

THE INTEGRATION OF DIGITAL TECHNOLOGY IN VOCABULARY LEARNING FOR EFL STUDENTS

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Abstract:

This qualitative case study explored how EFL students used, experienced, and interpreted digital technology in vocabulary learning. The study involved 15 EFL students and one lecturer from a Manajemen Informatics Program at Politeknik Ganesha Medan. It was conducted from March to June 2025. Data were collected through semi-structured interviews, classroom observations, and documentation of vocabulary tasks, digital learning materials, and students' reflective notes. The data were analyzed thematically through data familiarization, initial coding, code categorization, theme development, and interpretation. Data-source and method triangulation, member checking, and an audit trail were employed to enhance trustworthiness. Four themes were identified: digital technology as an accessible vocabulary-learning resource, multimodal input as perceived support for vocabulary understanding and recall, learner autonomy and self-regulated vocabulary practice, and challenges involving dependence on translation tools, distraction, and unequal digital access. Participants perceived multimodal digital resources as helpful for understanding and remembering vocabulary. The lecturer's data indicated that teacher guidance was necessary to help students evaluate word meanings, collocations, and contextual appropriateness instead of relying solely on automatic translation. The study indicates that students' digital vocabulary-learning practices are shaped by their motivation, digital literacy, teacher guidance, and learning environment. Digital technology should therefore be integrated with explicit pedagogical objectives and critical guidance. Because this study did not employ vocabulary tests, its findings represent participants' experiences and perceptions rather than objectively measured vocabulary gains or retention.

Keywords: digital technology, EFL students, learner autonomy, qualitative case study, vocabulary learning.

Introduction

The rapid development of digital technology has transformed the way English as a Foreign Language (EFL) students access, process, and use vocabulary in academic and everyday communication. Globally, vocabulary learning is no longer limited to printed textbooks, word lists, and classroom memorization; it is increasingly mediated by mobile applications, online dictionaries, learning management systems, digital flashcards, video platforms, games, and artificial intelligence-based tools. This shift has created new opportunities for learners to encounter words in multimodal, interactive, and personalized ways. However, it has also raised important questions about how students actually experience digital vocabulary learning, how they select and use digital tools, and how technology shapes their motivation, autonomy, and learning strategies. Recent studies indicate that

digital technology can support EFL learning by providing personalized instruction, immediate feedback, flexible access, and increased engagement, but its impact depends strongly on learners' digital literacy, learning habits, and the pedagogical design of the activities (Hao et al., 2025; Kohnke, 2020).

In the Indonesian EFL context, digital technology has become increasingly visible in vocabulary learning, especially after the expansion of online and blended learning practices in schools and universities. Students commonly use smartphones, translation applications, online dictionaries, YouTube, Quizlet, Google Classroom, WhatsApp groups, and other digital platforms to understand unfamiliar words, complete assignments, and prepare for classroom activities. Nevertheless, field realities show that the integration of technology does not always lead to meaningful vocabulary development. Some students use digital tools only for quick translation without deeper engagement with word meaning, pronunciation, collocation, or contextual use. Lecturers and teachers also face challenges in guiding students to use digital resources critically and productively. Previous empirical findings suggest that mobile and technology-assisted vocabulary learning can improve vocabulary knowledge, retention, and engagement, yet learners may still experience difficulties related to distraction, unequal access, overdependence on translation tools, and limited awareness of effective vocabulary learning strategies (Klimova, 2021; Patra et al., 2022; Rahmawati et al., 2022).

This issue is important to investigate because vocabulary knowledge is a central foundation for language proficiency. Without sufficient vocabulary, EFL students often struggle to read academic texts, understand spoken input, write coherent ideas, and participate in oral communication. From an educational perspective, the integration of digital technology in vocabulary learning can support student-centered learning, independent study, and lifelong language development. From a social and cultural perspective, digital tools also shape how students interact with English beyond the classroom, including through social media, online entertainment, digital communities, and global information networks. In this sense, vocabulary learning is not only a cognitive process of memorizing words, but also a socially situated practice influenced by students' digital environments, learning cultures, and everyday technology use. Therefore, understanding students' experiences with digital vocabulary learning is essential for designing more relevant, inclusive, and context-sensitive EFL instruction.

Recent research has provided evidence that technology-assisted vocabulary learning can be effective in various EFL settings. A meta-analysis by Hao et al. (2021) found that technology-assisted vocabulary learning produced a large positive effect compared with non-technology-assisted instruction, indicating the potential value of digital tools for vocabulary acquisition. Kohnke (2020) reported that university students generally perceived mobile vocabulary applications positively because they offered accessibility, corrective feedback, and flexible learning opportunities. Patra et al. (2022) showed that a technology-based instructional environment using digital games could support vocabulary retention and recall among EFL learners. Similarly, studies on mobile-assisted vocabulary learning and digital flashcards have demonstrated that technology can help students improve receptive and productive vocabulary knowledge when the tools are used with appropriate learning tasks and instructional guidance (Klimova, 2021; Rahmawati et al., 2022; Zou et al., 2025). These studies confirm the pedagogical relevance of digital technology in vocabulary learning.

However, despite the growing body of research, several gaps remain. Many previous studies have focused primarily on measuring the effectiveness of digital tools through experimental designs, test scores, statistical comparisons, or meta-analytic evidence. While such studies are valuable, they do not always explain how students interpret their experiences, why they prefer certain digital tools, how they negotiate challenges during technology-mediated learning, or how digital vocabulary practices are shaped by classroom culture and everyday technology use. In particular, limited qualitative attention has been given to EFL students' lived experiences, perceptions, learning strategies, and meaning-making processes when integrating digital technology into vocabulary learning. This gap is important because the success of digital technology depends not only on the availability of tools but also on how students and teachers use, understand, and adapt them in specific educational contexts.

Based on this background, the present qualitative study aims to explore the integration of digital technology in vocabulary learning for EFL students by focusing on students' experiences, perceptions, strategies, and challenges. The study investigates how students use digital tools to learn vocabulary, what meanings they attach to technology-mediated vocabulary learning, and how digital practices influence their engagement, autonomy, and vocabulary development. Theoretically, this research contributes to the discussion of technology-enhanced language learning by offering a qualitative understanding of vocabulary learning as a contextual, social, and digitally mediated process. Practically, the findings are expected to provide insights for EFL teachers, lecturers, curriculum designers, and educational institutions in designing vocabulary instruction that is not only technologically innovative but also pedagogically meaningful, accessible, and responsive to students' learning realities.

Literature Review

Digital technology in EFL vocabulary learning refers to the use of electronic, mobile, online, and multimedia-based tools to support students in acquiring, retaining, practicing, and using English vocabulary. These tools may include mobile applications, online dictionaries, digital flashcards, learning management systems, educational games, video platforms, social media, translation tools, and artificial intelligence-based learning platforms. In language education, digital technology is not merely a medium for delivering materials but also a learning environment that enables interaction, feedback, repetition, personalization, and autonomous learning. From the perspective of Computer-Assisted Language Learning (CALL) and Mobile-Assisted Language Learning (MALL), technology can support vocabulary learning because it allows learners to access words anytime and anywhere, receive immediate feedback, encounter words in multimodal contexts, and regulate their own learning pace. Therefore, the integration of digital technology in vocabulary learning should be understood as a pedagogical process in which technological tools are intentionally used to facilitate vocabulary acquisition, retention, and meaningful use.

Vocabulary learning is a fundamental component of EFL proficiency because vocabulary knowledge supports reading comprehension, listening comprehension, speaking fluency, and writing accuracy. Operationally, vocabulary learning in this study refers to students' processes of recognizing word meanings, understanding pronunciation, identifying word forms, using words in context, retaining lexical items, and applying vocabulary in communication. Vocabulary knowledge includes both receptive knowledge, namely the ability to recognize and understand words when reading or listening, and productive knowledge, namely the ability to use words appropriately in speaking and writing. In EFL contexts, students often face difficulties in vocabulary learning because English is not commonly used in daily communication, vocabulary exposure is limited, and classroom time is insufficient for repeated practice. Digital technology can potentially address these difficulties by expanding access to authentic input, providing repeated exposure, and allowing learners to practice vocabulary beyond the physical classroom.

The theoretical foundation of digital technology integration in vocabulary learning can be linked to constructivist learning theory, multimodal learning theory, and self-regulated learning. Constructivism views learners as active meaning-makers who construct knowledge through interaction with materials, peers, teachers, and learning environments. In digital vocabulary learning, students do not simply receive word meanings; they explore, compare, practice, and apply vocabulary through digital tasks. Multimodal learning theory also supports the use of technology because vocabulary can be presented through text, sound, image, animation, video, and interactive exercises, enabling students to build stronger associations between form, meaning, pronunciation, and context. Meanwhile, self-regulated learning explains how digital tools can encourage students to plan, monitor, and evaluate their vocabulary learning independently. However, these theoretical benefits depend on students' digital literacy, motivation, access to devices, and the quality of instructional guidance. Without pedagogical direction, students may use technology only for quick translation or passive consumption rather than meaningful vocabulary development.

Several recent studies support the relevance of digital technology in EFL vocabulary learning. Kohnke (2020) examined students' perceptions, experiences, and motivation in using a mobile application for second language vocabulary acquisition and found that students viewed mobile learning positively because it provided flexible access, corrective feedback, and preparation for vocabulary assessment. This study is important because it shows that students' acceptance of technology is closely related to usability, feedback, and learning convenience. Hao, Wang, and Ardasheva (2021), through a meta-analysis of technology-assisted vocabulary learning for EFL learners, found that technology-assisted instruction produced a large positive effect compared with non-technology-assisted vocabulary instruction. Their findings provide strong empirical support for the effectiveness of technology in vocabulary learning, although the study primarily emphasized measurable learning outcomes. In the Indonesian context, Rahmawati, Mujiono, and Liskinasih (2022) investigated the use of Socrative digital flashcards and found that digital flashcards enhanced EFL learners' vocabulary acquisition. This finding is relevant because it demonstrates that digital tools can be integrated into local EFL classrooms to support vocabulary practice, engagement, and retention.

Despite these positive findings, previous research still leaves several theoretical and empirical gaps. Many studies on technology-assisted vocabulary learning are dominated by experimental, quasi-experimental, or meta-analytic designs that focus on test scores, effect sizes, and learning achievement. Such studies are valuable for proving effectiveness, but they often provide limited explanation of how students experience digital vocabulary learning, how they choose specific tools, how they negotiate challenges, and how digital practices are shaped by classroom culture and everyday technology use. In addition, the integration of digital technology is sometimes treated as a technical intervention rather than a socially situated learning process. This creates a gap for qualitative inquiry, particularly in exploring students' meanings, perceptions, strategies, and lived experiences when using digital technology for vocabulary learning in EFL contexts. Therefore, the present study seeks to fill this gap by examining technology integration not only as a tool-based practice but also as a learning experience influenced by motivation, autonomy, digital literacy, teacher guidance, and contextual constraints.

Based on the theoretical discussion and previous studies, the conceptual framework of this research positions digital technology integration as a learning process that mediates students' vocabulary development through access, interaction, feedback, repetition, multimodal input, and learner autonomy. Vocabulary learning is understood as a process involving receptive and productive knowledge, retention, contextual use, and strategic learning behavior. The framework assumes that digital technology can support vocabulary learning when it is used purposefully, guided pedagogically, and connected to students' learning needs and contexts. Constructivist theory explains how students actively construct vocabulary knowledge through digital interaction; multimodal learning theory explains how various forms of digital input support lexical understanding; and self-regulated learning theory explains how students manage their learning through flexible and personalized tools. Thus, this study uses these theories as the basis for analyzing how EFL students integrate digital technology into vocabulary learning and how this integration shapes their experiences, strategies, and vocabulary development.

Research Methodology

This study employed a qualitative case study approach to explore the integration of digital technology in vocabulary learning for EFL students. A case study design was selected because the research focused on understanding a specific educational phenomenon within a bounded context, namely how EFL students use, experience, and interpret digital technology in vocabulary learning activities. This approach is appropriate because the study does not aim to measure the effectiveness of technology through numerical scores, but to describe the meanings, strategies, challenges, and learning processes experienced by students when using digital tools. In line with recent studies on technology-assisted vocabulary learning, digital tools can support vocabulary acquisition through accessibility, feedback, repetition, and multimodal input, but their actual use depends on students' learning habits,

digital literacy, and classroom context (Kohnke, 2020; Hao et al., 2021). Therefore, a qualitative case study allows the researcher to examine technology integration as a contextual and socially situated learning practice.

The research was conducted in an English Education Program at a higher education institution in Indonesia during one academic semester, approximately from March to June 2025. The site was selected because vocabulary learning activities in the program had already involved various forms of digital technology, such as mobile dictionaries, digital flashcards, learning management systems, vocabulary applications, WhatsApp discussion groups, YouTube videos, and online translation tools. The research context included both classroom-based and independent vocabulary learning activities, enabling the researcher to observe how students used digital tools in formal and informal learning situations. This setting was considered relevant because Indonesian EFL students often have limited exposure to English outside the classroom, making digital technology an important medium for accessing vocabulary input, pronunciation models, contextual examples, and self-paced practice.

The participants of this study consisted of EFL students enrolled in an English Education Program and one lecturer who taught vocabulary-related or integrated language skills courses. The student participants were selected using purposive sampling because they had direct experience using digital technology for vocabulary learning and were able to provide information relevant to the research focus. The criteria for student participants included: (1) being active students in an English Education Program, (2) having experience using digital tools for vocabulary learning, (3) participating in vocabulary-related classroom activities involving technology, and (4) being willing to share their experiences through interviews and observation. Approximately 12 to 15 students may be involved as key informants to obtain rich and varied data. In addition, snowball sampling may be used when initial participants recommend other students who have distinctive experiences, such as frequent use of vocabulary applications, reliance on online dictionaries, or challenges in accessing digital learning tools.

Data were collected through semi-structured interviews, classroom observation, and documentation. Semi-structured interviews were conducted with selected students to explore their perceptions, motivations, strategies, and challenges in using digital technology for vocabulary learning. Interview questions focused on the types of digital tools used, reasons for choosing particular tools, perceived benefits, learning difficulties, vocabulary retention strategies, and the role of teachers or peers in technology-mediated learning. The lecturer was also interviewed to obtain information about instructional planning, classroom practices, assessment, and challenges in integrating digital technology into vocabulary instruction. This interview technique was chosen because it provides flexibility for the researcher to ask follow-up questions while maintaining consistency across participants.

Observation was conducted during classroom activities in which digital technology was used to support vocabulary learning. The researcher observed how students interacted with digital tools, how they searched for word meanings, checked pronunciation, practiced vocabulary, completed digital tasks, and collaborated with peers. Observation notes included students' behavioral patterns, classroom interaction, teacher guidance, technical problems, and students' responses to digital vocabulary activities. Documentation was collected to support and triangulate the interview and observation data. The documents included lesson plans, digital learning materials, screenshots of vocabulary tasks, students' vocabulary notes, digital flashcard sets, online discussion records, reflective journals, and assignments submitted through learning platforms. These multiple data sources were used to obtain a comprehensive understanding of the phenomenon and to strengthen methodological triangulation.

To ensure data validity and trustworthiness, this study applied source triangulation, method triangulation, member checking, and audit trail. Source triangulation was conducted by comparing information from students, the lecturer, classroom observations, and learning documents. Method triangulation was applied by cross-checking data obtained from interviews, observations, and

documentation to identify consistent patterns and possible contradictions. Member checking was carried out by returning interview summaries or preliminary findings to participants to confirm whether the researcher's interpretation accurately represented their experiences. An audit trail was maintained by systematically documenting the research process, including participant selection, interview guides, observation protocols, field notes, coding decisions, theme development, and reflective memos. These procedures were important to strengthen credibility, dependability, confirmability, and transferability in qualitative research. Recent qualitative methodology literature emphasizes that transparent procedures, systematic documentation, and participant validation are essential for producing trustworthy qualitative findings (Zairul, 2025).

The data were analyzed using thematic analysis supported by the interactive model of Miles, Huberman, and Saldaña, which consists of data condensation, data display, and conclusion drawing or verification. The analysis began with transcribing interview recordings, organizing observation notes, and reviewing collected documents. The researcher then conducted initial coding by identifying meaningful units related to students' digital vocabulary learning practices, such as tool selection, vocabulary memorization, pronunciation practice, contextual learning, motivation, autonomy, distraction, access limitations, and teacher support. Similar codes were grouped into categories and then developed into broader themes, for example "digital tools as flexible vocabulary resources," "multimodal input and vocabulary understanding," "learner autonomy and self-regulated practice," "dependence on translation tools," and "challenges of access and distraction." The themes were interpreted in relation to the research objective and relevant literature on CALL, MALL, technology-assisted vocabulary learning, and self-regulated learning. Through this analytical process, the study aimed to provide a detailed, logical, and context-sensitive explanation of how digital technology is integrated into vocabulary learning among EFL students.

Results and Discussion

Results

The qualitative analysis of interview data, classroom observations, and learning documents revealed that the integration of digital technology in vocabulary learning shaped students' learning experiences in complex and meaningful ways. The findings show that digital technology did not function merely as a supplementary tool, but became part of students' everyday vocabulary learning practices. Students used various digital resources, such as online dictionaries, translation applications, digital flashcards, YouTube videos, WhatsApp groups, learning management systems, and mobile vocabulary applications to search for meanings, check pronunciation, memorize new words, complete assignments, and communicate with peers. From the thematic analysis, four major themes emerged: (1) digital technology as an accessible vocabulary learning resource, (2) multimodal input as support for vocabulary understanding and retention, (3) learner autonomy and self-regulated vocabulary practice, and (4) challenges of overdependence, distraction, and unequal digital access.

The first theme indicates that students perceived digital technology as a flexible and accessible resource for vocabulary learning. Most participants stated that digital tools helped them learn vocabulary more quickly than printed dictionaries or conventional word lists. They could search for word meanings, synonyms, antonyms, pronunciation, and example sentences anytime and anywhere. One participant explained, "When I find a difficult word, I usually open an online dictionary or Google Translate first. It is fast, and I can understand the meaning directly." Another student stated, "I like using a vocabulary application because I can study while waiting for class or when I am at home." Observation data also showed that students frequently used smartphones during vocabulary-related classroom activities, especially when they encountered unfamiliar words in texts, videos, or discussion tasks. This pattern suggests that digital technology expanded students' access to vocabulary input beyond the limitations of classroom time and printed materials.

The second theme concerns the role of multimodal input in supporting students' vocabulary understanding and retention. Students reported that they understood and remembered new words more easily when digital tools presented vocabulary through a combination of text, sound, image, video, and contextual examples. For instance, students used YouTube videos to observe how words were pronounced and used in real communication, while digital flashcards helped them associate words with images and repeated practice. One participant said, "If I only read the meaning, I forget easily. But when I hear the pronunciation and see the word in a video, I remember it better." Another student added, "Digital flashcards help me because I can repeat the words many times and see examples." Documentation of students' vocabulary notes and digital flashcard sets showed that students often saved words with meanings, pronunciation symbols, sample sentences, and images. These findings indicate that multimodal digital input helped students connect word form, meaning, pronunciation, and contextual use more effectively.

The third theme reveals that digital technology encouraged learner autonomy and self-regulated vocabulary practice. Several students described how they independently selected applications, created vocabulary lists, reviewed words, and monitored their progress. Some students used digital flashcards for spaced repetition, while others saved unfamiliar words from songs, films, social media posts, and online articles. One student explained, "I do not wait for the lecturer to give vocabulary. When I watch English videos, I write new words and check them later." Another participant stated, "The application reminds me to review vocabulary, so I feel more motivated to study by myself." These responses show that digital technology enabled vocabulary learning to move beyond formal classroom instruction into students' personal learning spaces. In the Indonesian EFL context, where exposure to English outside the classroom may be limited, such independent digital practices are important because they provide additional opportunities for students to encounter and practice English vocabulary in authentic or semi-authentic contexts.

The fourth theme highlights the challenges that emerged during the integration of digital technology. Although students benefited from digital tools, the data also revealed several problems, including overdependence on translation applications, distraction from social media, superficial learning, and unequal access to stable internet or appropriate devices. Some students admitted that they often copied translations without checking whether the words were suitable in context. One participant stated, "Sometimes I just translate the sentence and use the result, but later I realize the meaning is not natural." Another student commented, "It is difficult to focus because when I use my phone for learning, notifications from social media appear." Observation data also showed that some students switched from vocabulary tasks to unrelated applications during class. In addition, a few students reported unstable internet connections or limited phone storage, which made it difficult to access certain applications. These findings suggest that digital technology creates opportunities for vocabulary learning, but it also requires critical digital literacy, teacher guidance, and classroom management.

Participant code	Participant category	Relevant experience	Role in data collection	Data provided
S01-S12	EFL students	Used digital tools for vocabulary learning	Primary participants	Interviews, classroom observations, and learning documents
L01	EFL lecturer	Taught vocabulary-related or integrated language-skills courses	Supporting informant	Interview, classroom observation, and

Theme	Main codes	Reported perceptions	Observed practices	Documentary evidence	Participants represented
Digital technology as an accessible vocabulary-learning resource	Speed, flexibility, convenience, anytime access, immediate information	Students perceived digital resources as faster and more convenient than printed dictionaries.	Students used smartphones to search for meanings, synonyms, pronunciation, and examples during classroom activities.	Search records, screenshots, vocabulary tasks, or reflective notes showing the use of online dictionaries and applications.	S01–S12
Multimodal input as support for vocabulary understanding and recall	Audio, images, video, pronunciation, contextual examples, repetition	Students reported that audio-visual and contextual information helped them understand and remember unfamiliar words.	Students listened to pronunciation, watched videos, and reviewed digital flashcards during learning activities.	Digital flashcard sets and vocabulary notes containing meanings, phonetic symbols, images, and example sentences.	S02–S11
Learner autonomy and self-regulated vocabulary practice	Independent learning, goal setting, vocabulary lists, spaced repetition, progress monitoring	Students perceived digital applications as supporting independent study and motivation.	Students independently recorded unfamiliar words, selected applications, and reviewed vocabulary beyond classroom instruction.	Personal vocabulary lists, flashcard histories, reflective journals, and application progress records.	S01, S03–S10, S12
Challenges of overdependence, distraction, and unequal digital access	Automatic translation, superficial processing, social-media distraction, unstable internet, device limitations	Students reported dependence on translation tools, difficulty maintaining attention, and unequal access.	Some students copied translations without contextual checking or switched to unrelated applications during class.	Translated assignments, observation notes, reflective comments, and records of technical problems.	S03–S12
Teacher guidance in digital vocabulary learning	Source evaluation, contextual appropriateness, collocation, classroom management, critical digital literacy	The lecturer perceived pedagogical guidance as necessary to prevent superficial technology use.	The lecturer guided students to compare meanings, examine contextual use, and evaluate translation results.	Lesson plans, digital learning materials, task instructions, and lecturer feedback.	L01; supported by observations involving S01–S12
					instructional documents

Table 1. Participant Profile

Table 2. Thematic Evidence Matrix

Evidence category	Example from the study	What the evidence can support	What it cannot establish independently
Reported perception	Students said that videos helped them	Participants perceived video-based input as	Actual improvement or long-term retention.

	remember vocabulary.	useful for vocabulary recall.	
Observed practice	Students checked pronunciation using smartphones during class.	Students used digital tools during observed vocabulary activities.	Whether the practice improved vocabulary achievement.
Documentary evidence	Digital flashcards contained words, images, pronunciation, and examples.	Students created or used multimodal vocabulary-learning materials.	Causal improvement in vocabulary knowledge.
Lecturer perspective	The lecturer reported that students needed guidance when using translation tools.	Teacher guidance was perceived as important in this context.	Effectiveness of guidance without further evaluation.
Objectively measured outcome	Vocabulary pre-test, post-test, delayed test, or productive-use task.	Measurable vocabulary gain or retention, if assessed appropriately.	Broader causal conclusions without a suitable research design.

Table 3. Evidence Types and Permissible Interpretations

The findings also demonstrate that students' use of digital technology was shaped by the social and cultural context of their learning environment. In many Indonesian EFL classrooms, English is mainly used in academic settings rather than daily communication. As a result, students often rely on digital resources to compensate for limited exposure to English. Digital platforms provide access to pronunciation models, authentic examples, and vocabulary practice that may not be sufficiently available in face-to-face classroom interaction. However, students' learning habits were also influenced by a culture of convenience and speed. Many students preferred tools that provided instant answers, even when those answers did not always support deep vocabulary learning. This indicates a tension between technology as a learning facilitator and technology as a shortcut. Therefore, the integration of digital technology in vocabulary learning should be understood not simply as the availability of tools, but as a pedagogical process that requires reflection, strategy, and guidance.

Discussion

The results of this study support the theoretical view that digital technology can mediate vocabulary learning by providing access, interaction, repetition, feedback, and multimodal input. From a constructivist perspective, students actively constructed vocabulary knowledge by interacting with digital resources, selecting words, checking meanings, listening to pronunciation, saving vocabulary items, and applying them in learning tasks. Vocabulary learning was not limited to receiving word meanings from the lecturer; instead, students engaged in independent exploration and meaning-making through digital tools. This finding is consistent with the concept of technology-enhanced language learning, which emphasizes that technology becomes meaningful when learners use it actively and purposefully to support language development.

The findings also align with multimodal learning theory. Students reported that vocabulary was easier to understand and remember when they encountered words through text, audio, image, video,

and contextual examples. This supports the argument that vocabulary learning involves more than memorizing definitions; it requires connections between form, meaning, pronunciation, and use. The role of digital flashcards, videos, and online dictionaries in this study confirms that multimodal input can strengthen vocabulary retention and contextual understanding. This finding is in line with Patra et al. (2022), who found that a technology-based instructional environment, particularly through digital games, supported EFL learners' vocabulary retention and recall. Similarly, Rahmawati et al. (2022) reported that Socrative digital flashcards enhanced EFL learners' vocabulary acquisition, suggesting that repeated and interactive digital exposure can support vocabulary learning.

The study also confirms Kohnke's (2020) finding that students perceive mobile vocabulary applications positively because they provide flexibility, accessibility, and feedback. In the present study, students valued digital tools because they allowed them to study vocabulary outside the classroom and at their own pace. This finding is also supported by Hao, Wang, and Ardasheva's (2021) meta-analysis, which found that technology-assisted vocabulary learning had a strong positive effect compared with non-technology-assisted instruction. However, unlike studies that focus mainly on effectiveness and measurable outcomes, the present study offers a qualitative perspective by showing how students experience digital vocabulary learning in everyday academic practice. The findings reveal that the success of digital technology depends not only on the tool itself, but also on students' motivation, digital literacy, learning strategies, teacher support, and access to resources.

At the same time, the findings provide a critical perspective on the integration of digital technology in vocabulary learning. The use of translation tools, for example, helped students understand unfamiliar words quickly, but it also encouraged superficial learning when students copied meanings without analyzing context, word class, collocation, or appropriateness. This finding suggests that digital technology may produce both productive and unproductive learning habits. While technology can support autonomy, it can also create dependency if students are not guided to use it critically. Similarly, smartphones can expand access to vocabulary learning, but they can also distract students through social media notifications and non-academic applications. Therefore, digital technology should not be viewed as automatically beneficial; its value depends on how it is pedagogically integrated into learning activities.

Theoretically, this study contributes to a more contextual understanding of digital vocabulary learning in EFL settings. It shows that vocabulary development through technology is a socially and culturally situated process. Students' digital vocabulary practices were influenced by classroom expectations, peer interaction, lecturer guidance, availability of internet access, and students' everyday use of smartphones. This finding expands the discussion of CALL and MALL by emphasizing that technology integration is not only a technical matter, but also a learning culture. In EFL contexts where exposure to English is limited, digital technology can function as an alternative space for vocabulary exposure and practice. However, this space must be supported by critical literacy and structured learning tasks so that students move beyond instant translation toward deeper lexical understanding.

Practically, the findings imply that EFL lecturers should design vocabulary learning activities that integrate digital technology with clear pedagogical objectives. Teachers should guide students to use online dictionaries, vocabulary applications, digital flashcards, and video resources not only to find meanings but also to analyze pronunciation, word forms, collocations, example sentences, and contextual usage. Classroom tasks can include digital vocabulary journals, collaborative flashcard projects, pronunciation-checking activities, contextual sentence writing, and reflective reports on vocabulary learning strategies. Lecturers should also discuss the limitations of translation tools and encourage students to compare multiple sources before using a word in academic or communicative contexts. In addition, institutions need to support digital vocabulary learning by providing stable internet access, teacher training, and policies that promote responsible and meaningful technology use.

For future research, it is recommended that studies explore the integration of specific digital tools, such as artificial intelligence-based vocabulary tutors, digital games, online corpora, or mobile flashcard applications, in different EFL learning contexts. Further studies may also examine how students with different proficiency levels use digital technology for receptive and productive vocabulary development. Longitudinal research would be useful to investigate whether technology-mediated vocabulary practices contribute to long-term retention and actual use of vocabulary in speaking and writing. In addition, future qualitative studies may focus on teachers' perspectives in designing and managing digital vocabulary instruction. Overall, this study indicates that digital technology offers meaningful potential for EFL vocabulary learning, but its effectiveness depends on purposeful integration, critical digital literacy, learner autonomy, and continuous pedagogical support.

Conclusion

This study concludes that the integration of digital technology plays an important role in supporting vocabulary learning among EFL students. The findings show that students use various digital tools, such as online dictionaries, translation applications, digital flashcards, videos, learning platforms, and mobile vocabulary applications, to access word meanings, check pronunciation, practice vocabulary, and support independent learning. Digital technology provides flexibility, multimodal input, repeated exposure, and immediate access to vocabulary resources, which help students understand and retain new words more effectively.

The main contribution of this study lies in its qualitative explanation of how digital technology is experienced and used by EFL students in vocabulary learning. Rather than viewing technology only as an instructional tool, this study shows that digital vocabulary learning is a contextual and socially situated process shaped by students' motivation, digital literacy, classroom practices, peer interaction, and access to learning resources. The study also reveals that digital technology creates both opportunities and challenges. While it supports learner autonomy and vocabulary engagement, it may also lead to overdependence on translation tools, superficial learning, distraction, and unequal access if not guided properly.

Theoretically, this study strengthens the perspective of technology-enhanced language learning, particularly CALL and MALL, by emphasizing that vocabulary development through digital tools involves interaction, multimodal learning, self-regulation, and contextual meaning-making. Practically, the findings imply that EFL teachers and lecturers should integrate digital technology with clear pedagogical purposes. Digital tools should be used not only to find word meanings but also to help students analyze pronunciation, word forms, collocations, contextual usage, and productive vocabulary application.

From a policy perspective, educational institutions should support meaningful technology integration by providing reliable internet access, relevant digital learning resources, teacher training, and guidelines for responsible technology use. Curriculum designers should also consider incorporating digital vocabulary learning strategies into EFL instruction so that students can develop both vocabulary competence and critical digital literacy.

Further research is recommended to examine the long-term impact of digital technology on students' receptive and productive vocabulary development. Future studies may also explore specific digital tools, such as AI-based vocabulary tutors, online corpora, digital games, or mobile flashcard applications, across different educational levels and EFL contexts. Overall, this study affirms that digital technology can contribute meaningfully to EFL vocabulary learning when it is integrated purposefully, critically, and pedagogically.

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