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Research Article

Exploring app-based autonomous English vocabulary learning: strategies, motivation and challenges among Vietnamese learners

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Abstract

This study investigated how Vietnamese university students engaged in autonomous English vocabulary learning through mobile applications, with particular attention to learning strategies, motivation and engagement, and perceived challenges. Adopting a mixed-methods design, quantitative data were collected from 88 undergraduate students via a structured questionnaire, while qualitative insights were obtained through semi-structured interviews with 10 participants. Descriptive statistical analysis revealed that students reported positive attitudes toward vocabulary-learning applications and moderate levels of autonomous engagement. Repetition-based strategies and app-guided review were used most frequently, whereas deeper strategies such as contextual application and self-testing were employed less consistently. Motivation was largely exam-oriented and fluctuated according to academic workload, leading to unstable engagement over time. Qualitative findings further indicated that limited self-regulation skills, cognitive overload, and time constraints hindered sustained autonomous learning. The integration of quantitative and qualitative results suggests that while mobile applications offer valuable support for vocabulary learning, their effectiveness depends largely on learners' strategic awareness and capacity for self-regulated learning. The study highlights the need for pedagogical and institutional support to foster sustainable autonomous vocabulary learning in mobile-mediated environments.

Keywords

autonomous learning, English vocabulary learning, mobile-assisted language learning, university students, Vietnam

1. Introduction

English proficiency has become increasingly important for university students in Vietnam as the country continues its integration into regional and global academic, economic, and professional communities. Within second language learning, vocabulary knowledge plays a fundamental role, as it underpins learners' ability to comprehend input, express meaning accurately, and participate effectively in academic and professional communication. A substantial body of

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research has consistently shown that insufficient vocabulary knowledge constrains learners' performance across all four language skills. Nevertheless, despite years of formal English instruction, many Vietnamese university students continue to experience persistent difficulties in retaining and using newly learned vocabulary beyond the classroom.

Vocabulary learning presents particular challenges due to its cumulative and long-term nature. Unlike grammatical structures, which are often taught explicitly and systematically, vocabulary acquisition relies heavily on repeated exposure, meaningful engagement, and strategic learning over time. In exam-oriented educational contexts such as Vietnam, vocabulary learning is frequently associated with memorisation and short-term recall aimed at test performance. Although such practices may support immediate assessment outcomes, they often fail to foster durable retention or flexible use of lexical items in authentic contexts. Consequently, learners may struggle to develop autonomous habits that sustain vocabulary growth beyond formal instruction.

In recent years, the widespread adoption of mobile technologies has created new opportunities to address these challenges. Mobile-assisted language learning (MALL) enables learners to access language input flexibly across time and space, supporting vocabulary learning through features such as spaced repetition, multimodal input, immediate feedback, and gamified practice. For university students, mobile applications offer a convenient means of engaging in out-of-class learning, allowing vocabulary study to be integrated into daily routines. In Vietnam, the near-universal ownership of smartphones among young adults has contributed to the rapid uptake of English vocabulary-learning applications, which are commonly used as supplementary learning tools.

However, high levels of access and adoption do not necessarily translate into effective or sustained learning outcomes. Previous research has indicated that learners' engagement with mobile vocabulary applications varies considerably in depth and consistency. While students often report positive attitudes toward mobile learning, their actual learning behaviours frequently remain superficial, characterised by repetition-based strategies and irregular usage patterns. Studies conducted in Asian higher education contexts suggest that learners tend to prioritise short-term goals related to examinations and coursework, rather than long-term vocabulary development. As a result, the potential of mobile applications to support autonomous learning is not fully realised.

Motivation and engagement play a central role in shaping learners' interaction with mobile learning tools. Research grounded in motivational theory has demonstrated that learners' engagement with language-learning technologies is influenced by both intrinsic and extrinsic factors. In exam-driven contexts, extrinsic motivation related to grades, deadlines, and academic requirements often dominates learners' behaviour. Although gamification features such as points, badges, and streaks may stimulate initial interest, their motivational impact frequently diminishes over time. Engagement, particularly cognitive engagement, is therefore unstable and sensitive to academic workload, task design, and learners' capacity for self-regulation.

Alongside motivational issues, learners face a range of challenges that constrain sustained autonomous learning in mobile environments. Cognitive overload, time constraints, technological distractions, and limited experience with self-regulated learning have been widely reported as barriers to effective app-based vocabulary learning. These challenges are particularly salient for university students, who must balance academic demands, personal responsibilities, and multiple learning tasks. Importantly, such difficulties suggest that challenges in mobile learning are not merely technological in nature but are closely intertwined with learners' behavioural habits, strategic knowledge, and educational context.

Despite the growing body of international research on MALL, studies focusing specifically on autonomous vocabulary learning in the Vietnamese university context remain limited. Existing research in Vietnam has tended to examine general attitudes toward mobile learning or patterns of app usage, rather than investigating how learners regulate their vocabulary learning autonomously. Moreover, relatively few studies have explored the interrelationships among vocabulary learning strategies, motivation and engagement, and perceived challenges within a single research design. There is also a lack of mixed-methods studies that integrate quantitative patterns with qualitative insights to capture both the breadth and depth of learners' experiences.

To address these gaps, the present study investigated how Vietnamese university students engaged in autonomous English vocabulary learning through mobile applications. Specifically, it examined the types of vocabulary learning strategies students employed when using mobile apps, the motivational and engagement-related factors that influenced their participation, and the challenges they encountered in sustaining autonomous learning. By adopting a mixed-methods approach, combining survey data with in-depth interviews, the study sought to provide a nuanced and contextually grounded understanding of learners' behaviours in mobile-mediated vocabulary learning environments.

By focusing on learners' strategy use, motivation and engagement, and perceived challenges, this study contributes to a more comprehensive understanding of autonomous vocabulary learning beyond the classroom. The findings were expected to offer practical insights for educators, institutions, and developers seeking to support more effective and

sustainable use of mobile applications for vocabulary learning in higher education contexts.

2. Literature Review

2.1 Autonomous Vocabulary Learning in Second Language Acquisition

Vocabulary knowledge has long been acknowledged as a fundamental component of second language acquisition (SLA), underpinning learners' ability to comprehend input and express meaning effectively across all language skills. Nation (2013) and Schmitt (2010) emphasize that vocabulary development is cumulative and requires sustained engagement over time, making it particularly dependent on learners' capacity to manage their own learning beyond formal instructional settings. In this regard, learner autonomy has become a central concept in contemporary language education.

Learner autonomy was initially conceptualized by Holec (1981) as the ability to take charge of one's own learning, including decisions related to learning goals, content, and evaluation. Later research expanded this definition by highlighting autonomy as a dynamic and context-dependent capacity rather than a fixed trait (Benson, 2011). Autonomous learners actively regulate their learning processes through planning, monitoring, and evaluation, which closely aligns with models of self-regulated learning (Zimmerman, 2002). In vocabulary learning, autonomy manifests through learners' ability to select relevant lexical items, apply effective strategies, and sustain learning routines independently.

However, studies conducted in examination-oriented educational contexts suggest that learner autonomy is often constrained by institutional practices and prior learning experiences. In many Asian contexts, including Vietnam, learners tend to rely on teacher guidance and memorization-based strategies, which may limit their capacity for autonomous vocabulary development (Nguyen & Habók, 2021). These findings indicate that autonomy in vocabulary learning is not automatically achieved but must be supported through strategic awareness and appropriate learning environments.

2.2 Vocabulary Learning Strategies in Digital and Mobile Contexts

Vocabulary learning strategies (VLS) play a critical role in mediating how learners process, store, and retrieve lexical items. Schmitt (1997, 2010) categorizes VLS into determination, memory, cognitive, metacognitive, and social strategies, with empirical evidence consistently showing that deeper, elaborative strategies lead to more durable vocabulary retention than surface-level repetition. Cognitive theories such as the Levels of Processing Framework (Craik & Lockhart, 1972) and the Involvement Load Hypothesis (Laufer & Hulstijn, 2001) further explain why strategies involving semantic processing, contextual application, and retrieval practice are more effective than rote memorization.

In mobile-assisted learning environments, learners are provided with tools that potentially support effective vocabulary strategies, including spaced repetition, multimodal input, and self-testing features. Research indicates that such features can facilitate repeated exposure and retrieval, which are essential for long-term retention (Nation, 2013). However, the effectiveness of these tools largely depends on how learners interact with them. Several studies have found that learners often engage with mobile applications in a superficial manner, prioritizing task completion or speed over meaningful lexical processing (Stockwell, 2016; Zhou, 2022).

This pattern is particularly evident among university students, who frequently adopt repetition-based strategies when using vocabulary apps, even when more sophisticated options are available. Such findings suggest that access to mobile technology alone does not guarantee strategic or autonomous learning and that learners' existing habits and beliefs strongly influence their strategy choices.

2.3 Motivation and Engagement in Mobile-Assisted Language Learning

Motivation and engagement are widely recognized as key determinants of successful language learning, especially in autonomous and technology-mediated contexts. Dörnyei's (2005, 2009) L2 Motivational Self System highlights the role of learners' future self-guides—particularly the Ideal L2 Self—in sustaining long-term learning effort. Learners who possess a clear vision of themselves as competent language users tend to demonstrate higher persistence and engagement in vocabulary learning activities.

In mobile-assisted language learning (MALL), motivation and engagement are often shaped by app design features such as gamification, progress indicators, and personalized feedback. While these features can enhance initial motivation and behavioural engagement, their long-term effectiveness remains contested. Liu et al. (2020) report that gamification elements such as points and streaks may lead to short-term engagement but can also result in "gamification fatigue" when learners perceive these features as repetitive or pressure-inducing. As a result, engagement may fluctuate rather than stabilize over time.

Engagement in MALL is also multidimensional, encompassing behavioural, cognitive, and emotional components (Philp & Duchesne, 2016). Research suggests that cognitive engagement—reflected in effortful processing

and strategy use—is more strongly associated with learning outcomes than mere frequency of app use (Zhou, 2022). This distinction is particularly relevant for vocabulary learning, where sustained attention and deep processing are required for retention and productive use.

2.4 Challenges in Autonomous App-Based Vocabulary Learning

Despite the affordances of mobile technologies, learners frequently encounter challenges that undermine sustained autonomous learning. Cognitive overload is one of the most commonly reported difficulties, as vocabulary apps often introduce large amounts of lexical input with limited scaffolding or personalization (Zhou, 2022). Time constraints and competing academic demands further complicate learners' ability to maintain regular study routines, particularly among university students balancing coursework and extracurricular responsibilities (Stockwell, 2016).

Technological distractions also pose a significant challenge in mobile learning environments. Notifications, social media, and multitasking opportunities can fragment learners' attention, reducing the depth of engagement with vocabulary tasks. Moreover, learners with limited experience in self-regulation may struggle to plan learning sessions, monitor progress, or evaluate the effectiveness of their strategies without external guidance (Benson, 2011).

In the Vietnamese context, these challenges are intensified by exam-oriented curricula and teacher-centered instructional traditions. Although students increasingly adopt mobile applications as supplementary learning tools, their usage is often driven by short-term academic goals rather than sustained personal development (Nguyen & Habók, 2021). Consequently, autonomous app-based vocabulary learning remains fragile and inconsistent.

2.5 Research Gap

Collectively, previous studies highlight the potential of mobile applications to support vocabulary learning while also revealing persistent limitations related to strategy use, motivation, engagement, and contextual constraints. However, several gaps remain. First, many studies focus on general attitudes toward MALL or overall usage frequency, rather than examining how strategies, motivation, and challenges interact within autonomous learning processes. Second, research in the Vietnamese higher education context remains limited, particularly with regard to out-of-class vocabulary learning practices. Third, relatively few studies adopt a mixed-methods approach that integrates quantitative trends with qualitative insights to capture both the breadth and depth of learners' experiences.

To address these gaps, the present study investigates how Vietnamese university students engage autonomously with mobile applications for English vocabulary learning, focusing on strategy use, motivation and engagement, and perceived challenges. By combining survey data with in-depth interviews, the study aims to provide a more nuanced and context-sensitive understanding of autonomous vocabulary learning in mobile-assisted environments.

3. Methodology

3.1 Participants

The participants of this study were 88 undergraduate students enrolled at a public university in the Mekong Delta region of Vietnam. All participants were non-English majors who were required to study English as part of their university curriculum. To be eligible for inclusion, students had to meet one criterion: they must have used at least one mobile application for English vocabulary learning within the six months preceding the data collection period. This criterion ensured that participants had recent and relevant experience with app-based vocabulary learning.

The participants represented a range of academic years and English proficiency levels, reflecting the diversity of English learning experiences within the institution. Both male and female students participated voluntarily in the study. Prior to data collection, all participants were informed about the purpose of the research, the voluntary nature of participation, and the confidentiality of their responses. Consent was obtained before administering the research instruments.

For the qualitative phase, ten students were selected from the survey participants using purposive sampling. Selection criteria included variation in reported strategy use, motivation levels, and frequency of app usage, allowing for richer exploration of contrasting learning experiences.

3.2 Instruments

Two research instruments were employed: a questionnaire and a semi-structured interview guide.

The questionnaire was designed to collect quantitative data on students' autonomous vocabulary learning practices using mobile applications. It consisted of four main sections. The first section gathered background information, including age, gender, length of app usage, and preferred vocabulary-learning applications. The second section measured vocabulary learning strategies, focusing on repetition-based strategies, contextual learning, self-testing, and strategic selection of vocabulary items. The third section examined motivation and engagement, including exam-related motivation, perceived usefulness of apps, Ideal L2 Self, and behavioural and emotional engagement. The

final section addressed perceived challenges in app-based vocabulary learning, such as cognitive overload, time constraints, technological distractions, and difficulty with self-regulation.

All questionnaire items were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The instrument was reviewed by two colleagues with expertise in applied linguistics to ensure content clarity and relevance. A pilot test with a small group of students led to minor wording adjustments before formal administration.

The semi-structured interview guide was developed to complement the questionnaire data and to gain deeper insight into students' learning behaviours and perceptions. Interview questions focused on students' vocabulary learning routines, strategy choices, motivational experiences, engagement patterns, and perceived challenges when using mobile applications. The flexible structure of the interviews allowed participants to elaborate on their experiences and provide concrete examples from their daily learning practices.

3.3 Procedure

Data collection was conducted in two phases. In the first phase, the questionnaire was administered to undergraduate students during regular class sessions with the permission of course instructors. Participants completed the questionnaire in approximately 15 minutes. Responses were collected anonymously to encourage honest reporting.

After the questionnaire data were analysed preliminarily, the second phase of data collection involved conducting in-depth interviews with ten selected participants. Interviews were conducted in Vietnamese to ensure that participants could express their ideas clearly and comfortably. Each interview lasted approximately 20–30 minutes and was audio-recorded with participants' consent. The recordings were later transcribed and translated into English for analysis. To ensure accuracy, key excerpts used for analysis were cross-checked against the original Vietnamese transcripts.

3.4 Data Analysis

Quantitative data from the questionnaire were analysed using the Statistical Package for the Social Sciences (SPSS). Prior to analysis, the data were screened for completeness and internal consistency. Reliability analysis was conducted using Cronbach's alpha to assess the internal consistency of the questionnaire scales. Descriptive statistics, including means and standard deviations, were calculated to identify general patterns of strategy use, motivation and engagement, and perceived challenges in app-based vocabulary learning.

Qualitative data from the interviews were analysed thematically. The analysis followed an iterative coding process. First, transcripts were read repeatedly to achieve familiarity with the data. Initial codes were then generated to capture key ideas related to learning strategies, motivation, engagement, and challenges. These codes were subsequently grouped into broader categories, which were refined into overarching themes that reflected recurrent patterns across participants' narratives.

To enhance the credibility of the qualitative analysis, coding decisions were revisited multiple times, and representative excerpts were selected to illustrate each theme. The qualitative findings were then compared and integrated with the quantitative results to identify points of convergence and divergence. This triangulation process enabled a more comprehensive interpretation of students' autonomous vocabulary learning experiences in mobile-assisted environments.

4. Results and Discussion

4.1 Vocabulary Learning Strategies (RQ1)

Descriptive statistics revealed a clear dominance of repetition-based strategies in students' app-based vocabulary learning. As shown in Table 1, reviewing word lists and flashcards recorded the highest mean score (M = 4.12, SD = 0.71), indicating a strong preference for memorisation-oriented practices. Similarly, spaced repetition features embedded in mobile applications were frequently utilised (M = 4.16, SD = 0.68), suggesting that learners actively engaged with app-guided review systems.

However, strategies associated with deeper lexical processing were used less consistently. Contextual application of vocabulary—such as using words in self-created sentences—yielded a noticeably lower mean score (M = 3.21, SD = 0.83). Self-testing strategies, which require learners to retrieve vocabulary independently, received the lowest endorsement (M = 3.11, SD = 0.82). This pattern indicates that although students had access to features promoting deeper learning, these strategies were not fully integrated into their autonomous routines.

Table 1: *Descriptive Statistics of Vocabulary Learning Strategies (N = 88)*

Strategy Category	Mean	SD
Reviewing word lists / flashcards	4.12	0.71
Spaced repetition	4.16	0.68
General app-based review practice	4.08	0.81
Contextual application	3.21	0.83
Self-testing	3.11	0.82

Interview findings help explain these quantitative trends. Most participants reported relying on repetition and quick review, particularly during exam preparation. Although they recognised the pedagogical value of contextualisation and retrieval practice, many perceived these strategies as time-consuming or difficult to maintain without teacher guidance. These findings suggest that students' strategy choices were shaped not by lack of awareness but by exam-oriented habits and limited self-regulatory experience.

4.2 Motivation and Engagement (RQ2)

The survey results indicated that students' motivation for using vocabulary applications was largely extrinsic and assessment-driven. As shown in Table 2, exam-related motivation recorded a relatively high mean score (M = 3.98, SD = 0.74), highlighting the strong influence of academic requirements on app usage. Perceived usefulness of vocabulary applications was also positively rated (M = 3.85, SD = 0.69).

In contrast, motivation linked to long-term self-concept was only moderate. Ideal L2 Self motivation yielded a mean score of 3.67 (SD = 0.72), suggesting that learners had not fully internalised personal visions of sustained English development. Behavioural engagement was similarly unstable (M = 3.52, SD = 0.81), while emotional engagement was slightly lower (M = 3.41, SD = 0.77), indicating fluctuating interest and enjoyment over time.

Table 2. *Descriptive Statistics of Motivation and Engagement (N = 88)*

Dimension	Mean	SD
Exam-related motivation	3.98	0.74
Perceived usefulness	3.85	0.69
Ideal L2 Self	3.67	0.72
Behavioural engagement	3.52	0.81
Emotional engagement	3.41	0.77

Qualitative data clarified these patterns. Many interviewees described intense app use before exams, followed by disengagement once assessments were completed. Gamification features initially increased motivation but gradually lost effectiveness, sometimes becoming a source of pressure rather than enjoyment. These findings indicate that while mobile apps can trigger short-term engagement, sustained motivation depends on learners' ability to internalise goals and regulate learning independently.

4.3 Challenges in App-Based Vocabulary Learning (RQ3)

Students reported multiple challenges that hindered sustained autonomous engagement. As shown in Table 3, time constraints emerged as the most prominent challenge (M = 4.02, SD = 0.73), followed by cognitive overload (M = 3.89, SD = 0.78). Declining motivation over time was also strongly endorsed (M = 3.76, SD = 0.80), reinforcing the instability observed in motivation and engagement results.

Difficulties related to self-regulation without teacher guidance were reported at a relatively high level (M = 3.84, SD = 0.79), while technological distractions were moderately endorsed (M = 3.58, SD = 0.85).

Table 3: *Descriptive Statistics of Perceived Challenges (N = 88)*

Challenge	Mean	SD
Time constraints	4.02	0.73
Cognitive overload	3.89	0.78
Difficulty self-regulating learning	3.84	0.79
Declining motivation over time	3.76	0.80
Technological distractions	3.58	0.85

Interview narratives strongly supported these findings. Students described feeling overwhelmed by large volumes of vocabulary and struggled to maintain routines amid academic workload and personal commitments. Importantly, most participants framed these difficulties as problems of self-management rather than technological limitations, highlighting the central role of autonomy-related skills.

4.4 Integrated Discussion

Taken together, the findings suggest that Vietnamese university students are willing to use mobile applications for vocabulary learning but remain constrained by exam-oriented practices, fluctuating motivation, and limited self-regulatory capacity. Quantitative results reveal consistent reliance on surface-level strategies, while qualitative data explain how institutional pressures and habitual learning patterns shape these behaviours.

The results indicate that learner autonomy in mobile vocabulary learning is developmental rather than fully established. While mobile applications provide flexible access and rich features, their effectiveness depends largely on learners' ability to plan, monitor, and sustain engagement independently. Without explicit support in strategy use and self-regulation, the pedagogical potential of mobile-assisted vocabulary learning remains only partially realised.

5. Conclusion

This study examined how Vietnamese university students engage in autonomous English vocabulary learning through mobile applications, with particular attention to strategy use,

motivation and engagement, and perceived challenges. Using a mixed-methods design, the findings provide a nuanced account of how mobile technologies are integrated into students' everyday learning practices beyond the classroom.

The results indicate that while students generally hold positive attitudes toward vocabulary-learning applications, their autonomous engagement remains uneven and largely shaped by exam-oriented learning traditions. Quantitative data reveal a strong reliance on repetition-based and app-guided strategies, whereas deeper strategies such as contextual application and self-testing are used less consistently. Qualitative findings further show that this pattern stems not from a lack of awareness, but from difficulties in sustaining cognitively demanding practices without external structure or guidance.

Motivation for app-based vocabulary learning is predominantly extrinsic and closely tied to academic requirements. Although gamified features initially stimulate engagement, their motivational impact diminishes over time, leading to fluctuating learning routines. Persistent challenges—including cognitive overload, time constraints, and limited self-regulatory skills—further constrain learners' ability to maintain sustained autonomous learning.

Overall, the study suggests that mobile applications alone do not automatically foster learner autonomy. Instead, effective autonomous vocabulary learning depends on learners' capacity to regulate their strategies, motivation, and engagement within broader academic and cultural contexts. These findings underscore the need for pedagogical and institutional support that helps students move beyond short-term, exam-driven use of mobile apps toward more strategic and sustainable vocabulary learning practices.

Declaration

Author contributions:

The author designed and implemented the research, conducted data collection and analysis, and prepared the manuscript.

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Ethics approval:

All procedures involving human participants were conducted in accordance with ethical standards and the principles of the 1964 Helsinki Declaration and its later amendments. Informed consent was obtained from all participants prior to data collection.

Conflict of interest:

The author declares that there are no known conflicts of interest associated with this publication, and no financial or personal relationships that could have appeared to influence the work reported in this paper.

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