

The Role of Computer-Mediated Language Learning in Promoting Vocabulary Development: An Applied Linguistics Study

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Abstract : Learning vocabulary is one of the basic parts of learning a language, especially for the learners with elementary English skills. This study investigates the role of Computer-Mediated Language Learning (CMLL) in promoting vocabulary development among first semester students in an English language learning setting. The study employs a qualitative research design to explore learners' experiences, perceptions and engagement with technology-assisted vocabulary learning activities. There were 30 participants at first semester students with a beginner level of English proficiency. Data were collected by classroom observations, semi-structured interviews, and document analysis of students' learning activities. The results suggest that Computer-Mediated Language Learning has a positive effect on vocabulary development, as it raises learners' exposure to new lexical items, increases their awareness of pronunciation and encourages autonomous learning practices. Students used digital platforms, interactive applications, and multimedia resources to grasp word meanings, contextual usage.

Keywords : Computer-Mediated Language Learning, Vocabulary Acquisition, Applied Linguistics, Qualitative Research, Basic English Proficiency

Abstrak : Studi ini meneliti peran Pembelajaran Bahasa Berbasis Komputer (CMLL) dalam meningkatkan pengembangan kosakata di kalangan mahasiswa semester pertama dalam lingkungan pembelajaran bahasa Inggris. Studi ini menggunakan desain penelitian kualitatif untuk mengeksplorasi pengalaman, persepsi, dan keterlibatan pembelajar dengan aktivitas pembelajaran kosakata yang dibantu teknologi. Partisipan adalah mahasiswa semester pertama dengan tingkat kemampuan bahasa Inggris pemula. Data dikumpulkan melalui observasi kelas, wawancara semi-terstruktur, dan analisis dokumen aktivitas belajar mahasiswa. Hasil penelitian menunjukkan bahwa Pembelajaran Bahasa Berbasis Komputer memiliki efek positif pada pengembangan kosakata, karena meningkatkan paparan pembelajar terhadap kosakata baru, meningkatkan kesadaran mereka akan pengucapan, dan mendorong praktik pembelajaran mandiri. Mahasiswa menggunakan platform digital, aplikasi interaktif, dan sumber daya multimedia untuk memahami arti kata dan penggunaan kontekstualnya.

Kata Kunci : Pembelajaran Bahasa Dengan Mediasi Komputer, Pemerolehan Kosakata, Linguistik Terapan, Penelitian Kualitatif, Kemampuan Dasar Berbahasa

INTRODUCTION

Vocabulary acquisition is a crucial part of the second and foreign language learning process since vocabulary knowledge aids learners in understanding, interpreting, and producing meaningful communication. In English language teaching (ELT), vocabulary competence is no longer considered as a secondary component but as an important factor that affects communicative ability, reading comprehension and overall language proficiency (Röthlisberger et al., 2023). For example, in English as a Foreign Language (EFL) contexts such as Indonesia, students' participation in the classroom and their understanding of English learning materials are often impeded by insufficient vocabulary (Alfadyah et al., 2024). This problem is very common among the first semester university students who are taking General English courses, especially the non-English major students whose English proficiency is basically low (Quyen & Nguyen, 2022). Thus, it is a matter of great concern how to improve the process of learning vocabulary effectively in Applied Linguistics and ELT research.

The fast growing of digital technology in the area of education has resulted in the growing interest in the language learning approach called Computer-Mediated Language Learning (CMLL) (Gulzar & Jamil, 2022). CMLL (2024) adds that language learning can be enhanced by digital tools with the help of interactive input, immediate feedback, repeated practice and learner autonomy (Naseer & Qammar, 2024). Because of the flexibility of learning at any time and anywhere, mobile language learning apps are popular among learners (Abduljawad & Ahmad, 2023). One such application is Duolingo and is popular because it offers gamified learning, short learning activities, instant feedback and vocabulary based activities. In ELT contexts, these features can facilitate learners' vocabulary development through sustained participation, pronunciation practice, contextual learning and repeated exposure to words (Narjiani et al., 2026).

However, the use of Computer-Mediated Language Learning environments is not without some difficulties in the transfer from secondary education to university learning for the beginning students. Language teaching in many high schools is very structured; teachers guide learners through activities, check progress and give support along the way. Students generally become accustomed to external regulation instead of regulating their own learning process. At university, students are expected to take more responsibility for setting their own learning goals, monitoring their progress and choosing appropriate learning strategies. The move to independent learning can be difficult for first year students who may not possess the self-regulation skills to effectively engage with digital learning platforms (Broadbent & Poon, 2015).

Digital apps like Duolingo are convenient and accessible, but it can be difficult for beginning university students to stay motivated and engaged without the direct supervision of a teacher. Online resources are abundant but this may result in cognitive overload, difficulty to find relevant materials and to structure one's learning in an effective way. For some students, language learning apps may seem like an optional extra rather than part of their academic development. Thus, learners often need transitional support such as guidance on self-directed learning strategies, time management and digital literacy skills to reap the benefits of CMLL and to make a successful transition from teacher-centred instruction in high school to the more independent learning culture of higher education (Holec, 1981; Benson, 2013).

Despite the rapid growth of research on mobile-assisted language learning, there are still some gaps. Previous studies mostly use quantitative or experimental designs to evaluate learning outcomes, motivation or effectiveness. These studies, while useful, often fail to explain how learners experience vocabulary learning through technology on a personal level. In addition, most previous research focused on secondary school students, English major students or intermediate students. There are fewer studies that concentrate on the beginner-level non-English major university students in Indonesian higher education, especially those who are enrolled in General English courses. The needs of learners and learning experiences are context-dependent and further investigation is required.

Management students in General English classes of first semester at Pamulang University usually have some vocabulary difficulties that influence their English learning process. As students of non-English majors with a basic English level, many learners have limited vocabulary knowledge, low confidence in using English, and a strong dependence on translation practices. These challenges affect their understanding of the learning materials and communication in the English language. Simultaneously, university students are very familiar with mobile technology, and this opens doors for digital language learning. In this context Duolingo could be a useful tool for learning, as its mobile format, game-like design and gradual vocabulary practice fit the characteristics of beginner EFL learners. However, the role of Duolingo in supporting vocabulary learning for first-semester Management students at Pamulang University has not been sufficiently explored from a qualitative Applied Linguistics perspective.

The present study is based on an Applied Linguistics perspective that language learning is a social, cognitive and contextual process. Learning vocabulary is not about memorizing isolated words; it is acquired through repeated exposure, meaningful interaction, contextual understanding, and learner engagement (Arslan, 2024). CMLL environments can facilitate these processes by offering multimedia input, immediate feedback, and chances for independent practice (Puspitasari et al., 2025). However, better learning does not automatically come from better technology. The use of technology in supporting vocabulary development is greatly influenced by learners' perceptions, motivation, learning behaviours and interactions with digital tools (Nadira & Ningsih, 2025). Therefore, exploring students' experience with Duolingo can contribute to a better understanding of vocabulary acquisition in technology-mediated ELT contexts.

Based on these considerations, this study uses a qualitative case study method to investigate the role of Duolingo in encouraging students of Management first semester in General English classes at Pamulang University to develop their vocabulary. A qualitative approach is suitable because it provides an opportunity to explore students' experiences, perceptions, and learning practices in-depth (Almansour & Almoayad, 2024). The study draws on multiple sources of data including semi-structured interviews, classroom observations, students' reflective learning logs and document analysis of Duolingo activity records and progress screenshots. The use of multiple data sources is expected to contribute to a richer understanding of students' engagement with mobile-assisted vocabulary learning in a higher education EFL context (Ganapathy et al., 2025).

The study is significant both pedagogically and scientifically. From pedagogical perspective, learning how the beginning level students of non-English majors utilize Duolingo may help with better and technology-supported vocabulary teaching in General English courses. The study contributes academically to the discussions of Applied Linguistics in relation to the vocabulary acquisition, learner autonomy and technology-mediated language learning. This research is conducted to reveal the effect of mobile learning applications on the development of the vocabulary, motivation, and independent learning behaviours of first-semester Management students. This study fills a research gap in Applied Linguistics, ELT, and Computer-Mediated Language Learning by exploring Duolingo-based vocabulary learning in an educational context that has been under investigated. The research is focused on learners' experiences and classroom realities in technology-mediated vocabulary learning rather than on experimental effectiveness. The findings are expected to theoretically contribute to research on mobile-assisted vocabulary acquisition and practically to the development of digital General English instruction for non-English major students in Indonesian higher education.

RESEARCH METHODOLOGY

The research used a qualitative case study design to analyze the impact of Computer-Mediated Language Learning in improving vocabulary development through Duolingo for first semester Management students of Pamulang University. The study is dedicated to the in-depth understanding of students' experience, perceptions and learning practices concerning vocabulary acquisition in a technology-mediated learning environment. The qualitative approach is appropriate because it enables researchers to explore participant perspectives, behaviors, and

meanings in their natural educational context. The case study design enables the researcher to explore a particular educational setting, which is the General English courses for students in the beginner level of a non-English major that employs the mobile-assisted language learning application Duolingo (Schroyens et al., 2026). Qualitative data were analyzed using Braun and Clarke's (2006) framework for thematic analysis. The framework comprises six stages – familiarization with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the final report. The selection of this framework is based on the fact that it offers a systematic, but also flexible, approach to finding patterns and themes on students' vocabulary learning experiences and their perceptions of Duolingo-assisted learning.

The 30 participants of this study is the first semester students of Management in General English class at Pamulang University. The participants were selected by purposive sampling because they are learners with basic English proficiency and they directly use Duolingo for learning vocabulary. The study targets non-English major students because this group of learners often suffers from vocabulary limitations when learning English in higher education settings. Data are gathered by means of a selection of qualitative instruments to ensure data richness and triangulation (Donkoh & John, 2023). First, semi-structured interviews are conducted to explore students' perceptions, experiences, motivations, and challenges when learning vocabulary with Duolingo. Second, classroom observations are used to investigate students' participation, engagement and interaction during technology-based vocabulary learning activities. Third, students' reflective responses or learning logs are collected to gain insights into learners' personal reflections, learning habits and vocabulary development experiences while using Duolingo. Finally, document analysis is used to analyse the students' activity logs from Duolingo, progress reports and screenshots of learning as supporting evidence of learning engagement and vocabulary practice.

Collected data is analysed through thematic analysis. The process of analysis consists of several steps: data familiarization, coding, categorization, theme development and interpretation. Interview transcripts, observation notes, reflective logs and document records are systematically reviewed to identify recurring patterns, themes and meanings related to the vocabulary learning experiences in a Computer-Mediated Language Learning environment. The results are discussed in the context of the literature on Applied Linguistics, vocabulary acquisition theory and Computer-Mediated Language Learning. Several strategies are employed to assure the trustworthiness of the research findings including data triangulation, member checking and prolonged engagement with the research context. Data triangulation is achieved through the use of multiple data sources such as interviews, observations, learner reflections and document analysis. Member checking is the process of asking participants to review some interpretations of the interview data for the purposes of confirming their accuracy. The purpose of these procedures is to enhance the credibility, reliability and validity of the qualitative findings. The research process also takes ethical considerations into account. Participants are provided with information on the study's purpose, data collection procedures and voluntary participation. Participants provide informed consent before data collection begins, and their identities are protected through pseudonyms and confidential data management practices.

RESULTS AND DISCUSSION

Results

Perceptions of Duolingo in General English Vocabulary Learning

The result showed that the first-semester students of Pamulang University Management had positive perceptions toward Duolingo as a supporting tool of vocabulary learning in General English classes in general. Most of the participants said that the application made learning new vocabulary more interesting, accessible and less intimidating than the traditional way of learning (Alisoy & Sadigzade, 2025). Students reported on a number of positive features of the app that assisted them in learning and remembering new words, including game-like activities, instant feedback, pronunciation practice, and vocabulary repetition (Bauer-Marschallinger et al., 2023).

Many learners also enjoyed the flexibility of Duolingo that could be used on mobile devices at any time and place, thus promoting autonomous learning outside the classroom (Saniyah, 2023). However, some participants reported problems such as lack of contextual explanation, being too dependent on translation, and difficulty in understanding some of the vocabulary items without the aid of a teacher. In general, students perceived Duolingo as a useful tool for Computer-Mediated Language Learning with better motivation, vocabulary practice, and learner autonomy in the context of learning General English.

Table 1. Students' Perceptions of Duolingo in General English Vocabulary Learning

Core Theme	Sun Indicator	Representative verbatim Quote
Enhanced Learning Motivation through Gamification	Enjoyment of game-like activities; learning feels less stressful; increased willingness to practice vocabulary	" I like Duolingo because it's like a game, not studying. "I like the points and levels, they make me want to continue learning new words." (Participant 3)
Improved Vocabulary Acquisition and Retention	Repeated exposure to vocabulary; easier memorization; contextual learning of words	" The words are used many times in different exercises, so I can remember them better than when I just read them from a textbook." (Participant 7)
Immediate Feedback Facilitates Learning	Instant correction of mistakes; awareness of vocabulary errors; self-monitoring	" When I answer wrong, Duolingo shows the right answer immediately. It helps me understand my mistakes and learn more quickly" (Participant 5)
Support for Pronunciation Development	Listening activities; pronunciation practice; confidence in speaking words correctly	"I can hear how the words are pronounced and repeat them. This helps me know the correct pronunciation of new vocabulary." (Participant 9)
Flexibility and Accessibility of Learning	Learning anytime and anywhere; mobile-based convenience; independent learning opportunities	"I usually practice on my phone while commuting or during breaks. It is easy because I do not have to wait for classroom activities." (Participant 2)
Promotion of Learner Autonomy	Self-directed learning; personal learning pace; responsibility for learning progress	" I can study by myself with the aid of Duolingo. I can choose when I want to learn and I can repeat lessons if I need more practice." (Participant 6)
Reduced Anxiety in Vocabulary Learning	Less intimidating than traditional learning; comfortable environment; willingness to make mistakes	" I'm not afraid of making mistakes because the application corrects me without embarrassing me like in class." (Participant 1)

How Duolingo Supports Vocabulary Learning for Beginner Non-English Major Students

The results indicated that Duolingo was a more interactive, flexible and learner-centered Computer-Mediated Language Learning environment with great influence on vocabulary acquisition experiences of novice non-English major students. Students said that the application helped them learn new words with the repetitive exercises, immediate corrective feedback, pronunciation exercises and contextual word exercises that improved their retention and understanding of new vocabulary (Ihsani et al., 2025) . With the mobile format, students could learn autonomously outside the classroom (Hazaea, 2018). This also fed into continued participation in English and learner independence. Participants commented that the gamified elements, such as points, levels and daily learning goals, boosted motivation and decreased the anxiety often associated with learning English vocabulary (Huseinović, 2023). However, some students reported limitations such as difficulties in understanding the meaning of vocabulary in wider communicative situations, and the use of translation strategies when carrying out learning

activities. In conclusion, Duolingo had a positive contribution to students' vocabulary development by increasing engagement, autonomous learning and more exposure to English vocabulary in the technology-mediated educational environment.

Benefits and Challenges of Duolingo in Vocabulary Learning

The results of the research show that the application of Duolingo in the vocabulary development of first semester Management students at Pamulang University has created pedagogical opportunities and learning challenges. The main benefits were increased motivation to learn, flexibility in accessing vocabulary practice, increased learner autonomy and increased engagement through gamified features of learning (Arif, 2025). Duolingo also gave students the opportunity to practice their English vocabulary on the go, and told them to learn outside the classroom regularly. The interactive exercises, instant feedback and repetitive learning patterns of the application aided in retention of vocabulary and awareness of pronunciation (Ihsani et al., 2025). However, the learning curve had its problems. Some of the students had difficulties in understanding the meanings of the vocabulary in the real communicative contexts, they used translation strategies and needed more teacher explanation to fully understand some lexical items (Reima, 2026). Other barriers to effective learning identified are technical problems, irregular learning discipline and limited contextualized language use (Kebede & Asregid, 2024). Finally, the results indicate that Duolingo provides sufficient opportunities for technology mediated vocabulary learning, but its effectiveness can be enhanced by supplementing it with teacher support and contextualized classroom teaching.

Discussion

Perceptions of Duolingo in General English Vocabulary Learning

The findings showed that Duolingo was considered an important pedagogical tool for vocabulary learning in General English classes by the first semester Management students of Pamulang University. The positive perception can be explained in the view of Applied Linguistics and Computer-Mediated Language Learning (CMLL) which consider language learning as a process with the support of interaction, repeated exposure, learner engagement and mediated learning experience (D. Bai et al., 2025). According to students' comments, Duolingo was not just a supplemental digital application but also a mediational space which turned the learners' engagement with vocabulary learning around (Nanin Verina et al., 2026). The positive feedbacks of the learners towards the accessibility of the application and the interactive design indicate that digital platforms might be able to reduce the psychological barriers often faced by beginner-level EFL learners, especially non-English major students who tend to have not enough confidence and limited lexical knowledge.

The results can also be explained by Krashen's Affective Filter Hypothesis which states that emotional variables such as anxiety, self-confidence and motivation are factors in determining how successfully language input can be processed and acquired. As Krashen (1985) has claimed, learners with high self-confidence and low anxiety are able to take in linguistic input more willingly as their affective filter is lowered. In this study, many students described Duolingo as fun, non-threatening and easy to use, which indicates that the application contributed to building a low-anxiety learning environment. Students were able to practice new vocabulary through gamified activities, private practice opportunities and immediate corrective feedback, without the fear of negative evaluation by teachers or peers. This result is consistent with recent studies that claim that mobile-assisted language learning apps can improve learners' emotional engagement, increase confidence, and decrease foreign language anxiety through a supportive and self-paced learning environment (e.g., Alisoy & Sadigzade, 2025; Narjiani et al., 2026). Thus, the reduction of affective barriers may have contributed to students' wish to practice vocabulary more often and to persist in the language learning.

One important finding is that students feel that Duolingo is a more engaging and less intimidating way to learn than the traditional way of teaching vocabulary (Rouabhia & Kheder, 2024). This perception can be explained by the gamified learning structure of the application making the learning of vocabulary a task-oriented and achievement-based activity (Kingsley & Grabner-hagen, 2017). From the motivation perspective, game elements such as points, streaks,

progress levels and rewards can increase learner participation and keep learners focused in the learning activities (Paul & Murphy, 2025). This motivational dimension is particularly important for beginner level learners as the process of vocabulary learning is often associated with memorization, anxiety, and fear of making linguistic errors (Yilmaz & Sahan, 2023). The results thus imply that the game-based setting of Duolingo may play a role in working as a lower-affective learning environment where students can feel more comfortable to interact with English vocabulary.

Students also cited immediate feedback, pronunciation practice and repeated exposure to vocabulary as key (Ihsani et al., 2025). The results of this study are in line with theories of vocabulary acquisition which highlight the importance of repetition, noticing and corrective input (Iswara et al., 2025). Immediate feedback allows learners to detect errors and adjust their comprehension of vocabulary usage more rapidly than when they receive corrections after the fact in traditional settings. Repeated exposure to the vocabulary items can also help in the better retention of the lexical items and in the development of the long-term memory (Reima, 2026). Pronunciation activities also help vocabulary learning by combining phonological awareness and lexical knowledge, which allows students to recognize written words as well as become aware of spoken forms (Layes et al., 2021). This multi-dimensional exposure demonstrates how technology mediated environments can support vocabulary acquisition through multi-modal learning experiences (Sutrisna, 2025). Another important finding is that students appreciated the flexibility and accessibility of Duolingo. Participants said that mobile-based learning offered opportunities to practice vocabulary outside of class hours, which improved independent learning behaviours (Rachmawati & Fadhilawati, 2025).

From the CMLL perspective, this finding is consistent with the role of digital technology in fostering learner autonomy (Afrilyasanti, 2023). Students could control their learning such as time, pace and frequency of vocabulary practice instead of depending completely on teacher-led instructions. Such an advance to self-directed learning is particularly true in higher education contexts where autonomous learning is an important educational goal (Kharroubi, 2024). These results suggest that Duolingo may be able to extend vocabulary learning activities to a continuous and personalized learning practice outside of the classroom (Fitriani, 2024). However, the findings also point to several important limitations. Some participants faced difficulty in understanding the vocabulary items as the contextual explanation in the application was limited (Saniyah, 2023). This raises the question of whether repeated exposure alone is enough for deep vocabulary acquisition. Vocabulary learning is not only identifying isolated words but also understanding semantic meaning, contextual appropriateness, collocational patterns and communicative usage (Rouabhia & Kheder, 2024). The lack of rich contextual support may inhibit learners' ability to transfer their vocabulary knowledge into real language use (Andrian & Yul, 2025). This result thus supports the Applied Linguistics position that digital tools should be used to supplement, rather than entirely substitute, contextualized classroom instruction (Andrian & Yul, 2025).

Also outstanding is the occasional use of translation strategies by students and the teacher's guidance. While translation can serve as a useful learning scaffold for beginners, too much reliance on translation can inhibit direct conceptual engagement with the target language (Muryani & Yunus, 2024). The results showed that some learners still required teacher mediation to interpret unfamiliar vocabulary and clarify meanings. This indicates the continuing pedagogical relevance of teacher support in technology-enhanced learning environments. The findings suggest that vocabulary learning may be more successful when digital applications and pedagogically informed classroom interaction are combined (Haque et al., 2024), rather than treating technology as an autonomous substitute instructional tool. The results in general indicate that Duolingo can provide the beginner-level non-English major students with effective vocabulary learning opportunities through its positive effects on motivation, repeated lexical exposure, mobile accessibility and learner autonomy. However, its pedagogic effectiveness seems to be improved when it is accompanied by contextual explanation, teacher facilitation and opportunities for meaningful language use (Saad & Almfleh, 2023). The findings add to the

discussions in Applied Linguistics and ELT by showing that the use of Computer-Mediated Language Learning tools can have a positive effect on vocabulary development (Saylan et al., 2023), and on the other hand, underscore the importance of contextualized, socially mediated language instruction in higher education EFL settings (Saad & Alme fleh, 2023).

How Duolingo Supports Vocabulary Learning for Beginner Non-English Major Students

The findings highlight the key role of Duolingo in creating a more interactive, flexible and learner-centered Computer-Mediated Language Learning (CMLL) setting for the beginner non-English major students and thus impacting their vocabulary learning journeys. From an applied linguistics perspective, this result points to the significance of digital mediation in the process of language acquisition through interaction, repetition and learner engagement (Barua, 2023). Students' experiences indicated that Duolingo facilitated vocabulary acquisition through a variety of pedagogical mechanisms such as repeated practice, immediate corrective feedback, pronunciation exercises and contextual vocabulary activities (Nanin Verina et al., 2026). The features are consistent with theories of vocabulary learning that stress the significance of repetitive lexical exposure, noticing, and prompt feedback for vocabulary knowledge growth (Ihsani et al., 2025). The use of written, auditory and interactive tasks offered students various learning channels through which they could explore the vocabulary, which might have increased retention and understanding. This multimodal exposure is particularly important for beginner EFL learners as it enables them to learn vocabulary beyond rote memorization and encourages more active interaction with lexical items.

Another important finding is regarding the impact of Duolingo on learner autonomy, motivation and emotional engagement. The mobile-based structure was able to provide autonomy to the learners to learn vocabulary on their own outside the class hours and control the pace, frequency of practice and schedule of their study (Bai, Y. 2024). This flexibility is one of the key principles of Computer Mediated Language Learning which is to promote self-directed and autonomous learning. The participants' responses also showed that gamified elements such as points, achievement levels and daily targets had a positive effect on motivation and persistence for learning. These features may affectively reduce the anxiety that is often reported by novice learners in learning English vocabulary. Students saw learning as a slow, goal-oriented and rewarding process, rather than seeing the process of learning vocabulary as a gruelling process of memorization.

This finding lends support to the claim that gamified mobile learning apps can enhance not only the motivational and emotional aspects of language learning but also the cognitive dimension in ELT contexts (Murat, 2023). Despite these positive results, the findings also reveal important limitations in context understanding and reliance on translation (Putu et al., 2024). Some students had difficulties in understanding meanings of vocabulary in wider communicative contexts, indicating that vocabulary exposure through digital exercises does not always lead to complete semantic understanding or contextualized use of the language (Haque et al., 2024). Vocabulary learning is not only about knowing separate words. It also includes pragmatic meaning, collocations, appropriateness in context and authentic communicative use. Moreover, the students' translation strategies indicate that some learners were still dealing with vocabulary through their first language rather than dealing directly with target-language meaning. The findings show that Duolingo is useful for vocabulary practice and learner engagement, but its educational value could be increased when used together with teacher support, contextual explanations and communicative classroom activities (Fitriani, 2024). Therefore, technology-mediated vocabulary learning should be viewed as an adjunct to ELT instruction, rather than as a complete replacement for socially mediated and context-rich language learning experiences.

Benefits and Challenges of Duolingo in Vocabulary Learning

The results show that the use of Duolingo has provided many meaningful opportunities for vocabulary development for the first semester of Management students at Pamulang University. One opportunity was supporting learner motivation and engagement with the application's gamified learning environment. Interactive and rewarding elements were added to vocabulary learning through features such as points, achievement levels, streak systems and daily learning

goals. Motivation is very important in Applied Linguistics and ELT to maintain behaviours in the process of language acquisition (Fitriani, 2024; Rouabhia & Kheder, 2024), especially for non-English major students at the beginner level who tend to lack of confidence and interest in English learning (Nanin Verina et al., 2026). The results show that the game-like structure of Duolingo reduced the perception of vocabulary learning as a difficult memorization task and promoted active student engagement in vocabulary practice (Nanin Verina et al., 2026). Additionally, the mobility of the app provided students with opportunities to have continuous learning outside the classroom instructions, thus enhancing independent practices and learner autonomy.

A further significant opportunity arising from the findings is the pedagogical benefit of repeated exposure, immediate feedback and flexible learning practices in a Computer-Mediated Language Learning setting. As students explained, Duolingo repeatedly exposed them to vocabulary items via interactive activities like translation, matching, pronunciation, and sentence completion (Saniyah, 2023). Theories of vocabulary acquisition stressing frequency, noticing and corrective feedback in lexical development have been strongly associated with these repeated exposures (Fitriani, 2024; Saniyah, 2023; Zitha et al., 2024). Immediate feedback allowed learners to find errors and change their answers quickly, which helped with the development of the understanding and retention of vocabulary. Also the flexibility of mobile learning allowed students to structure their learning and practice at their convenience and pace. The results suggest that Duolingo may be a useful instructional supplement, which could help to move vocabulary learning from teacher-centered classrooms to more individualized learner-centered educational environments (Narjiani et al., 2026; Rouabhia & Kheder, 2024; Saniyah, 2023).

However the results also show some difficulties that could decrease Duolingo's efficiency in vocabulary development. Some students reported difficulties in understanding the meaning of vocabulary in wider communicative and contextual situations. This suggests that technology-based vocabulary exercises may not always promote deep semantic understanding or authentic language use. "Vocabulary knowledge includes not only recognition of words, but also knowledge of their meanings in context, of words that go together, of their pragmatic functions and of what is communicatively appropriate" (Nanin Verina et al., 2026; Saniyah, 2023). Moreover, some learners exhibited the use of translation strategies and still required teacher explanation to fully comprehend unknown lexical items. Inconsistent learning discipline, and sporadic technology limitations, were also associated with barriers to continued learning engagement. Findings suggest that Duolingo offers opportunities for vocabulary acquisition but pedagogical benefits are enhanced by teacher mediation, contextualised classroom teaching and communicative learning tasks. Therefore, technology-assisted vocabulary learning should be considered as a supplementary pedagogical approach rather than an isolated solution in the context of General English instruction for beginner EFL learners.

CONCLUSION AND RECOMMENDATION

The aim of this study is to investigate the role of Duolingo in supporting vocabulary development in General English class of the first semester Management students of Pamulang University. This study adopted a qualitative case study design to investigate students' perceptions, learning experiences, and opportunities and challenges of using Duolingo in a Computer-Mediated Language Learning (CMLL) environment. The results showed students' positive perceptions of Duolingo in general as it made the vocabulary learning more interesting, flexible and accessible. Features such as gamification, instant feedback, pronunciation practice and repeated vocabulary exercises helped students to understand, remember and practice new vocabulary. The mobile-based format offered another chance for students to become autonomous learners by studying independently outside the classroom.

The study also identified some opportunities and challenges in vocabulary learning through Duolingo. The application increased students' motivation, promoted self-directed learning and continuously provided exposure to new vocabulary. However, some students found it difficult to comprehend vocabulary in larger communicative contexts, relied heavily on translation strategies, and required teacher support to understand specific lexical items. Therefore, Duolingo

was useful for vocabulary development but was more useful when it was supported by a teacher and contextualized instruction in the classroom. In general, this study adds to the growing body of literature in Applied Linguistics and ELT by emphasizing the value of technology-mediated learning for beginner-level non-English major students.

Based on these findings, it is proposed that first-semester General English classes adopt a blended approach of mobile assisted vocabulary learning along with communicative activities in the classroom. Specifically, lecturers should include gamified spaced-repetition vocabulary tasks that are facilitated by apps such as Duolingo or digital flashcard apps for regular review to enhance lexical retention. These activities should be complemented with contextual interactive video tasks in which students encounter target vocabulary in authentic conversations and engage in comprehension, prediction, and vocabulary-noticing activities. Also, teachers should design discipline-related vocabulary projects like business case discussions, role-plays, and problem-solving tasks pertinent to Management students to foster the meaningful use of new vocabulary in communicative contexts. Vocabulary journals (completed weekly), peer discussion activities, and short oral presentations can also foster students' use of vocabulary beyond the mere recognition of isolated words. Finally, lecturers should provide regular scaffolding and feedback to move learners from translation-dependent strategies to more contextualized and communicative vocabulary use. This might maximize the benefits of digital learning tools while addressing the limitations found in this study, in terms of pedagogical practices.

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