the impact of a mobile based game in developing the target vocabularies. To do so, 3 educators and 100 students participated in a quasi-experimental study for nine weeks. The participants were divided into two groups. The experimental group had to study the target vocabularies through two carefully selected websites, which are *Professional Word Web* and *University Word Web*, and those website involve games. On the other hand, the control group had to study the same target words through in class activity-based lessons. The results of the tests indicated that, "the experimental group outperformed the control group statistically in the post-test. Also, the students in the experimental group generally preferred online learning supplemented with digital educational games to conventional activity-based lessons" (Yip et al., 2006, p. 233). This means the online chosen website and the mobile based games are very useful tools, and they helped students in the experimental group to learn the target vocabularies in a more effective way. Therefore, mobile-based games are helpful and efficient tools for students who want to build new vocabularies in an interesting and entraining way.

Students' attitudes about using mobile phones as educational tool

Throughout reviewing some of the related research studies in this field, I was interested in the students' attitudes about using mobile phones for vocabulary development. Fortunately, I found that most articles in this field shed light on students' perspectives about incorporating mobile technology in language learning in general and vocabulary acquisition in particular. For example, Anaraki's study (2008) showed that "majority of participants have a positive attitude towards mobile learning, and they are enthusiastic to learn English using their mobile devices" (p. 34). Also, other research studies indicated that students have developed positive attitudes toward the use of mobile devices in learning (Cavus & Ibrahim, 2009). So, it seems that mobile technology has a positive impact on students' learning experiences. It also seems that students reap the benefits from employing such technology in their learning; otherwise, they would not show a positive attitude toward it. To give further information about students' attitudes toward mobile technology, the following two studies are examined.

First, Zengning's study (2011) investigated how adult learners perceive vocabulary learning through utilizing mobile phones by having 24 English major students studying English vocabularies through their mobile phones. To do so, he utilized a questionnaire survey to ask students about their attitudes. The results showed that the students favored mobile phone as a tool for learning new vocabularies with average scores of 4.30 on a scale ranging from 1 to 5. That means the students have enjoyed the experience of learning vocabulary through utilizing mobile phones and that has contributed to their positive feedback. The findings of Zengning's study first indicated that students liked the "accessibility of mobile phones", and they showed that they took the advantage of their convenience when they do not have access to computers or textbooks. Secondly, students believed that vocabulary text messaging is very helpful for them as a reminder for autonomous learning since it reminds them of a vocabulary task when they forgot

about it. It helped them discipline themselves to keep up with their study. Third, students found that the mobile technology is a great for those who are busy with family and work and can hardly find time for learning. Mobile technology provides students with the opportunity to make use of the fragmented time.

Similarly, Ulfa's (2012) study had two groups of students studying vocabulary thorough a prototype mobile game and a word list respectively, and the students from each group were invited to comment about their experience while learning the target vocabulary. The overall comments that the mobile game group provided was very positive since students indicated that they could memorize the words easily based on the repetitive features that the mobile games provided. They also indicated that learning vocabulary through the mobile game is fun, interesting, motivating, and helpful to them. On the other hand, the overall comments that the word list group provided was negative, and students expressed that they faced difficulty and confusion while studying the target vocabulary through the word list. This means the mobile game group had a much better experience, which has contributed to the positive comments they provided. It also suggests that students in the mobile game group have a positive attitude toward using the mobile phones in learning vocabulary, and they felt that the mobile phone is an effective tool for vocabulary development.

Limitations of Mobile-Assisted Language Learning

Although the above research studies argued for the benefits of incorporating mobile technology in assisting language learning, there are also some problems associated with it. A few of the drawbacks are as follows:

First, mobile technology is expensive and it may affect students' budgets. Perry (2003) argued that "costs of software and accessories" are one of the MALL disadvantages since students need to spend money to buy cell phones or pay for the service. So, the cost of money is considered as one of the MALL limitations.

In addition to the cost of money, researchers in MALL fields have some concerns about the cell phones' screen size and the limited battery charge. Lee (2005) argued that these could be considered drawbacks when utilizing the cell phones for language learning. This means these two features may impact the effectiveness of mobile assisted language learning.

Similarly, Perry (2003) noted that cell phones have the disadvantage of " unstable data storage (on battery exhaustion) leading to lost work"(p. 20). This means students may lose their works that they have saved in their cell phones due to battery problems.

Furthermore, the need for teachers and students' training on using cell phones for academic purposes can be considered as one of MALL disadvantages, too. Perry (2003) noted that one of the drawbacks associated with mobile assisted language learning is the crucial need for effectively training both the students and teachers to make sure that they both are on the same track. If the students are not well trained in using the target cell phone application, the learning process will be negatively affected.

In addition to the need for training, there is also a need for technical support when incorporating mobile technology in language learning, which is another drawback. Perry (2003)

indicated that MALL creates a need for technical support to help the learning process go on because, as he argued, "if students do not get technical support, they are less likely to derive maximum benefits from adopting cellphones to support learning"(p.30). He supported his claim by providing a student's experience from Thornton and Houser's study (2004) as an example. The student in Thornton and Houser's (2004) study has experienced difficulty-hearing audio through his cell phone, which has the researcher to look for a technical support expert to solve the problem.

Conclusion

To sum up, the aim of this paper was to to discover how far mobile devices are being used to support language learning by shedding light on its contribution to assisting vocabulary development. It does so by examining some the existing and related research studies in this field. Throughout developing this paper, it can be noticed that most of the existing and related studies have argued that mobile technology is an effective tool for vocabulary development, although no one can deny the drawbacks that are associated with mobile technology. Most of the related studies that are referred to here in this paper recommend incorporating mobile technology to help language learners develop their vocabulary effectively, which will, of course, contribute to improving the four language skills. The paper also indicates that students have positive attitudes toward the use of mobile technology in learning vocabulary.

It is also interesting to realize that most of the existing and related research studies have tried to examine some of the features that mobile phones allow for users such as SMS, mobile-based flashcards, mobile-based games, and others. However, there are limited research studies that were targeted at examining the impact of social media applications, such as Twitter, Facebook, and Instagram on vocabulary development, in spite of the fact that social media applications are becoming popular among language learners. Therefore, there is a need for more research studies that investigate the impact of social media on students' vocabulary development since they are very popular among language users, and the numbers of such programs' users are rapidly increasing.

About the Author:

Hind Alzahrani is a Ph.D. candidate at Indiana University of Pennsylvania majoring in English composition and TESOL (Teaching English as a second language). She holds a master degree in TESOL from California State University, East Bay and bachelor degree in English from Albaha University. She worked as an English teacher in Saudi Arabia, her home country. Also, she worked as an English composition instructor at California State University, East Bay.

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