Exploring English Vocabulary Learning Strategies Through AI Integration of Thai University Students: A Case Study*

Anawin Khlakheang[1] and Amorn Cherngroongroj[2]
Business English Program, Faculty of Arts, Dhurakij Pundity University, Thailand
Global Business English Program, Faculty of Arts, North Bangkok University, Thailand
Corresponding Author's Email: anawin.khl@dpu.ac.th[1]

Abstract

This study aimed to explore the English vocabulary learning strategies of Thai university students with an emphasis on the integration of Artificial Intelligence (AI) tools. Specifically, the research sought to (1) identify the vocabulary learning strategies employed by students, (2) examine how AI tools such as ChatGPT, Quizlet, and Grammarly were integrated into their learning practices, and (3) evaluate their perceptions of AI-assisted strategies compared with traditional methods. Data were collected through a voluntary online survey conducted in March until April 2025 with 32 informants, all undergraduate students majoring in Business English at a private university in Bangkok. The survey included open-ended questions, and the responses were analyzed qualitatively using thematic analysis to capture recurring patterns and themes. The findings revealed that students combined traditional strategies (e.g., reading, note-taking, peer discussions) with technology-based approaches, highlighting a dynamic blend of methods. ChatGPT emerged as the most widely adopted AI tool, followed by Grammarly and Quizlet, each serving complementary purposes in vocabulary acquisition. Students perceived AI-assisted strategies as highly effective, particularly in providing instant feedback, contextualized examples, and enhanced motivation, though they continued to value traditional practices for deeper comprehension and authentic interaction. The study contributes to the growing body of research on AI-assisted vocabulary learning in EFL contexts by offering insights into how Thai undergraduates integrate emerging technologies with established learning strategies. The study contributed to EFL pedagogy by

* Received 23 June 2025; Revised 9 October 2025; Accepted 15 October 2025

highlighting practical ways to integrate AI tools into vocabulary instruction while preserving the value of traditional strategies.

Keywords: English vocabulary learning, AI integration, Vocabulary strategies, EFL students, Technology-assisted learning

Introduction

The process of language acquisition is inherently complex and multifaceted, involving numerous cognitive and social dimensions; thus, a comprehensive understanding of the wide array of strategies that learners employ specifically for expanding their English vocabulary is crucial for educators aiming to design and implement effective, targeted instructional practices that cater to diverse learner needs and optimize language proficiency outcomes (Brown, 2007; Nation, 2001). In recent years, the emergence of Artificial Intelligence (AI) has significantly reshaped the landscape of language education, offering learners new tools to personalize, accelerate, and reinforce vocabulary acquisition (Chou, 2021; Wang & Vasquez, 2012). Ghalebi, Sadighi, and Bagheri (2020) highlight that acquiring a foreign or second language is a complex and evolving process that benefits from strategic, adaptable methods increasingly shaped by digital technologies.

Vocabulary is defined as a collection of lexemes that includes individual words, compound terms, and idiomatic expressions (p. 307). Within this framework, a strategy refers to a systematic approach or technique applied to achieve a specific objective. Consequently, vocabulary learning strategies represent a specialized subset of general language learning strategies, involving both deliberate and automatic processes aimed at acquiring and retaining vocabulary. With technological advancements, these strategies increasingly incorporate engagement with digital resources, particularly AI-driven platforms, which facilitate memorization, contextual understanding, and personalized feedback during vocabulary learning (Kukulska-Hulme, 2020). Our dedication to fostering students' vocabulary growth is grounded in the widely accepted recognition—supported by both practical experience and empirical studies—that vocabulary forms a crucial foundation for successful language acquisition.

Extensive research, especially within the contexts of EFL (English as a Foreign Language) and ESL (English as a Second Language) learners, has consistently revealed a significant positive relationship between the breadth of learners' vocabulary knowledge and their overall language proficiency (Qian & Lin, 2020). Vocabulary knowledge plays a vital role not only in improving reading and writing skills but also in enhancing learners' oral communication abilities. Seffa (2015) examined the connection between vocabulary mastery and oral proficiency among EFL learners, highlighting that a robust vocabulary foundation is essential for effective spoken interaction. Furthermore, the rise of AI technologies has made vocabulary acquisition more accessible and interactive, enabling learners to utilize intelligent tools that offer real-time feedback, contextual examples, and personalized support tailored to their language proficiency (Xie, Wong, & Tsai, 2022).

In this study, we examined the English vocabulary learning strategies of Thai university students, with a particular focus on how AI technologies are being integrated into their learning practices. Through a qualitative analysis of students' responses, we identified thematic patterns and determined their preferred methods of vocabulary acquisition. Special attention was given to the role of AI tools—such as ChatGPT, Quizlet, and Grammarly—in shaping or supplementing these strategies. This case study seeks to contribute to the growing body of research on AI-assisted language learning by offering insights into how learners in an EFL context utilize both traditional and technology-driven approaches to enhance their English vocabulary. Despite extensive studies on vocabulary learning strategies in Thailand (e.g., Chumworatayee & Pitakpong, 2017; Boonnoon, 2019), most of these investigations have not addressed the role of Artificial Intelligence (AI) in shaping learners' vocabulary practices. Conversely, international research has increasingly focused on AI in language education (e.g., Kasneci et al., 2023; Zou & Xie, 2024), but these studies tend to discuss general affordances and challenges of AI without a specific focus on vocabulary learning strategies. Therefore, there remains a gap in the literature concerning how Thai EFL learners integrate AI tools into their vocabulary learning practices. This study addresses that gap by examining AI-integrated vocabulary learning strategies of Thai university students in an EFL context.

Objectives

1. To identify the vocabulary learning strategies employed by Thai university students in an EFL context.

2. To explore how Artificial Intelligence (AI) tools such as ChatGPT, Quizlet, and Grammarly are integrated into students' vocabulary learning practices.

3. To examine the perceived effectiveness and preferences of students regarding AI-assisted vocabulary learning compared to traditional learning strategies.

Literature Review

Vocabulary learning strategies refer to the various methods and techniques learners utilize to acquire new words and expressions, thereby expanding their overall vocabulary knowledge. Recognized as a fundamental aspect of language learning, vocabulary acquisition enables effective communication and comprehension across diverse texts and genres. It is widely accepted that a larger vocabulary contributes to greater language proficiency and learner confidence. Nonetheless, the process of learning vocabulary is complex, involving an intricate interaction of cognitive, emotional, and social factors that affect how learners acquire, retain, and use new words in different contexts (Nation, 2001; Takač, 2014). Consequently, gaining insight into these strategies is essential for educators and curriculum developers aiming to enhance language instruction.

Nation (2009) identified four primary categories of vocabulary learning strategies: (1) encoding, (2) retrieval, (3) elaboration, and (4) metacognitive strategies. Encoding strategies help learners transfer new vocabulary into long-term memory by utilizing cues such as word components, synonyms, antonyms, associations, and imagery. Retrieval strategies focus on recalling previously learned words through methods like word lists, mapping, and language games. Elaboration strategies encourage learners to connect new vocabulary with existing knowledge using examples, explanations, and comparative techniques. Kukulska-Hulme (2020) stated that metacognitive strategies involve learners actively managing their learning process via goal-setting, planning, feedback, and

self-assessment. With the integration of AI, many of these strategies are further supported and enhanced by technology; for instance, tools like Quizlet facilitate retrieval through interactive flashcards, while AI chatbots such as ChatGPT promote elaboration and metacognitive reflection by offering contextualized feedback and engaging conversational practice.

Expanding on Oxford's foundational framework, Schmitt (1997) developed a detailed classification of vocabulary learning strategies, dividing them into two main types: independent learning, where learners independently infer meanings, and collaborative learning, which involves social engagement. These categories further branch into five principal strategies: determination strategies that focus on learners' efforts to uncover word meanings; social strategies that leverage interaction with peers; memory strategies that use associations and mental connections; cognitive strategies centered on repetition and practice; and metacognitive strategies that involve planning, monitoring, and assessing one's learning progress. In the context of AI integration, these strategies can be effectively supported—for example, ChatGPT facilitates elaboration by providing immediate feedback and enabling clarification, while Quizlet supports memory and cognitive strategies through spaced repetition and gamification (Kukulska-Hulme, 2020). The success of vocabulary learning strategies depends on various individual learner characteristics such as age, proficiency level, motivation, and preferred learning styles. For EFL learners, particularly Thai university students, it is crucial for educators to evaluate their specific needs before implementing strategy-focused teaching methods. A significant difficulty in acquiring vocabulary in a second language (L2) lies in the comparatively fewer cognates available than in a learner's first language (L1). Takač (2014) highlighted that this scarcity necessitates more intensive and deliberate instruction in L2 vocabulary learning.

Chumworatayee and Pitakpong (2017) identified a significant disparity between Thai English majors' perceived value of vocabulary learning strategies (VLSs) and their actual usage. Their study of 72 students revealed moderate engagement with VLSs, despite learners rating these strategies as highly useful. Positive correlations were found between the use and perceived benefit of most strategies, except for certain techniques like seeking translations or highlighting

letters, which were less commonly practiced despite being valued. These results suggest that providing explicit instruction on VLSs could enhance vocabulary acquisition for Thai learners. In the context of AI, this gap could be reduced through AI-powered platforms that offer personalized, strategy-focused feedback and support, promoting more consistent and effective strategy use. Similarly, Boonnoon (2019) examined VLS usage among 267 Thai EFL students enrolled in academic reading courses across four disciplines. The research showed moderate overall use of strategies, with dictionary use and note-taking being the most popular, while selective attention was used the least. Statistical analysis indicated significant differences in strategy use among academic majors, with health science students demonstrating the highest levels of engagement. These findings imply that academic background influences vocabulary learning preferences. Integrating AI-driven tools tailored to disciplinary needs could address these differences by providing customized strategy support aligned with students' unique academic contexts and learning preferences.

The reviewed literature underscores the complexity and diversity of vocabulary learning strategies employed by language learners, particularly within the Thai EFL context. Previous studies have highlighted both the moderate use and high perceived value of these strategies among students, with variations influenced by factors such as academic discipline and individual learner characteristics (Boonnoon, 2019; Chumworatayee & Pitakpong, 2017). Furthermore, traditional vocabulary learning frameworks (Nation, 2009; Schmitt, 1997; Takač, 2014) provide a strong foundation for understanding strategic language acquisition processes. However, the rapid advancement of AI technologies offers new possibilities to enhance and personalize vocabulary learning through tools like ChatGPT, Quizlet, and Grammarly, which can support encoding, retrieval, elaboration, and metacognitive strategies. Despite this promising potential, there remains a gap in empirical research exploring how Thai university students specifically integrate AI tools into their vocabulary learning practices. To address this gap, the present case study adopts a qualitative approach to investigate the strategies Thai students use to learn English vocabulary, with a particular focus on the role and impact of AI integration.

Methodology

This study adopted a qualitative case study design to investigate Thai university students' vocabulary learning strategies, focusing on the integration of Artificial Intelligence (AI) tools.

Data Collection Tool

Data were collected during March until April 2025 using an online open-ended questionnaire distributed via Google Classroom. The instrument consisted of two sections: (1) demographic information (e.g., age, year of study, program) and (2) open-ended questions such as *"How do you use AI to learn English vocabulary?"* and *"Which strategies do you find most effective when learning new vocabulary?"* These questions were designed based on established frameworks of vocabulary learning strategies (Nation, 2009; Schmitt, 1997), and were reviewed by three experts in applied linguistics to ensure content validity. A pilot test with five students confirmed the clarity and relevance of the questions.

Participants

The survey was distributed to 64 undergraduate students enrolled in a Business English program at a private university in Bangkok. Of these, 32 students voluntarily participated and completed the questionnaire in full. The participants were selected through purposive sampling, as they were considered representative of EFL learners who actively engage with both traditional and AI-assisted learning strategies.

Data Analysis

Responses were analyzed using thematic analysis, following Braun and Clarke's (2006) six-step framework: (1) familiarization with data, (2) generating initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and (6) producing the report. To enhance the trustworthiness of the analysis, peer debriefing was conducted with two fellow researchers, and coding consistency was checked across multiple readings.

Ethical Considerations

The study followed the ethical guidelines of the university's research ethics committee. Participation was voluntary, and informed consent was

obtained from all respondents. Anonymity and confidentiality were strictly maintained throughout the research process.

Results

This study aimed to explore the English vocabulary learning strategies employed by Thai university students, focusing on the integration of Artificial Intelligence (AI) tools such as ChatGPT, Quizlet, and Grammarly. Thirty-two students participated in a voluntary online survey during March until April 2025. Thematic analysis of their qualitative responses yielded rich insights aligned with the three research objectives.

Vocabulary Learning Strategies Employed by Thai University Students

Consistent with the first research objective, the findings demonstrate that students employ a diverse range of vocabulary learning strategies combining both traditional and digital approaches.

The table 1: Vocabulary Learning Strategies

No.	Strategy Type	Percentage (%)
1	Traditional Methods (Reading books, discussions, handwritten notes)	78%
2	Multimedia Resources (Videos, films, social media)	22%

Traditional methods remain foundational, with approximately 78% of respondents indicating regular use of reading books, engaging in face-to-face discussions with teachers and peers, and using handwritten notes to reinforce vocabulary. These strategies were frequently cited for their effectiveness in promoting deep comprehension and contextual learning. In addition, a considerable proportion around 22% of students reported leveraging multimedia resources such as videos, films, and social media platforms to support their vocabulary acquisition. Participants highlighted the engaging nature of such resources, which provide authentic language input and diverse contextual examples. This indicates a shift toward integrating more varied, multimodal learning experiences that supplement traditional strategies.

Integration of AI Tools in Vocabulary Learning Practices

Addressing the second objective, a prominent theme was the active integration of AI tools into students' vocabulary learning routines. AI-powered

platforms were widely utilized and valued for their interactivity, accessibility, and personalized feedback.

The table 2: Integration of AI Tools in Vocabulary Learning Practices

No.	AI Types	Percentage (%)
1	ChatGPT	69%
2	Grammarly	19%
3	Quizlet	12%

ChatGPT emerged as the most frequently mentioned AI tool, with approximately 69% of students reporting regular use. Respondents described using ChatGPT to generate example sentences, clarify meanings of unfamiliar words, and simulate conversational practice, which helped them contextualize vocabulary in real-time interactions. **Grammarly** was used by roughly 19% of students, primarily for writing support. Participants appreciated Grammarly's instant corrective feedback on vocabulary usage and grammar, which helped them self-correct and build confidence in written English. **Quizlet** was reported by about 12% of participants as an effective tool for memorization through flashcards and spaced repetition. Many noted that the platform's gamified quizzes and progress tracking features increased their motivation and retention. The integration of these AI tools reflects a clear trend toward technology-assisted learning that complements and enhances traditional strategies, providing learners with additional channels to practice and reinforce vocabulary.

Perceived Effectiveness and Preferences Regarding AI-Assisted vs. Traditional Strategies

Regarding the third objective, students generally perceived AI-assisted vocabulary learning as highly beneficial but favored a balanced approach combining both AI tools and traditional methods. Approximately 81% of participants expressed positive attitudes toward AI tools, emphasizing their convenience, accessibility, and capacity for personalized feedback. Many highlighted that AI technologies offered immediate answers and examples, which accelerated their learning and helped overcome challenges encountered in self-study. However, about 19% preferred to use AI tools as supplements rather than replacements for traditional learning methods. They valued face-to-face interactions with teachers and peers, extensive reading, and contextual usage as

essential components of vocabulary acquisition. This preference indicates that while AI facilitates personalized and adaptive learning experiences, it does not entirely substitute the richness of human-mediated and contextual learning environments.

Discussion

The findings align closely with previous research on vocabulary learning strategies. Consistent with Nation's (2009) framework, students employ a variety of encoding, retrieval, elaboration, and metacognitive strategies, integrating both traditional and technology-assisted methods. The continued use of reading, social interaction, and note-taking echoes Schmitt's (1997) distinction between independent and social learning strategies. Moreover, the significant role of AI tools in vocabulary acquisition supports Kukulska-Hulme's (2020) assertion that digital platforms provide adaptive, personalized learning experiences. The moderate use of strategies observed by Boonnoon (2019) and the gap between perceived usefulness and actual use highlighted by Chumworatayee and Pitakpong (2017) are reflected in students' selective adoption of AI tools alongside conventional practices. Overall, this study confirms that while AI integration is reshaping vocabulary learning, traditional strategies remain essential in comprehensive language development.

Recommendation

One limitation of the study lies in the relatively small number of participants (n=32). However, this is consistent with the nature of qualitative research, where the focus is placed on the richness of individual responses rather than statistical generalizability. Future research may consider employing a mixed-method approach or expanding the sample size to validate and triangulate the findings. Based on the findings, it is recommended that English language courses integrate AI tools such as ChatGPT, Quizlet, and Grammarly to support vocabulary learning. Students should receive guidance on how to effectively combine these AI-assisted methods with traditional strategies for a balanced approach. Additionally, incorporating AI-based activities that encourage the contextual use of vocabulary can deepen learning. Finally, further research is needed to explore

the long-term effects of AI integration, while ensuring equitable access to these technologies for all learners. tools on vocabulary acquisition and overall language proficiency, particularly among diverse learner populations. Moreover, efforts should be made to improve equitable access to AI technologies to ensure all students can benefit regardless of socioeconomic background.

References

Boonnoon, S. (2019). Vocabulary learning strategies used by Thai EFL students in an academic reading course: A comparative study across academic disciplines. *International Journal of Language and Linguistics, 6*(2), 45–57.

Brown, H. D. (2007). *Principles of language learning and teaching* (5th ed.). Pearson Longman.

Chou, P.-N. (2021). Artificial intelligence in language learning: Opportunities and challenges. *Journal of Educational Technology & Society, 24*(3), 24–37.

Chumworatayee, S., & Pitakpong, P. (2017). Vocabulary learning strategies: Perceived value and actual use among Thai English majors. *English Language Teaching, 10*(4), 32–45.

Ghalebi, H., Sadighi, F., & Bagheri, M. S. (2020). Strategic language learning: A key to success in EFL learning. *Journal of Language Teaching and Research, 11*(5), 782–790.

Kasneci, E. et al. (2023). *ChatGPT for education: Opportunities and challenges.*

Kukulska-Hulme, A. (2020). Mobile-assisted language learning [MALL]: Contexts and challenges. *Language Learning & Technology, 24*(1), 1–9.

Nation, I. S. P. (2001). *Learning vocabulary in another language*. Cambridge University Press.

Nation, I. S. P. (2009). Teaching vocabulary: Strategies and techniques. *TESOL Journal, 1*(2), 12–18.

Qian, D. D., & Lin, J. (2020). Vocabulary knowledge and language proficiency: A comprehensive review of empirical research. *Language Learning Journal, 48*(4), 430–445.

Richards, J. C., Platt, J., & Weber, H. (1985). *Longman dictionary of applied linguistics*. Longman.

Schmitt, N. (1997). Vocabulary learning strategies. In N. Schmitt & M. McCarthy (Eds.), *Vocabulary: Description, acquisition, and pedagogy* (pp. 199–227). Cambridge University Press.

Seffa, M. (2015). Vocabulary knowledge and oral competence in EFL learners. *International Journal of English Linguistics, 5*(2), 89–98.

Takač, V. P. (2014). *Vocabulary learning strategies and foreign language acquisition*. Multilingual Matters.

Wang, Y., & Vasquez, C. (2012). Technology and language learning: A review of research and perspectives. *Journal of Language Teaching and Research, 3*(3), 452–458.

Xie, I., Wong, L., & Tsai, S. (2022). The impact of AI tools on language learning: A systematic review. *Computers & Education, 182*, Article 104470.

Zou, D., & Xie, H. (2024). ChatGPT in English language education: Affordances and challenges. *Computers and Education: Artificial Intelligence, 5,* 100235. https://doi.org/10.1016/j.caeai.2023.100235