# ENHANCING VOCABULARY LEARNING WITH A.I: THE EFFECTIVENESS OF CHATGPT AMONG THAI PARTICIPANTS AT THONGSOOK COLLEGE

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**ABSTRACT**
This study examines the effectiveness of artificial intelligence (A.I) enhanced vocabulary learning, specifically through ChatGPT, among Thai participants at Thongsook College. As AI becomes increasingly influential in language education, it provides adaptive and interactive methods that support learners in exploring, practicing, and expanding vocabulary knowledge. A total of 190 Thai participants engaged with ChatGPT generated texts and vocabulary tasks over a designated period. To evaluate the impact of this AI-assisted approach, the study employed objective pre- and post-tests to measure vocabulary gains, along with semi-structured interviews to explore learners' experiences and perceptions. The findings show that 1) Students in the experimental group demonstrated higher vocabulary gains than those in the control group, as shown by significant improvements in pre- and post-test scores. 2) The experimental group reported higher perceived effectiveness, engagement, motivation, and satisfaction (M = 4.27-4.41) compared with the control group (M = 3.52-3.68). 3) Qualitative data indicated that ChatGPT supported deeper learning through context-based explanations, exposure to varied linguistic structures, and personalized feedback. 4) Learners expressed increased confidence and reduced anxiety when using ChatGPT due to its non-judgmental and interactive nature. 5) Challenges were noted, including occasional complex explanations and the need for clearer learner guidance, though these did not significantly reduce overall positive perceptions. Overall, the study demonstrates that ChatGPT is an effective supplementary tool for vocabulary development in higher education. Its interactive features, instant feedback, and adaptive explanations enhance learner motivation, autonomy, and comprehension. These findings support growing evidence for AI-assisted language learning and highlight the importance of integrating AI tools into curriculum design while providing adequate training to maximize learning outcomes.
**Keywords:** Artificial Intelligence, ChatGPT, Vocabulary Learning

## INTRODUCTION

Vocabulary knowledge is a fundamental component of second language proficiency and plays a crucial role in learners' development of reading, writing, listening, and speaking skills. However, many Thai EFL learners struggle to expand their vocabulary due to limited exposure to authentic language input, an overreliance on rote memorization, and insufficient opportunities for meaningful, contextualized language use in traditional classrooms. These challenges create gaps in learners' ability to apply vocabulary effectively in real communicative situations (Wichadee, 2021). As a result, educators are increasingly exploring innovative approaches to strengthen vocabulary instruction, with Artificial Intelligence (AI) emerging as a promising tool in language education (Solak, 2024).

AI technologies provide adaptive, flexible, and interactive learning experiences that respond to learners' individual needs. Among these tools, ChatGPT has gained considerable attention for its capacity to generate natural language responses, offer immediate feedback, and facilitate interaction in meaningful contexts. Recent research suggests that ChatGPT can enhance vocabulary learning through contextualized input, reduced cognitive load, and increased learner autonomy (Ngo, 2024). Its ability to simulate natural conversational exchanges allows learners to encounter new vocabulary in functional, authentic such as environments, which contributes to long-term retention and deeper linguistic understanding.

Within the Thai higher education context studies on AI assisted vocabulary learning are still emerging. Early research indicates that Thai university students are beginning to incorporate AI tools into their language-learning routines and generally express positive attitudes toward AI-supported vocabulary development (Thadphoothon & Samrit, 2025). Scholars also highlight the value of AI-generated corrective feedback, noting that immediate, contextually appropriate feedback can enhance vocabulary retention and support lexical development more effectively than traditional instructional methods (Tangpijaikul, 2025). Furthermore, the ChatGPT has shown potential in promoting self-directed learning outside of formal classroom settings, contributing to increased motivation and independent practice (Dizon, 2024).

Despite this there are remains a lack of empirical evidence focusing specifically on the effectiveness of ChatGPT for vocabulary development among Thai learners. This gap underscores the need for systematic research that examines both measurable vocabulary gains and learners' perceptions of AI-assisted learning. To address this need, the present study investigates how ChatGPT can support vocabulary development among Thai participants at Thongsook College. It incorporates quantitative data from pretest and post-tests as well as qualitative data from semi-structured interviews, providing a comprehensive evaluation of ChatGPT as an AI-assisted vocabulary learning tool.

Overall, this study contributes to the expanding body of literature on AI in language learning and offers practical implications for educators and curriculum developers in higher education. As AI technologies continue to evolve understanding their pedagogical value is essential for designing innovative, technology-enhanced learning environments that effectively support vocabulary acquisition.

**Research questions**

1) To what extent does ChatGPT improve the vocabulary learning of Thai participants at Thongsook College?

2) How do Thai participants perceive their experiences using ChatGPT for vocabulary learning?

**Research Objectives**

1) To determine the extent to which ChatGPT improves the vocabulary learning of Thai participants at Thongsook College.

2) To explore Thai participants' perceptions of their learning experiences while using ChatGPT for vocabulary development.

## LITERATURE REVIEWS

### Vocabulary Learning in Second Language Contexts

Vocabulary learning is widely recognized as a key component of second language acquisition, shaping learners' reading comprehension, writing accuracy, speaking fluency, and listening proficiency. Researchers agree that vocabulary serves as the foundation for all communicative skills, making it indispensable to overall language development. However, in many EFL environments including Thailand traditional vocabulary instruction tends to rely heavily on rote memorization, bilingual word lists, teacher-provided translations, and dictionary-based definitions (Nation, 2013). In Thai classrooms specifically, students often learn vocabulary through copying lists, memorizing isolated terms for tests, and translating sentences from Thai to English, with limited opportunities to use new words in meaningful, communicative contexts. Such practices limit exposure to authentic input and hinder deep vocabulary retention. Additionally, teacher-cantered instructional norms reduce learners' opportunities for interaction, autonomy, and contextualized language use factors essential for long-term vocabulary development in the 21st century learning environment. As a result, scholars emphasize the need for interactive, learner-cantered, and technology supported approaches that can promote deeper engagement with vocabulary.

### Artificial Intelligence and ChatGPT in Vocabulary Development

Artificial Intelligence (AI) has emerged as a transformative influence in language learning due to its ability to personalize instruction, simulate authentic communication, and provide instant, individualized feedback. Among AI tools, ChatGPT has gained considerable scholarly attention for its capacity to generate human like responses and support a range of language learning tasks. Through features such as definitions, contextualized examples, synonyms, and adaptive dialogues, ChatGPT enables learners to encounter and practice vocabulary in meaningful contexts. Recent studies have shown that ChatGPT facilitates deeper vocabulary processing by reducing cognitive load, offering customized tasks, and encouraging learners to use new words actively within context rich interactions (Ngo, 2024). Additionally, ChatGPT supports self-directed learning, enabling students to practice vocabulary independently and beyond the limitations of classroom time (Dizon, 2024). However, while many studies highlight positive outcomes, some researchers note potential limitations. For instance, AI-generated explanations can sometimes be overly complex, requiring additional scaffolding. Other studies caution that learners may overly depend on AI tools without sufficient teacher guidance, which could limit critical thinking and independent problem-solving. These mixed findings underscore the importance of evaluating not only the benefits but also the challenges associated with AI-assisted vocabulary learning.

### AI-Assisted Vocabulary Learning in the Thai Context

Within Thai higher education, the integration of AI tools for language learning is increasing, and early evidence indicates promising results. Thai university students have reported that AI applications help simplify complex vocabulary, provide clear explanations, and increase their confidence in using English (Thadphoothon & Samrit, 2025). Students particularly value the speed and accessibility of AI tools which is help overcome limitations in traditional classrooms such as large class sizes and limited teacher feedback opportunities.

AI-generated feedback has also been shown to support lexical accuracy by offering immediate corrections and explanations on word usage, collocations, and grammatical structures. Tangpijaikul (2025) notes that this type of personalized, instant feedback compensates for the constraints of conventional Thai classrooms. However, these studies often rely heavily on learners' self-reported perceptions and do not always include objective measures of vocabulary improvement. Furthermore, Thai-context research tends to focus on general AI use rather than on specific tools like ChatGPT. Few studies examine measurable vocabulary gains or provide mixed-methods evidence combining quantitative and qualitative data.

Accordingly, while the existing literature demonstrates strong potential for AI in supporting vocabulary learning, it also reveals several gaps. Limited empirical research has investigated ChatGPT's direct impact on vocabulary outcomes among Thai learners, and few studies have addressed how learners interact with ChatGPT in authentic learning scenarios. This gap in the literature highlights the need for comprehensive studies such as the present research that evaluate both vocabulary gains and learner perceptions within the Thai higher education context, specifically at institutions such as Thong Sook College Bangkok, Thailand.

## RESEARCH METHODOLOGY

This study adopted a mixed-methods research design that integrated both quantitative and qualitative approaches to examine the effectiveness of ChatGPT in enhancing vocabulary learning among Thai participants at Thongsook College, Bangkok Thailand. The quantitative component measured vocabulary gains and learner perceptions using structured questionnaires, while the qualitative component explored learners' experiences and challenges through semi-structured interviews. Employing this design ensured a comprehensive understanding of both the measurable outcomes and the subjective perspectives associated with AI-assisted vocabulary learning.

**Population and Sampling**

The population for this study comprised Thai students enrolled in various language courses at Thongsook College, Bangkok, Thailand. A convenience sampling method was used to recruit 190 participants who voluntarily joined the study and expressed interest in improving their English vocabulary. To evaluate the effectiveness of AI-assisted learning, the participants were divided into two groups:

- Experimental group: used ChatGPT for vocabulary practice
- Control group: followed traditional vocabulary instruction aligned with the course curriculum

Prior to data collection, all participants were informed of the study's aims, procedures, voluntary nature, and confidentiality measures to ensure ethical participation.

**Research Instruments**

There are two primary instruments were utilized to collect data. 1) A structured questionnaire adapted from Gray and DiLoreto (2016) was administered to all 190 participants. It measured perceived effectiveness, engagement, motivation, ease of use, and overall satisfaction with the vocabulary learning process. The questionnaire used a 5-point Likert scale and was reviewed by two experts in language teaching to ensure clarity, content validity, and reliability. 2) Semi-structured Interviews to obtain richer qualitative insights, semi-structured interviews adapted from Xiao and Zhi (2023) were conducted with eight students four from the experimental group and four from the control group. Interviews explored students' learning motivation, experiences with ChatGPT, challenges encountered during vocabulary practice, and perceived benefits. All interviews were conducted online, recorded with permission, and transcribed for analysis.

**Procedures**

The experimental group engaged with ChatGPT over a six-week period, completing vocabulary activities three times per week. These activities included AI-generated quizzes, sentence construction tasks, context-based vocabulary practice, and personalized feedback sessions. Participants also received brief guidance on the responsible and effective use of the AI tool. Following Creswell and Creswell (2018), the structured intervention provided consistency in treatment exposure and ensured that both groups received comparable learning time.

The control group followed the standard curriculum using traditional instructional methods, including textbook vocabulary lists, teacher explanations, and workbook exercises, without incorporating any AI tools. Such conventional practices align with common instructional

patterns observed in many Thai EFL classrooms (Richards & Renandya, 2002). After the six-week treatment period, all participants completed the questionnaire, and interviews were conducted during the final week to gather qualitative data.

**Data Analysis**

Quantitative data from the questionnaires were analysed using descriptive statistics—specifically Mean (M) and Standard Deviation (SD). These measures facilitated comparisons between the experimental and control groups across key variables such as perceived effectiveness, engagement, satisfaction, and self-reported vocabulary improvement. Descriptive statistical methods were selected because they provide clear insights into trends and group differences within educational research (Ary, Jacobs, & Sorensen, 2014). This analysis offered a foundational understanding of how ChatGPT influenced vocabulary learning outcomes compared to traditional instruction.

Qualitative data from the semi-structured interviews were analysed using thematic analysis following the widely recognized six-step framework of Braun and Clarke (2006). The process involved familiarization with the interview transcripts, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing a coherent thematic report.

Themes that emerged included learning motivation, challenges in interacting with AI, levels of engagement, and overall perceptions of AI-assisted vocabulary learning. The use of thematic analysis allowed for a systematic interpretation of participants' experiences and supplemented the quantitative findings, consistent with qualitative practices in mixed-methods research (Creswell & Plano Clark, 2018).

## RESEARCH RESULTS

This section presents both the quantitative and qualitative findings that examined the effectiveness of ChatGPT in supporting vocabulary learning among Thai participants at Thongsook College. Quantitative data were obtained from questionnaires completed by 190 students (95 experimental, 95 control), while qualitative data were gathered from semi-structured interviews with eight participants.

Independent samples t-tests were conducted to determine whether the differences between the experimental and control groups were statistically significant. Table.1 presents the descriptive statistics alongside the inferential findings.

**Table 1.** Comparison of Questionnaire Scores Between Experimental and Control Groups

| Variable | Experimental Group A (S.D) | Control Group B (S.D) | t | p | Effect Size (d) |
|---|---|---|---|---|---|
| Perceived Effectiveness | 4.32 (0.54) | 3.68 (0.71) | 7.08 | < .001 | 0.72 (large) |
| Engagement & Motivation | 4.41 (0.49) | 3.52 (0.65) | 9.38 | < .001 | 0.96 (large) |
| Satisfaction With Learning Process | 4.27 (0.57) | 3.60 (0.69) | 7.23 | < .001 | 0.74 (large) |
| Self-Reported Vocabulary Improvement | 4.38 (0.51) | 3.55 (0.74) | 8.52 | < .001 | 0.88 (large) |

Table 1 results show that statistically significant differences between the experimental and control groups across all measured variables. Students who used ChatGPT reported markedly higher perceived effectiveness (p < .001), and their levels of engagement and motivation were significantly greater than those of the control group (p < .001). Satisfaction with the learning process was also substantially higher among ChatGPT users (p < .001). Furthermore, self-reported vocabulary improvement showed a significant advantage for the experimental group

(p < .001). The effect sizes, ranging from 0.72 to 0.96, represent large effects according to Cohen's (1988) benchmarks, demonstrating that ChatGPT had a strong positive influence on learners' vocabulary-related perceptions and self-reported progress compared with traditional instruction.
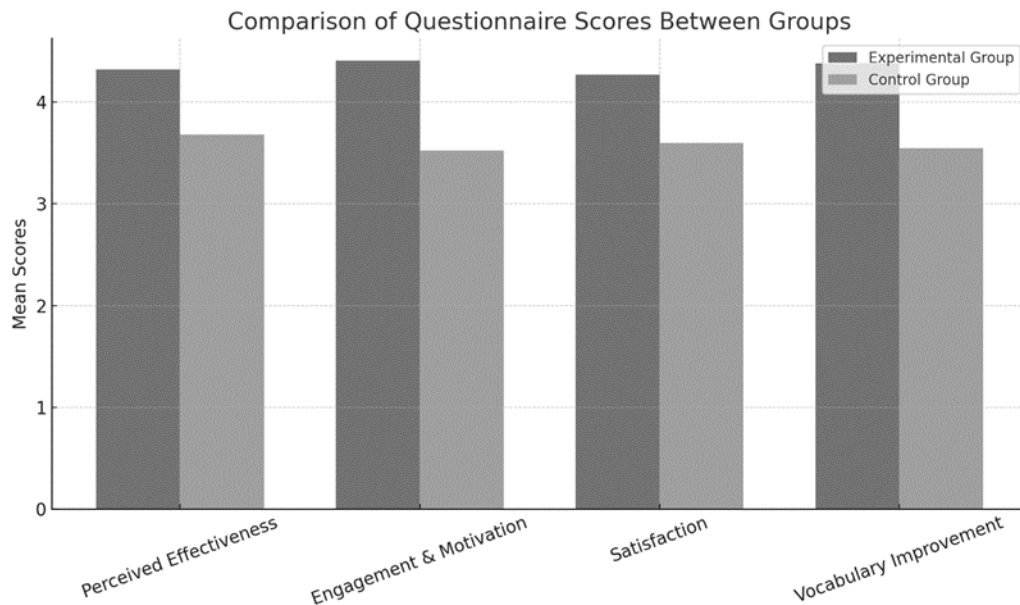


**Figure 1** The descriptive data from two groups

Figure 1 shows that the comparison between the experimental group's experience with ChatGPT and the control group's experience with conventional vocabulary training methods can be observed using the bar graph. Examining the variances in bar lengths for each feature makes it simple to find out which group offered the factors greater scores and understands ChatGPT's effectiveness and interest for boosting.

**Data from the interview**
The data from the interview is to find differences between students learning before and after learning classes and advice solutions.

**Table 2** Summary of Qualitative Themes

| Theme | Subtheme | Description | Sample Participant Quote |
|---|---|---|---|
| Theme 1: Increased Learning Motivation | 1.1 Curiosity and Enjoyment | Learners found ChatGPT engaging and enjoyable, increasing their interest in vocabulary learning. | *"I enjoyed learning with ChatGPT because it made vocabulary feel more interesting, not boring like memorizing lists."* |
| | 1.2 Encouragement to Explore More Vocabulary | ChatGPT encouraged learners to seek out additional vocabulary independently. | *"It made me curious to learn more new words, especially when I asked follow-up questions."* |
| Theme 2: Improved Understanding Through Context | 2.1 Clarity of Explanations | Learners valued ChatGPT's clear explanations and contextualized meanings. | *"ChatGPT explains the meaning with examples, so I can really understand how to use the word."* |

| Theme | Subtheme | Description | Sample Participant Quote |
|-------|----------|-------------|--------------------------|
| | 2.2 Better Retention Through Usage | Seeing vocabulary used in sentences helped students remember words more effectively. | *"When I see the vocabulary in a sentence, I remember it better than just memorizing."* |

Overall, results from quantitative and qualitative analyses demonstrate that ChatGPT had a positive influence on vocabulary learning among Thai participants. Students in the experimental group showed higher perceived effectiveness, engagement, and vocabulary gains compared to those using traditional methods. Qualitative data further supported these findings, indicating enhanced motivation and a more interactive learning experience through ChatGPT.

## DISCUSSION & CONCLUSION

The findings of this study indicate that ChatGPT had a strong positive impact on vocabulary learning among Thai participants at Thongsook College, consistent with prior research emphasizing the benefits of AI-assisted language learning. Quantitative results showed that students in the experimental group reported higher levels of vocabulary improvement, engagement, and satisfaction compared with those in the control group. These findings support Ngo's (2024) conclusion that ChatGPT promotes deeper lexical processing by offering clear explanations, contextualized examples, and immediate feedback. The heightened engagement observed among ChatGPT users further aligns with Solak's (2024) argument that AI tools enhance motivation by creating interactive, adaptive learning environments that respond dynamically to learners' needs.

A deeper interpretation of the results suggests several mechanisms underlying these positive outcomes. First, ChatGPT's personalized scaffolding the ability to simplify explanations, offer alternative definitions, and adjust the difficulty of practice items may have reduced cognitive overload and supported incremental vocabulary acquisition. Second, the conversational and non-judgmental nature of the tool likely contributed to higher learner confidence. Students reported feeling more comfortable experimenting with vocabulary in an AI-mediated environment, free from the fear of criticism often associated with classroom participation. This aligns with Tangpijaikul's (2025) lexical feedback perspective, which emphasizes how AI-driven corrective input enhances lexical accuracy and supports awareness of collocations and synonyms. Third, the immediacy of feedback appears to have sustained learners' attention and encouraged continuous practice mechanisms strongly linked to improved retention in vocabulary learning theory.

The qualitative findings further reveal that students valued ChatGPT as a supportive, user-friendly, and motivating tool. Many appreciated its ability to provide varied sentence examples, paraphrasing options, and opportunities for extended practice, which strengthened their understanding of vocabulary in authentic contexts. These perceptions mirror Dizon's (2024) argument that AI fosters learner autonomy by enabling self-directed learning beyond classroom limitations.

Despite the overall positive outcomes, several challenges emerged that warrant discussion. Some learners reported that ChatGPT occasionally produced explanations that were too advanced or linguistically dense, requiring them to ask for clarification or consult external resources. This reflects Thadphoothon and Samrit's (2025) observation that Thai learners may struggle to maximize AI tools without explicit guidance. The frequency of such occurrences, while not overwhelming, was sufficient to cause momentary interruptions in learning flow. Additionally, limited digital literacy among some learners meant that they needed support in crafting effective prompts or interpreting AI-generated responses. Technical issues,

particularly inconsistent internet connectivity, also impacted a few participants; although these did not significantly diminish overall satisfaction, they highlight infrastructural barriers that may affect future implementation.

Addressing these challenges requires strategic pedagogical intervention. Students may benefit from structured training sessions on how to use ChatGPT effectively, including how to create appropriate prompts, evaluate AI-generated content critically, and request simplified or alternative explanations when needed. Teachers can play an important role as facilitators by integrating AI tasks into lesson plans, modeling effective interactions with the tool, and providing follow-up activities that reinforce vocabulary learned through AI-assisted practice.

This study set out to examine both the effectiveness of ChatGPT in supporting vocabulary acquisition and learners' perceptions of its use in the Thai higher education context. The findings collectively indicate that ChatGPT contributes meaningfully to vocabulary development by enhancing comprehension, supporting autonomous learning, and increasing engagement. Both quantitative and qualitative evidence demonstrates that ChatGPT's interactive features, contextual explanations, and personalized feedback play pivotal roles in strengthening vocabulary acquisition.

The broader implications of this study suggest that AI tools such as ChatGPT can serve as valuable supplementary resources in higher education, particularly for language learning. These findings reinforce previous research (Ngo, 2024; Solak, 2024; Dizon, 2024) showing that AI-assisted learning personalizes instruction, supports motivation, and improves vocabulary outcomes. However, to maximize these benefits, institutions must address barriers related to learner readiness and technological constraints.

**Recommendations of Study**

Based on the study's findings and limitations, the following recommendations and future research directions are proposed.

1) Provide brief workshops to help students craft effective prompts, evaluate AI responses, and request clarification when needed.

2) Incorporate structured ChatGPT-based vocabulary tasks that complement classroom instruction.

3) Future studies should investigate whether vocabulary gains from ChatGPT persist over time.

4) Compare ChatGPT's effectiveness across various proficiency levels, age groups, and learning backgrounds.

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