

Using Smartphones for Vocabulary Improvement: Insights from College Students' Reflections

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This study aimed to investigate students' reflections on using smartphones to enhance vocabulary learning. The sample consisted of 64 college students enrolled in required English as a Foreign Language (EFL) reading course. A twenty-two-item questionnaire was developed to elicit students' reflections on their experiences in terms of three aspects; engagement, vocabulary learning strategies, and attitudes towards smartphone use. The study also explored the effect of previous experiences of smartphones use on the students' reflections. Results showed that students' engagement was generally high, their vocabulary learning strategies had changed, and that their attitudes towards using smartphones to develop their vocabulary were positive. The study also found that there were differences between those who have experience in using smartphones and those who did not, in favour of those with experience. It is recommended that teachers encourage their students to use smartphones to enhance their English language abilities, especially their vocabulary.

Keywords: using mobile, technology in ELT, EFL in Palestine, smartphone in EFL, teaching vocabulary, using mobile in vocabulary

INTRODUCTION

The use of smartphones for educational purposes has become widespread over the last decade. According to Burston (2018), high rates of smartphone usage have been predicted for teaching English as a Foreign Language (EFL) due to its ubiquity, affordable cost and availability of applications, as well as their practicality and familiarity. The use of the smartphone as a tool for teaching and learning has been supported by several researchers, (Abdullah, et al. 2013; Jarvis & Achilleos, 2013). In general, research has found that using technology is effective in teaching vocabulary (Ahmad, et.al. 2017; Gorjian, 2012; Lai & Chun, 2017; Mahdi, 2018; Niitemaa, 2018; Rezaee&Shoar, 2011; Yun, 2011; Taj, Ali & Ahmad, 2017). One of the main uses of smartphones for educational purposes is learning vocabulary. This was evident in Zhang and Perez-Pardes' (2019) study of postgraduate EFL learners that found using smartphones to improve vocabulary was second only to using them to pass exams. Moreover, they found that learners rated the vocabulary learning and smartphone dictionary applications as their favourite smartphone applications.

Although research on the use of Mobile Assisted Language Learning, (MALL) has increased rapidly (Burston, 2014), no studies have discussed this issue in the Palestinian higher education context. This study aims to explore first-year engineering students' reflections on using smartphones to enhance vocabulary learning. It also seeks to shed light on the use of MALL in EFL teaching and learning in the Palestinian higher education context in general.

Vocabulary is essential part of EFL learning, and for some researchers, it is necessary for the mastery the four skills (Nation, 2005; Shoebottom, 2012; Thornberry, 2002). One of the main challenges facing EFL students is vocabulary. Students need vocabulary for comprehension (Silverman & Hines, 2009), and they always complain that they find it difficult to use the vocabulary items they have been

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exposed to in class in real communicative contexts. Therefore, it is important for teachers and students to explore all available tools to enhance the teaching and learning vocabulary in EFL. The availability of smartphones and the huge development of smartphone applications could be of great assistance in accomplishing these goals.

Purpose of the study

This study aimed to investigate first year engineering reflections on using smartphones to improve their vocabulary. It included four aspects of using smartphones in learning vocabulary items which were a) student engagement, b) the effect of smartphones on their vocabulary learning strategies, c) attitudes towards smartphone practices and d) the effect of students' previous experience of using smartphones for educational purposes on their reflections. The study aimed to answer the following research questions:

1. How did students experience using a smartphone dictionary for vocabulary learning in terms of engagement, vocabulary learning strategies, and attitudes towards smartphone use?
2. Were there significant differences between the reflections of the students who had previous experience in using mobile for educational purposes and those who did not have?

Review of Literature

The use of technological tools in teaching and learning in the field of English as a Foreign Language (EFL) has increased as a result of the availability and accessibility of these tools, with smartphones being the most widely used. According to the UN Telecommunication Agency report about 6 billion people have mobile phones, and almost 3 billion use the internet. Wu (2019) found that smartphones are the most useful device used by Chinese university students. He also reported that students use smartphones for educational purposes in various settings in addition to the classroom such as home, dorms and library. Studies on use of smartphones in EFL have covered several aspects such as students' and teachers' attitudes and the effect of using smartphones on different EFL skills and sub-skills including vocabulary learning.

Studies have found that students have positive attitudes towards using mobile phones in EFL (Dashtestani, 2016; Oberg & Daniels 2012). Saidouni and Bahloul (2016) found that it is not only students who have positive attitudes towards using smartphones in EFL learning, but also teachers. Both teachers and students agreed on the high potential of MALL in developing teaching and learning EFL methods. Alrefaai (2019) investigated the attitudes of 70 Saudi graduate students towards using smartphones for EFL as well as the problems that they face in using them. He found that although the majority of students faced technical problems and experienced psychological stress associated with their use, their attitudes were positive. He also found significant differences between male and female students in their attitudes towards using smartphones, with female students having more favorable attitudes. Chang and Yeh (2018) found that using smartphones to produce videos and uploading them to a Facebook group for responses from colleagues, provided students with good opportunities to practice speaking. They also expressed positive attitudes towards the activity as a means of improving their speaking. In the same context, Oz (2015) investigated the attitudes of 128 Turkish university students towards Computer Assisted Language Learning (CALL), and found that they had positive attitudes. He also found that differences in attitude can be explained by age, gender, experience in foreign language learning and academic achievement. Vocabulary has been one of the main topics of CALL research studies over the last two decades. (Kim & Kwon 2012). Lin & Lin (2019) reviewed thirty-three studies published between 2005-2018 to explore the relationship between the use of mobile technology and vocabulary retention. They found a significant positive impact of using this tool on vocabulary retention. Fageeh (2013) investigated the effect of using mobile technology on students' vocabulary learning and motivation. He found that the experimental group had better

performance than the control group. Katemba (2019) also found that using either MALL or CALL improved students' vocabulary and helped them to increase their vocabulary. Gamlo (2019) investigated the use of smartphone language games on motivating the first-year university students to learn English including vocabulary. The sample consisted of 30 female freshmen students at a Saudi University. The researcher explored the students' perceptions of using smartphones in EFL teaching. She found that the students' motivation increased significantly and confirmed that the use of mobile applications is very useful for learning English. Zhou, Yan and Li (2018) investigated the perceptions of 166 students from 21 universities in China on the use of smartphones for EFL by employing a questionnaire and interviews. They found that students were highly motivated by the smartphones. An important aspect of using technology in EFL that research has addressed is using online dictionaries and apps. Kohnke (2020) investigated the undergraduate students' perceptions of using vocabulary learning apps and found that students were enthusiastic about using the app. In another study, Zhang & Wu (2019) found that students benefited from a mobile dictionary through incidental vocabulary learning. O'Neill (2019) explored the impact of using online dictionaries and translators on the writing scores of university students enrolled in intermediate Spanish or French courses and found that those who used online dictionaries scored higher than those who did not even without having training dictionary use using. Moreover, Hojatpanah & Dashtestani (2020) found that both students and teachers had positive attitudes towards the use of electronic dictionaries for learning vocabulary. One study conducted by Yang and Liu (2020) explored the use of mobile-assisted vocabulary learning among Chinese EFL learners. The study found that using a mobile application for vocabulary learning was effective in improving learners' vocabulary knowledge, and that learners preferred using the mobile application over traditional classroom instruction. Another study conducted by Azadi, Tahiri, and Rasekh (2021) investigated the use of WhatsApp as a tool for vocabulary development among Iranian EFL learners. The results showed that using WhatsApp to learn vocabulary was more effective than traditional classroom instruction, and that learners enjoyed using WhatsApp as a learning tool. In addition, a study by Alshahrani (2022) examined the effectiveness of the use of mobile applications for vocabulary learning among Saudi Arabian EFL learners. The findings of the study indicated that using mobile applications had a significant positive effect on learners' vocabulary knowledge and retention. Furthermore, a study by Wang, Zeng, and Zhang (2022) investigated the use of WeChat, a popular social media platform in China, for vocabulary learning among Chinese EFL learners. The results showed that using WeChat as a learning tool significantly improved learners' vocabulary knowledge.

Although most of the studies on the use of MALL for EFL learning in general and vocabulary, in particular, reveal positive results and positive attitudes, some researchers found that students still face some difficulties. Lu (2008) reported that students have negative attitudes towards using smartphones to learn vocabulary because of the complicated technical problems that they face while using them. These include a lack of concentration and the small number of examples that illustrate the use of vocabulary items. Dashtestani (2014) found that only 14.2% of the participants in his study reported that they were proficient in using an online dictionary, and Niitemaa and Pietila (2018) suggested that students' skills in using online dictionaries are limited. Ganapathy, Shuib & Azizan (2016) conducted a study on 78 undergraduate students to explore their perception of using smartphones to test grammar. They found that students' perceptions were moderate and that they faced challenges such as limited capacity, small screen size and connectivity. In another related study, White & Mills (2014) collected data from 403 Japanese university students over a 2-year period to investigate their attitudes towards usage of smartphones. They found that despite the difficulties that participants reported they faced, their attitudes improved over the course of the experience. At the end of the two years, the students said that some of the difficulties they had initially faced had disappeared. Researchers categorized the challenges students faced when using smartphones into three types. First are technical challenges, such as the small size and low resolution of the device, and students and instructors' lack of familiarity with the applications available on smartphones. Second are psychological challenges

such as the need for students to change from their traditional static classroom setting where they are guided by a teacher, to a new setting that requires them to guide themselves and to maximize their autonomy. Moreover, students think of their smartphones as mostly an entertainment device not a device for educational purposes. The last type of challenges is the instructors' attitudes towards the use of smartphones in the classroom. Many teachers believe that smartphones disrupt the flow of the lecture, and they distract students' attention.

METHOD

Participants

The study sample consisted of sixty-four first-year engineering students, comprised of thirty-six males and twenty-eight females, who were enrolled in a compulsory English course at Palestine Polytechnic University. Although the course was in general English, the emphasis was on reading. Engineering students are required to take three English courses. The first two aim to improve all language skills with a focus on reading, while the third aim is to improve speaking and writing. All participants were freshmen in their second semester at the university. They finished high school and passed the General Secondary Certificate Exam (GSCE), which is an official exam organized by the Ministry of Education and Higher education as an exit exam. Exam results are a decisive factor in students' choice of study, with the highest achievers going to prestigious and well-respected majors in Palestine such as medicine and engineering. All participants in the study had an average score of at least 82% on their high school exit exam. It is worth mentioning that all participants had completed twelve years of schooling education and had been exposed to English as a school subject from the first grade. However, most teachers and parents in Palestine complain that students' proficiency in English is very low. At the university, English is used as a medium of instruction, especially in the faculties of science and engineering.

Instruments

A questionnaire consisting of twenty-two Likert- scale type items with four points ranging from 1=strongly disagree to 4=strongly agree, was developed to elicit students' reflections on their experience of using smartphones to enhance their vocabulary. The questionnaire required students to reflect on three aspects of their experience in using smartphones; the degree of engagement in dealing with the smartphone dictionary, the effect of using the smartphone on vocabulary learning strategies and their attitudes towards the actual practice of using the smartphone during the semester. The questionnaire underwent a validation process involving a panel of colleagues who reviewed its content and offered valuable insights for enhancing the clarity and phrasing of certain items. Subsequently, these suggestions were thoughtfully incorporated into the questionnaire. To assess its reliability, the Alpha Cronbach scale was employed, utilizing SPSS software. The resulting overall reliability score for the questionnaire was 0.86.

Students were given a template with three sections to use as a vocabulary log. In the first section, they were asked to write unfamiliar vocabulary items that they encountered during the reading activities. The second section was for the meanings of the vocabulary items that they were asked to look up in their smartphone dictionaries. In the third section, they were required to use the words in meaningful sentences.

Procedures and data collection:

Students were asked to download the application of the Merriam-Webster dictionary onto their smartphones so that they could look up the meaning of the new vocabulary items they encountered during the semester. They were also provided with the vocabulary log template. They were instructed to keep their mobiles on but silent inside the classroom. Once they encounter a new

vocabulary item, they were required to list it in the vocabulary log, then look it up using their smartphone dictionary and write it in the space provided in the vocabulary log. The students then used the word in a sentence of their own. They also had to hand in the vocabulary log at the end of the term as part of their course portfolio.

At the end of the term, students were asked to complete the questionnaire described above, which was designed to elicit their reflections on the experience of using the smartphone to develop their vocabulary. To analyse the data collected from the questionnaire, the researcher utilized SPSS software. He reported both the means and standard deviations, as well as conducted ANOVA analyses.

FINDINGS

The results of this study will be presented and discussed in this section according to the order of the research questions. The first question will be addressed in three separate parts; students' engagement, vocabulary learning strategies and their attitudes towards using mobile phones.

Research question one: How did students experience using a smartphone dictionary for vocabulary learning in terms of engagement, vocabulary learning strategies, and attitudes towards smartphone use?

Students Engagement

Table 1

Means (*M*), standard deviations (*SD*) and percentage of students agreeing and disagreeing on items about their engagement in using smartphones

No.	Items	<i>M</i>	<i>SD</i>	% Agree & Strongly Agree	% Disagree & Strongly Disagree
1	I feel enthralled (caught up) using mobile to learn English vocabulary.	3.1	.5	92.2	7.8
2	I feel more motivated to do my vocabulary assignments using my mobile.	2.9	.6	78.1	21.9
3	It is great fun to learn new vocabulary using dictionary application on my mobile.	3.2	.7	92.2	7.8
4	I think that using mobile makes learning vocabulary more interesting.	3.2	.5	92.2	7.8
5	I think that mobile makes me want to learn new vocabulary	3.0	.7	79.7	20.4
6	Using the dictionary application on my phone makes it easy for me to look up new words, their derivations and their usages in illustrative examples.	3.5	.5	98.5	1.6

Table 1 shows that the items with the highest rates of agreement were items 6 ($M=3.5$) and 4 ($M=3.2$). Both items relate to the process of the using the smartphone and the ease of using it. Two other items relating to feeling and engagement (1 & 2) also have high means ($M=3.1$ & $M= 3.2$). Most of the students agreed that using smartphones is interesting, and they feel happy when they use them to learn new vocabulary items. However, the lowest means and percentages were for the two items (2 & 5) that are related to using smartphones to do vocabulary assignments, ($M=2.9$ & $M= 3.0$). The percentages of agreement were 78.1% and 79.7% respectively. This means that a reasonable percentage of students were still feeling uncomfortable with using smartphones for educational purposes such as doing assignments and exercises. This may be consistent with the findings of White & Mills (2014) regarding the difficulties that students face when using smartphones for academic purposes. It may also be due to the fact that students use smartphones for fun activities most of the time, and have little or no experience of using them for educational purposes.

Vocabulary learning strategies

Table 2

Means (*M*), standard deviations (*SD*) and percentages of students agreeing and disagreeing with items regarding the effect of using smartphones on their learning strategies

No.	Item (statement)	<i>M</i>	<i>SD</i>	% Agree & Strongly Agree	% Disagree & Strongly Disagree
7	I will continue to use my smartphone dictionary application to learn and use new vocabulary.	3.3	.6	93.8	6.3
8	I have developed an e-lifestyle using my smartphone on a daily basis to look up and learn new words	2.9	.8	71.9	28.1
9	After using my smartphone in this semester for vocabulary learning, I prefer using my smartphone dictionary to look up and learn new words over paper-based dictionaries	3.3	.8	72.8	17.2
10	I am increasingly engaged in learning vocabulary via smartphone compared to paper-based-dictionary	3.2	.6	89.0	10.9
19	I start using my smartphone for other learning purposes in the classroom.	2.8	.7	65.7	34.4
20	Using my smartphone to learn vocabulary meanings encourages me to read more English texts.	2.9	.8	71.8	28.1
21	I think that smartphones help to solve the problem of being unable to complete exercises in class.	3.2	.6	93.2	7.8
22	I think that smartphones provide freedom of learning.	3.3	.6	93.7	6.3

The item with the highest mean in this category was number 22 ($M=3.3$), which show that students believe that using smartphones gives them the freedom to learn. They can use it to learn vocabulary items whenever they need and wherever they feel appropriate. This is followed by item 7 with ($M=3.3$) where participants said that they will continue to use smartphones to learn vocabulary. This can be seen as a new strategy for learning vocabulary that can be added to the previous ones, they are familiar with. It may increase their pool of strategies and may contribute to their learning ability as each strategy could be used with a specific category of vocabulary items. These two responses show that the use of smartphones can be very helpful in encouraging students to rely on themselves especially in difficult circumstances, such as during the COVID 19 period, when universities and schools were closed in most countries of the world. The lowest mean in this set of items was 19 ($M=2.8$). This shows that students are not ready yet to use smartphones for a variety of educational purposes. This may be because their teachers are not encouraging them to do that, or they themselves may not be well informed about using smartphone applications, or may not be comfortable using their smartphones for educational purposes. These challenges could be connected to the explanations of Dashtestani (2016) and White and Mills (2014) about the challenges that students face using smartphones. Both studies suggested that the negative attitudes of the teachers are one of the main obstacles for using smartphones for educational purposes. The reluctance of students to use smartphones for educational purposes was identified by Dashtestani (2016) as one of the psychological challenges that students feel when they need to transform their use of smartphones from

a means of entertainment to a source for learning. The second lowest item was number 8 ($M= 2.9$). It also reflects students' lack of experience in using smartphones for academic purposes. They have not reached the point where they are almost dependent on smartphones as an e-lifestyle for learning vocabulary items. It could be said that this stage of development in using smartphones needs cooperation from all teachers and academic administrators to develop a policy that celebrates using smartphones for learning and encourages teachers and students to use them. In general, students' reflections showed that the use of smartphones helped them to move from being dependent on their teachers and using teacher-driven to learning vocabulary to being dependent on themselves and using student-driven approaches.

Students' attitudes regarding smartphone use

Table 3

Means (M), standard deviations (SD) and percentages of students' agreeing and disagreeing with items about smartphone use in the classroom

No.	Item	M	SD	% Agree & Strongly Agree	% Disagree & Strongly Disagree
11	I think that my smartphone is convenient and easy to access.	3.6	.5	98.6	1.6
12	I can get vocabulary assignments done faster when I am working on my smartphone than when I am working with a paper-based dictionary	3.6	.5	100	.0
13	I think that my smartphone is a very useful reference tool for learning vocabulary in class	3.4	.5	98.5	1.6
14	It's easy to learn the different forms of a new word by using the available smartphone applications.	3.0	.6	86.0	14.1
15	I think that using my smartphone helps me memorize new words easily	2.9	.7	71.9	28.2
16	I think that using my smartphone increases awareness of vocabulary usage.	3.0	.6	84.4	15.6
17	I think that my smartphone enables me to review the vocabulary easily.	3.1	.6	87.5	12.5
18	I think that my smartphone increases my vocabulary knowledge.	3.1	.5	93.8	6.3

This table shows that the two items that had the highest means regarding attitudes towards using smartphones are items 1 ($M=3.5$) and 2 ($M=3.5$). Participants think that using the smartphone dictionary is faster than using paper-based dictionaries and that the smartphone is easy and convenient to access. This is very important for students who often complain that they do not have enough time to do all the required assignments and exercises. The two items that had the lowest means were 15 ($M=2.9$) and 14 ($M=3.0$). These items were about using smartphones to help students memorize vocabulary items and to learn the different forms of vocabulary items. It is known that vocabulary retention depends on a number of different variables and that the smartphone dictionary in this case, is one of them. To be able to retain the vocabulary items, students should be given the opportunity to use them in their output. However, their experience in using this application is limited, and they do not use it frequently. This is reflected in the previous question where a reasonable percentage of participants said that they have not developed using smartphones as an e-lifestyle. Moreover, this may be related to the capacities of the smartphone dictionary applications they are using.

Research question two: Were there significant differences between the reflections of those who have previous experience in using smartphones and those who have not?

The results show that there are significant differences between students who have previous experience in using smartphones in other subjects and those who have not.

Table 4
ANOVA analyses comparing students with and without smartphone experience

Item number		Sum of squares	df	Mean square	F	p-value
Item. 7	Between groups	2.162	1	2.162	6.842	.011
	Within groups	19.588	62	.316		
	Total	21.750	63			
Item. 19	Between groups	4.097	1	4.097	8.192	.006
	Within groups	31.012	62	.500		
	Total	35.109	63			
Item 20	Between groups	2.901	1	2.901	5.037	.028
	Within groups	35.708	62	.567		
	Total	38.609	63			

The students who had used smartphones for educational purposes prior to this course reported that they would continue to use the smartphone to learn vocabulary ($p=.011$), and had begun to use it for other academic purposes in the classroom ($p=.006$). They also felt motivated to read more in English as a result of using their smartphone to learn unfamiliar vocabulary items ($p=.028$). Students experienced the educational benefits of using smartphones and felt that they could help to them to achieve their academic goals. This result should motivate teachers in all subjects to offer their students rich and varied opportunities to use their smartphones for learning, either inside or outside the classroom. This result is also consistent with White and Mills (2014), who found that the attitudes of students towards using smartphones for academic purposes improved by the experience.

CONCLUSION

This study explored college students' reflections on using smartphones to improve their learning of English vocabulary. The results showed that students were highly engaged in using smartphones to learn unfamiliar vocabulary items, and enjoyed the experience. Moreover, their responses revealed that using their smartphone will be added to their vocabulary learning strategies. This is a positive development that will facilitate improvement of their English language skills, as vocabulary is important for the four language skills. In addition to these two findings, the study showed that students have positive attitudes towards using smartphones, and believe that smartphone dictionaries are easy to use and are more convenient and faster than paper-based dictionaries.

Another important aspect of smartphones use revealed by this study is the importance of experience in using smartphones for educational purposes. Students tend to use their smartphones for fun and social media, and rarely for educational purposes. This study showed that those who had previous experience of using smartphones for educational purposes were very likely to continue using them for learning vocabulary and for other educational purposes. Moreover, they felt that using smartphones motivated them to read more in English, which is something that most teachers keep urging their students to do. Teachers can play an important role in developing their students' English language proficiency by utilizing techniques that require the use of smartphone applications. Kassem (2018) found that after training in-service teachers in using smartphone applications, their students' vocabulary acquisition improved significantly.

Although studies on the use of smartphones in EFL classroom, including this one, suggest that they are an effective tool for supporting vocabulary learning in EFL, there are still some challenges that

need to be addressed when using smartphones for this purpose. One important challenge is to match students interests with the educational activities and tasks that they are required to complete. This aspect should be a fruitful topic for further research on using smartphones for academic purposes. Another important aspect that needs to be studied is the significance of the experience of using smartphones on students' adaptation to distance learning that they have gone through as a result of the closure of educational institutions as part of the protection of society against the spread of the COVID 19 pandemic. Furthermore, the contribution of smartphones and their applications on the e-learning process in which most of the world's educational institutions were involved during the pandemic needs to be explored. In addition to these suggested avenues for further research, the research results also provide valuable insights for classroom applications. Teachers are encouraged to leverage smartphones as tools to enhance students' vocabulary acquisition and to promote their utilization in various educational activities.

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