

Learning English in the Palm of Your Hand: Comparing English and Non-English Major Students' Views on Smartphone-Based Vocabulary Learning in an Indonesian EFL Islamic Higher Education Context

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ABSTRACT

This study aimed to investigate tertiary EFL students' perceptions of using smartphones for English vocabulary learning and to examine whether there is a significant difference between English major and non-English major students. A quantitative cross-sectional survey design was employed involving 54 students from an Islamic higher education institution in Jambi Province, Indonesia. Data were collected through a structured questionnaire using a five-point Likert scale and distributed via Google Forms. The data were analyzed using descriptive statistics and an independent samples t-test. The findings showed that students generally had positive perceptions of smartphone use for vocabulary learning, particularly in understanding word meanings, learning new vocabulary, and improving comprehension. However, students reported relatively lower perceptions regarding more complex vocabulary aspects, such as collocations, synonyms, and antonyms. The independent samples t-test indicated that there was no statistically significant difference between English major and non-English major students, $p = .984$. These findings suggest that students' academic background did not significantly influence their perceptions of smartphone use for vocabulary learning. The study highlights the potential of smartphones as accessible tools for supporting English vocabulary learning in the context of Islamic higher education.

Keywords: *Smartphone-Assisted Vocabulary Learning, EFL Students, Vocabulary Learning Perceptions, English Majors and Non-English Majors, Islamic Higher Education*

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INTRODUCTION

Recent technological development has profoundly influenced many areas of human life, including education. The rapid development of digital technologies has transformed the ways in which knowledge is accessed, delivered, and constructed within modern learning environments (Crompton & Burke, 2018; Filiz & Benzet, 2018; Sung et al., 2016). In today's educational context, learning is no longer restricted to conventional classroom settings, as digital technologies facilitate more interactive, collaborative, and learner-centered approaches (Redecker, 2017; Selwyn, 2016). Educational systems therefore continue to incorporate digital tools and innovative pedagogical strategies to enhance instructional delivery and overcome some limitations of traditional teaching methods (Redecker, 2017). These developments also emphasize the importance of students' digital skills, which are increasingly necessary in a technology-oriented educational environment (Lukas & Yunus, 2021; Venkatesh et al., 2012). Consequently, digital literacy, critical thinking, and independent learning have become important components of 21st-century education (Ng, 2012; Voogt & Pareja Roblin, 2012).

Among various digital technologies, mobile technology has become an important part of everyday life and has influenced how learners access and use information. Smartphones, in particular, provide flexible learning opportunities beyond the classroom because of their portability, internet connectivity, and multifunctional features (Crompton & Burke, 2018;

Traxler, 2018). These features allow students to access learning materials across different settings and at different times. This development has contributed to the growth of Mobile-Assisted Language Learning (MALL), which refers to the use of mobile devices to support language learning and development (Gutiérrez-Colón et al., 2020; Kukulska-Hulme, 2020). Through mobile technology, language learning can become more flexible, accessible, and learner-centered, allowing students to practice beyond formal classroom environments (Yang & Chen, 2007).

In English language learning, vocabulary is an essential component of language proficiency because learners need sufficient vocabulary knowledge to understand and communicate effectively (Nation & Hunston, 2013). Smartphones can support vocabulary learning by providing convenient access to digital learning materials and activities. Mobile applications may offer text, audio, images, interactive exercises, and game-based features that can create engaging learning experiences and support vocabulary retention (Klimova, 2019; Mayer, 2009; Wu, 2015). However, the use of smartphones for vocabulary learning should be distinguished from the use of specific vocabulary-learning applications. Smartphone-based vocabulary learning refers more broadly to the use of smartphones as tools for accessing, practicing, and reviewing vocabulary, while vocabulary-learning applications represent particular digital platforms or applications designed specifically for vocabulary instruction. Therefore, examining students' perceptions of smartphone use for vocabulary learning can provide a broader understanding of how learners view mobile technology as a learning tool.

Previous research has highlighted the potential of mobile technology to support flexible, personalized, and student-centered language learning (Crompton & Burke, 2018; Gutiérrez-Colón et al., 2022; Sung et al., 2016). Mobile devices can provide learners with opportunities to access learning materials anytime and anywhere, while multimedia and interactive features may support vocabulary learning, learner engagement, and retention (Fu & Hwang, 2018; Lu, 2008). Mobile learning has also been associated with greater learner autonomy because students can control aspects of their learning according to their individual needs and preferences (Viberg & Grönlund, 2021). Nevertheless, much of the existing research has emphasized learning outcomes and technological effectiveness, while students' perceptions of smartphone-based vocabulary learning have received comparatively less attention. Understanding students' perceptions is important because their attitudes and beliefs may influence how they accept and use technology for learning (Venkatesh et al., 2012). The Technology Acceptance Model (TAM), for example, identifies perceived usefulness and perceived ease of use as important factors influencing technology acceptance (Davis, 1989; Venkatesh et al., 2012).

This issue is particularly relevant in the context of English as a Foreign Language (EFL) education in Indonesia, where students may use smartphones as part of their everyday learning activities. However, research examining students' perceptions of smartphone use for English vocabulary learning in Islamic higher education institutions in Jambi Province remains limited. The context is important because students in Islamic higher education institutions learn English within a particular educational environment that combines language education with Islamic higher education. In addition, students from different academic backgrounds may have different levels of exposure to English and different learning needs. Comparing English major and non-English major students can therefore provide a more detailed understanding of whether academic background is associated with students' perceptions of smartphone-based vocabulary learning.

Therefore, this study aimed to investigate EFL university students' perceptions of using smartphones for English vocabulary learning at an Islamic higher education institution in Jambi Province. The study focused on students' perceptions of the usefulness and effectiveness of smartphones for vocabulary learning, as well as the benefits and challenges they experience when using smartphones as learning tools. Furthermore, the study compared the perceptions of English major and non-English major students to determine whether their academic backgrounds are associated with differences in their perceptions.

The findings of this study are expected to contribute both theoretically and practically. Theoretically, the study adds empirical evidence to the literature on Mobile-Assisted Language Learning by examining students' perceptions of smartphone use for vocabulary learning in an EFL and Islamic higher education context. It also contributes to discussions of technology acceptance and learner-centered learning in digital education. Practically, the findings may help English language educators design more effective and appropriate smartphone-based vocabulary learning activities. The findings may also provide useful information for curriculum developers and higher education institutions in considering how mobile technology can be integrated into English language learning.

Research Question

What are EFL university students' perceptions of using smartphones for English vocabulary learning?

Is there a significant difference in perceptions of smartphone-based vocabulary learning between English major and non-English major students?

Literature Review

Mobile phones have become an essential part of everyday life, and their roles have progressively extended into educational settings (Crompton & Burke, 2018; Nazari & Xodabande, 2020). In the context of language learning, this development is especially important for vocabulary acquisition, as mobile learning allows students to access, practice, and review new words anytime and anywhere using their personal devices. This level of flexibility encourages more personalized, learner-centered, and context-sensitive learning experiences. As noted by Kukulska-Hulme (2020), mobile technologies can facilitate context-aware learning by adapting to learners' surroundings, enabling vocabulary to be learned in authentic and meaningful contexts. Moreover, Sung et al. (2016) argue that mobile learning can significantly enhance learning outcomes when it is effectively integrated into instructional design. More recent studies also confirm that mobile-assisted learning improves vocabulary retention and learner engagement by linking learning activities to real-life situations (Rahmani et al., 2022; Viberg & Grönlund, 2021).

Furthermore, the portability, accessibility, and personalized nature of mobile devices, supported by increasingly advanced technological features, make smartphones valuable tools for autonomous vocabulary learning (Kukulska-Hulme, 2012). These features enable learners to experience repeated exposure, multimedia input, and interactive tasks, all of which are crucial for vocabulary development. From a cognitive perspective, Mayer's (2009) Cognitive Theory of Multimedia Learning suggests that combining visual and verbal information can strengthen vocabulary acquisition. In addition, research shows that mobile learning environments can increase learners' motivation and engagement through immediate feedback and interactive elements (Klimova, 2019; Stockwell, 2010).

The increasing use of mobile technology in language education has led to the appearance of Mobile-Assisted Language Learning (MALL), which plays a significant role in vocabulary development. MALL refers to language learning facilitated by mobile devices beyond traditional classroom boundaries (Kukulska-Hulme, 2012). This approach supports continuous exposure to vocabulary in authentic contexts while also promoting learner autonomy. According to Burston (2015), MALL has consistently demonstrated positive effects on vocabulary acquisition across different learning environments. Empirical studies further indicate that MALL offers benefits such as flexibility, accessibility, and increased motivation, all of which contribute to better vocabulary retention (Burston, 2015; Duman et al., 2015; Viberg & Grönlund, 2021).

In addition, mobile learning fosters interactive and collaborative learning through features such as online discussions, peer interaction, and real-time feedback. These elements help learners process vocabulary more deeply and support long-term retention. This form of social interaction aligns with Vygotsky's sociocultural theory, which highlights the importance of interaction in language development. Learners can also adopt personalized

strategies for vocabulary learning, including the use of mobile applications, digital flashcards, and multimedia tools, which further enhance learning effectiveness (Nation & Hunston, 2013; Zhang & Pérez-Paredes, 2021).

In EFL contexts, Mobile-Assisted Language Learning (MALL) offers learners flexible opportunities to enhance vocabulary knowledge through the use of everyday mobile applications. Research has indicated that mobile technologies can facilitate vocabulary acquisition and support language learning both inside and outside the classroom. Students can utilize both specialized vocabulary applications and general digital tools, such as videos, online texts, and messaging platforms to strengthen their vocabulary knowledge across different contexts. Previous research also indicates that frequent exposure and retrieval practice through mobile tools play a key role in vocabulary development (Webb & Nation, 2017). Given their widespread availability, smartphones serve as practical and cost-effective tools for ongoing vocabulary learning.

A considerable body of research supports the effectiveness of mobile technologies in enhancing vocabulary acquisition, including the use of mobile applications, SMS-based learning, and messaging platforms like WhatsApp (Başoğlu & Akdemir, 2010; Lu, 2008; Motallebzadeh et al., 2011). In addition, meta-analyses and systematic reviews have demonstrated that mobile-assisted learning has a moderate to strong positive impact on language learning outcomes (Burston, 2015; Golonka et al., 2014). More recent studies also emphasize the importance of mobile-mediated interaction and social communication in improving vocabulary learning and learner engagement (Kaceti & Klímová, 2019; Lai, 2019; Rahimi & Fathi, 2022). Therefore, examining students' perceptions of smartphone-based vocabulary learning is crucial for helping educators effectively integrate mobile technologies into language instruction.

Considering Indonesia's diverse educational landscape, further research is needed to explore how students from different backgrounds perceive and utilize mobile technologies for vocabulary learning. Such studies can provide valuable insights for designing more effective, inclusive, and technology-enhanced language learning environments, particularly in developing countries where mobile technology plays a key role in expanding access to education (Redecker, 2017; Traxler, 2018).

METHOD

Research Design

This study employed a quantitative research design using a survey method. It adopted a cross-sectional approach aimed at generalizing the findings from the sample to the wider population (Creswell, 2012). The research was conducted at an Islamic institution in Jambi Province, involving students from the English Education Department as well as students from other academic majors. The main variable investigated in this study was students' perceptions of using smartphones for English language learning.

Respondents

The participants in this study consisted of 54 university students selected through convenience sampling. Among them, 9 were male and 45 were female students, aged between 18 and 23 years old, consisting of both English major and non-English major students. All participants had relatively similar academic backgrounds. They voluntarily agreed to take part in the research.

Instruments

The main instrument used in this study was a structured questionnaire designed to investigate EFL university students' perceptions of smartphone-based vocabulary learning. The questionnaire was adapted from Afrizal et al. (2024) and was adjusted to fit the context of the present study. The questionnaire was selected because it focuses specifically on students' perceptions of using smartphones to learn English vocabulary.

The questionnaire consisted of two sections. The first section collected demographic information, including age, gender, and academic major. The second section consisted of 17 Likert-scale items, with responses ranging from 1 = strongly disagree to 5 = strongly agree. The 17 items measured students' perceptions of smartphone-based vocabulary learning, including perceived usefulness, benefits, ease of use, motivation, engagement, and overall learning experience.

Before data collection, the questionnaire was reviewed to ensure that the items were relevant and understandable to the participants. The reliability of the 17-item questionnaire was also analyzed. The results showed excellent internal consistency, with a Cronbach's alpha coefficient of .923 based on responses from 54 participants. The corrected item-total correlations ranged from .418 to .743, exceeding the commonly accepted minimum criterion of .30.

Procedures

The study was conducted using a quantitative survey design with a cross-sectional approach. The research involved 54 EFL university students from an Islamic higher education institution in Jambi Province, consisting of both English major and non-English major students. The participants were selected through convenience sampling and voluntarily participated in the study. Before completing the survey, the participants were informed about the purpose of the research and assured that all responses would remain confidential and only be used for academic purposes.

Data were collected through a structured questionnaire distributed online via Google Forms. The questionnaire consisted of demographic questions and Likert-scale items measuring students' perceptions of smartphone-based vocabulary learning, including effectiveness, usefulness, motivation, and challenges. After the data collection process was completed, the responses were analyzed using descriptive statistics such as frequencies, percentages, means, and standard deviations. After the data collection process was completed, the responses were analyzed using descriptive statistics such as frequencies, percentages, means, and standard deviations. In addition, an independent-samples t-test was conducted using SPSS software to examine differences in perceptions between English-major and non-English-major students.

Data were collected through a structured questionnaire administered online using Google Forms. Before accessing the questionnaire items, participants were presented with an informed consent statement explaining the purpose of the study, the voluntary nature of participation, their right to decline or discontinue participation, and the intended academic use of the data. Participants were asked to indicate their consent before proceeding to the questionnaire. The collected responses were treated confidentially and used solely for research purposes. Participation was voluntary, and no personally identifiable information was reported in the study.

The questionnaire consisted of demographic questions and Likert-scale items measuring students' perceptions of smartphone-based vocabulary learning, including its effectiveness, usefulness, motivational value, and associated challenges. After the data-collection period ended, the responses were downloaded from Google Forms and analyzed using descriptive statistics, including frequencies, percentages, means, and standard deviations. In addition, an independent-samples t-test was conducted using SPSS to examine whether perceptions of smartphone-based vocabulary learning differed significantly between English-major and non-English-major students.

Data Analysis

The collected data were analyzed using both descriptive and inferential statistics. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize students' overall perceptions. To examine differences in students' perceptions between English-major and non-English-major students, an independent-samples

t-test was conducted. The level of significance was set at 0.05, and all analyses were performed using SPSS software.

FINDINGS AND DISCUSSION

Findings

The findings of this study reveal that students generally have positive perceptions toward the use of smartphones in learning English vocabulary. As shown in Table 1, most of the mean scores are above 4.00, indicating that the participants agree that smartphones are effective tools for vocabulary learning. Students reported that smartphones help them acquire new vocabulary, understand the meanings of unfamiliar words and expressions, and improve their overall vocabulary comprehension. The highest mean score was found in the statement related to learning the meanings of new vocabulary words ($M = 4.33$), followed by understanding English expressions ($M = 4.28$) and acquiring new vocabulary ($M = 4.19$). These results suggest that smartphones play an important role in supporting students' vocabulary development and facilitating English language learning.

Table 1. The students' perceptions of smartphones in learning English vocabulary.

No.	Statements	SD	D	N	A	SA	Mean	SD
1.	The advent of smartphones has greatly contributed to acquiring my new English vocabulary	1.85	0.00	12.96	48.15	37.04	4.19	0.80
2.	Smartphones help me to learn the meaning of new English vocabulary words.	1.85	0.00	5.56	48.15	44.44	4.33	0.75
3.	Smartphones help me to understand the meaning of new English expressions.	0.00	3.70	5.56	50.00	40.74	4.28	0.74
4.	I can identify the meaning of the new English vocabulary through the context using a smartphone.	0.00	0.00	14.81	61.11	24.07	4.09	0.62
5.	I can identify the exact meaning of the new vocabulary using a smartphone	0.00	0.00	9.26	64.81	25.93	4.17	0.57
6.	Smartphones help me remember the meaning of the vocabulary I have acquired later on.	0.00	0.00	18.52	62.96	18.52	4.00	0.61
7.	I can use this new vocabulary later in my daily life using a smartphone	0.00	1.85	12.96	59.26	25.93	4.09	0.68
8.	Smartphones help me to write the English vocabulary correctly.	0.00	3.70	9.26	57.41	29.63	4.13	0.73
9.	Smartphones help me to remember the correct pronunciation of the new English vocabulary.	0.00	3.70	14.81	53.70	27.78	4.06	0.76
10.	I can reinforce the existing English vocabulary using a smartphone.	0.00	0.00	18.52	57.41	24.07	4.06	0.66
11.	Smartphones help me to link the new vocabulary to their meanings in the English language.	0.00	0.00	14.81	59.26	25.93	4.11	0.63
12.	I can easily identify the word class of the new English vocabulary using a smartphone.	1.85	0.00	22.22	57.41	18.52	3.91	0.76
13.	Smartphones help me to know the collocation of the new English vocabulary.	0.00	0.00	18.52	66.67	14.81	3.96	0.58
14.	Smartphones help me to connect the new vocabulary to their synonyms.	0.00	0.00	24.07	57.41	18.52	3.94	0.66
15.	I can easily connect the new vocabulary to their antonyms using a smartphone.	0.00	1.85	29.63	53.70	14.81	3.81	0.70
16.	I can keep a vocabulary notebook using a smartphone.	1.85	1.85	14.81	55.56	25.93	4.02	0.81
17.	Smartphones help me to ask other people (friends, mates) about the meaning of the new vocabulary.	3.70	1.85	11.11	55.56	27.78	4.02	0.90

The table indicates that students generally have positive perceptions of using smartphones to learn English vocabulary, as most mean scores are above 4.00. This shows that learners agree smartphones are effective tools for vocabulary acquisition, especially in understanding meanings, learning new words, and improving comprehension of expressions. The highest mean score (4.33) highlights that smartphones are particularly helpful in learning word meanings, followed by understanding expressions (4.28) and acquiring new vocabulary (4.19). In addition, students perceive smartphones as useful for identifying meanings, improving spelling, pronunciation, and linking words to their meanings. The relatively low standard deviation values suggest that responses are consistent among participants. However, slightly lower mean scores are observed in more complex aspects such as identifying word classes, collocations, synonyms, and antonyms, indicating that smartphones may be less effective for deeper vocabulary knowledge. Overall, the findings suggest that smartphones are highly beneficial for basic vocabulary learning and retention, but less effective for advanced lexical understanding.

Table 2. Students' Perceptions of Smartphone Use for Vocabulary Learning: A Comparison Between English and Non-English Majors

	Major	N	Mean	Std. Derivation	Std. Error Mean
Perception	English	27	4.0696	0.46626	0.08973
	Non-English	27	4.0670	0.49128	0.09455

The table presents a comparison of students' perceptions of smartphone use for vocabulary learning between English major and non-English major groups. Both groups consist of an equal number of participants (N = 27), ensuring a balanced comparison. The mean scores indicate that English major students (M = 4.0696) and non-English major students (M = 4.0670) hold almost identical positive perceptions toward the use of smartphones for vocabulary learning. This similarity suggests that academic background does not significantly influence how students perceive the effectiveness of smartphones in enhancing vocabulary acquisition.

Furthermore, the standard deviations for both groups are relatively low (0.46626 for English majors and 0.49128 for non-English majors), indicating that responses within each group are fairly consistent. The standard error means are also close, reinforcing the reliability of the results. Overall, the findings suggest that smartphones are widely accepted as beneficial tools for vocabulary learning across different fields of study, highlighting their universal applicability and effectiveness in supporting English language development among EFL students.

Table 3. Independent Samples T-Test of Students' Perceptions of Smartphone-Based Vocabulary Learning Between English and Non-English Majors.

		Levene's Test for Equality of Variances				T-test for Equality of Mean				
		Sig.	t	df	Sig. (2- tailed)	Mean Differen ce	Std. Error Differen ce	95% confidence interval of the Difference		
								Lower	Upper	
Perceptio ns	Equal Variances assumed	.470	0.496	0.020	52	0.984	0.00259	0.13035	-0.13035	0.26416
	Equal Variances not assumed			0.020	52.859	0.984	0.00259	0.13035	-0.13035	0.26417

The table presents the results of an independent sample t-test comparing students' perceptions of smartphone-based vocabulary learning between English and non-English majors. The Levene's Test shows a significance value of 0.496, which is higher than 0.05, indicating that the assumption of equal variances is met. Therefore, the results from the "equal variances assumed" row are appropriate to interpret. The t-test results reveal a t value of 0.020 with 52 degrees of freedom and a significance (2-tailed) value of 0.984. Since the p-value is much greater than 0.05, there is no statistically significant difference between the two groups. The mean difference is extremely small (0.00259), further confirming that both groups share almost identical perceptions. Additionally, the 95% confidence interval ranges from -0.13035 to 0.26416, crossing zero, which reinforces the absence of a meaningful difference. Overall, this suggests that students' academic background does not significantly influence their perceptions of smartphone-based vocabulary learning.

Discussion

The present study aimed to investigate EFL university students' perceptions of using smartphones for English vocabulary learning and to examine whether perceptions differed between English-major and non-English-major students. Overall, the findings indicate that students hold highly positive perceptions of smartphone-assisted vocabulary learning. Most questionnaire items obtained mean scores above 4.00, suggesting that students consider smartphones useful, accessible, and effective tools for learning English vocabulary. These findings are consistent with literature on Mobile-Assisted Language Learning (MALL), which highlights the flexibility, personalization, and learner-centered opportunities offered by mobile technologies beyond traditional classroom settings (Crompton & Burke, 2018; Kukulska-Hulme, 2012, 2020; Traxler, 2018). The positive perceptions observed in this study also support the view that smartphones facilitate continuous and autonomous learning by allowing learners to access educational resources anytime and anywhere (Gutiérrez-Colón et al., 2022; Viberg & Grönlund, 2021).

The findings further demonstrate that students strongly agree that smartphones facilitate vocabulary acquisition, particularly in learning the meanings of new words, understanding English expressions, identifying vocabulary in context, and improving spelling and pronunciation. The highest mean score was obtained for the statement that smartphones help students learn the meanings of new English vocabulary words, indicating that vocabulary comprehension is one of the perceived benefits of smartphone-assisted learning. This finding is consistent with Başoğlu & Akdemir (2010), who reported that mobile-assisted vocabulary learning improved learners' vocabulary achievement compared with traditional flashcards. Similarly, Lu (2008) found that mobile-phone-based vocabulary learning enhanced vocabulary acquisition by allowing learners to review words regardless of time and place. Motallebzadeh et al. (2011) also demonstrated that mobile learning encouraged repeated vocabulary exposure, supporting vocabulary retention. In addition, Ibna Seraj et al. (2020) reported that university students perceived smartphone-based vocabulary applications as useful, motivating, and effective for expanding vocabulary knowledge.

These findings can also be interpreted through Krashen (1985) Input Hypothesis, which proposes that language acquisition occurs when learners are exposed to meaningful and comprehensible input. Smartphones provide access to dictionaries, translators, authentic reading materials, videos, and vocabulary applications that expose learners to language input. These resources may help learners understand unfamiliar vocabulary and increase the frequency of language exposure. Authentic digital resources may also allow learners to encounter vocabulary in meaningful contexts, supporting incidental vocabulary learning.

Another possible explanation for the positive perceptions is Mayer's (2009) Cognitive Theory of Multimedia Learning. Many smartphone applications integrate written texts, audio pronunciations, images, animations, and interactive exercises into a single learning platform. Multimedia learning theory suggests that appropriately combining verbal and visual information can support comprehension and retention. Research on mobile learning has also

reported positive learning outcomes and benefits associated with mobile technology integration (Klimova, 2019). Therefore, students' positive perceptions may partly reflect the potential benefits of multimedia-rich smartphone applications for vocabulary learning.

Furthermore, students reported that smartphones helped them remember vocabulary, pronounce words correctly, understand contextual meanings, and reinforce previously learned vocabulary. Smartphones enable learners to revisit vocabulary when necessary, increasing opportunities for rehearsal and retrieval practice. The flexibility of smartphones may therefore help explain why participants perceived them as valuable tools for vocabulary development.

Although students demonstrated positive perceptions overall, relatively lower mean scores were observed for items concerning word classes, collocations, synonyms, and antonyms. These findings suggest that students may perceive smartphones as more helpful for basic vocabulary acquisition than for developing deeper lexical knowledge. Knowing a vocabulary item involves more than understanding its meaning; learners must also develop knowledge of grammatical functions, collocations, word associations, pronunciation, and contextual usage. Although smartphones provide opportunities for continuous vocabulary practice, developing sophisticated lexical knowledge may also require explicit instruction and productive language use. Mobile applications should complement rather than replace classroom instruction because teacher guidance remains important for developing language skills.

The generally positive perceptions identified in this study further support the principles of Mobile-Assisted Language Learning (MALL). Mobile-assisted language learning offers a flexible approach that allows learners to integrate language-learning activities into their everyday lives. These perspectives support the present findings, suggesting that smartphones can facilitate vocabulary practice beyond classroom boundaries.

Another important finding is that no statistically significant difference was found between English-major and non-English-major students in their perceptions of smartphone-assisted vocabulary learning. Both groups demonstrated nearly identical mean scores, and the independent-samples t-test indicated that the observed difference was not statistically significant. This finding suggests that academic major did not meaningfully influence students' perceptions in this sample. One possible explanation is that perceived usefulness and perceived ease of use influence technology acceptance. Because smartphones are familiar devices for many university students, learners from different academic backgrounds may similarly recognize their potential usefulness for language learning.

The findings also suggest that technology acceptance may be associated with performance expectancy, effort expectancy, facilitating conditions, and social influence. The familiarity and accessibility of smartphones may help explain why academic specialization was not associated with substantial differences in perceptions. However, this interpretation should be treated cautiously because the present study examined students' perceptions rather than directly measuring technology adoption or learning outcomes.

Overall, the findings reinforce the potential value of smartphones for vocabulary learning in EFL contexts. Mobile technologies offer flexibility, accessibility, opportunities for learner autonomy, and access to multimedia resources that may support vocabulary learning and engagement. Nevertheless, the comparatively lower scores for deeper lexical knowledge suggest that smartphones alone may not be sufficient to develop comprehensive vocabulary mastery. Smartphone-assisted vocabulary learning should therefore be integrated with appropriate instructional strategies, teacher guidance, collaborative activities, and meaningful contextual practice.

The independent-samples t-test revealed no statistically significant difference in perceptions of smartphone-based vocabulary learning between English-major and non-English-major students. This suggests that academic major alone may not be a significant determinant of students' perceptions. The similarity between the groups may reflect the widespread use of smartphones as multifunctional learning tools that provide access to

dictionaries, language-learning applications, online resources, and vocabulary practice opportunities. Although learner characteristics such as English proficiency may influence perceptions, the present findings suggest that academic major was not associated with a meaningful difference in this sample. Thus, smartphone-based vocabulary learning may have broad applicability across students from different academic disciplines.

CONCLUSIONS

This study found that EFL university students generally perceived smartphones positively as tools for English vocabulary learning, particularly for understanding word meanings, learning new words, and supporting pronunciation, spelling, and retention. However, smartphones were perceived as less effective for developing complex lexical knowledge, including collocations, synonyms, antonyms, and word classes. No statistically significant difference was found between English major and non-English major students' perceptions, suggesting that academic major was not substantially associated with their attitudes toward smartphone-assisted vocabulary learning in the institution examined. These findings highlight the potential of smartphones as accessible resources for independent and flexible vocabulary learning. Teachers and educational institutions are encouraged to integrate smartphone-based activities into vocabulary instruction while providing structured guidance to promote deeper lexical understanding and contextualized language use. Nevertheless, the study was limited by its small sample of 54 students from one institution and its reliance on self-reported perceptions without directly measuring vocabulary gains. Future research should involve larger, more diverse samples and incorporate objective vocabulary assessments and experimental designs to evaluate the actual effectiveness of smartphone-assisted vocabulary learning.

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