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The Utilization of Chat-GPT 3.5 for Vocabulary Learning: A Study on Students' Perceptions

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Abstract

Vocabulary plays a fundamental role in language acquisition and communication, serving as the building blocks for expressing ideas, understanding texts, and engaging in effective verbal communication. However, effectively learning vocabulary can be challenging due to learners' diverse needs and learning styles, as well as a lack of motivation. With the emergence of artificial intelligence (AI), numerous opportunities exist to leverage technology in language instruction, including vocabulary learning. This research explored students' perceptions towards using Chat-GPT 3.5 (free version) to improve vocabulary acquisition beyond the classroom. The study employed a mixed-methods approach, administering a survey with Likert-scale and open-ended questions based on the Technology Acceptance Model to students in university academic classes. Results from the Likert-scale section indicated the potential for learners to use Chat-GPT 3.5 for self-directed vocabulary learning after class. Findings in the open-ended parts revealed that Chat-GPT 3.5 can provide significant support to learners in terms of learning vocabulary for both meanings and usage in the relevant contexts if they can have enough guidance and scaffolding from teachers or peers. Therefore, it is crucial to raise awareness about organizing relevant training for English teachers on technological knowledge, especially on how to use Chat-GPT, and ensuring sufficient scaffolding for learners. This approach will help guide learners on the right path to independent vocabulary learning.

Keywords: Chat-GPT 3.5, mixed method, scaffolding, vocabulary learning

Introduction

English has emerged as one of the dominant lingua francas due to globalization. The English language plays an essential role in various dimensions of human activity. The language, indeed, facilitates global communication between speakers from diverse ethnicities (Sharifian, 2009). Moreover, the potential of English in global interactions and collaborations has been reinforced through the use of various digital platforms. Additionally, English has experienced a significant development in the domain of education and research, especially in Asian countries. In Asia, a growing number of individuals are employing and learning English in the field of pedagogy (Jenkins, 2015), addressing the need for information distribution (Gotti, 2020).

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Mastering vocabulary is an important part of learning a language because it significantly impacts how well students can understand, speak, and interact in the target language (Nation, 2001). In the context of English language learning, acquiring a rich and diverse vocabulary is essential for developing four major skills, including listening, reading, speaking, and writing. Concerning the two receptive skills, vocabulary strongly correlates with listening and reading comprehension (Ataş, 2018; Ha, 2021). Nation and Newton (2008), in particular, emphasize that learners with a wide range of vocabulary can successfully interpret spoken discourse in listening skills. Moreover, lexical richness enables learners to figure out the meaning of unfamiliar words from context and make inferences on speaker intent (Kaivanpanah & Alavi, 2008). Regarding reading skills, high vocabulary proficiency facilitates the process of decoding unfamiliar words and inferring meanings; hence, enhancing learners' comprehension accuracy and fluency (Qian, 1999). Lexical knowledge also considerably influences acquiring the other two productive skills. In addition, vocabulary plays an important role in facilitating verbal communication, as it helps learners express opinions and confidently engage in conversation (Richard & Schmidt, 2013). A diverse vocabulary, furthermore, allows learners to express abstract and complex concepts and bridge comprehensive gaps in spoken interactions (Meara, 2005). Research also demonstrates that learners' mastery of vocabulary significantly influences the quality of their written compositions. According to Masrai (2023), and Miralpeix and Muñoz (2018), lexical knowledge has a substantial contribution to writing compared to other skills. Though vocabulary is considered crucial in foreign language learning, English as a Foreign Language (EFL) learners still exhibit deficiencies in this crucial aspect of language learning (Octaberlina, 2022; Rohmatillah, 2017). Vietnamese students also struggle with limited vocabulary knowledge (Dang, 2020; Vu & Peter, 2021), which is caused by a variety of factors. In many Vietnamese universities, English language instruction often relies on textbooks and materials that lack authenticity and relevance to real-world academic contexts. Consequently, students may struggle to acquire the specialized vocabulary necessary for academic English learning (Huynh, 2024). Moreover, the excessive use of translation-based methods further hinder students' ability to develop their own vocabulary learning strategies (Vu & Peters, 2021). Another critical factor contributing to vocabulary deficiency is inadequate teaching approaches when giving instructions (Vu & Peters, 2021). Students using traditional methods that focus on rote memorization cannot demonstrate the ability to retain vocabulary (Zhang & Reynolds, 2023). Furthermore, the emphasis on grammar has a secondary role for vocabulary in the curriculum (Vu & Peters, 2021).

In the 4.0 era, the advancements in artificial intelligence (AI) and natural language processing (NLP) offer promising solutions to these challenges. Among many different tools, Chat-GPT has recently attracted the interest of many scholars, educators, and researchers. Various papers (Fuchs, 2023; Li et al., 2024; Nguyen & Tran, 2023; Yuan et al., 2024) have examined the effectiveness of Chat-GPT in assisting English language teaching and learning. Generally, the researchers indicated that the integration of Chat-GPT can facilitate learners' language learning processes. Although there have been various papers examining the benefits of Chat-GPT, empirical research related to students' perceptions should receive more attention. Investigating students' perceptions of Chat-GPT integration, particularly in facilitating vocabulary acquisition, can demonstrate its effectiveness and provide a valuable resource for students in

their autonomous learning process. Therefore, this study was conducted to gather the students' perceptions of implementing Chat-GPT into learning vocabulary and contribute to the relevant literature.

Literature review

Vocabulary and its aspects

Although the role of vocabulary may vary in different historical periods, it is considered an essential component in language learning. Due to its significance, vocabulary has attracted considerable interest from scholars; thus, various definitions have been proposed. According to McCarthy (1990), vocabulary is not just a list of words but a complex and interconnected system that includes single words, multi-word units, phrases, and expressions conveying meaning. Richards and Schmidt (2010) offer a somewhat similar definition, defining vocabulary as "a set of lexemes, including simple words, compound words, and idioms" (p.629). The definitions presented by Nation (2001) and Thornbury (2002) are quite analogous to those specified before; nevertheless, they also emphasize the element of word usage by an individual. Vocabulary, therefore, refers to knowledge of words in a language and words that one person is familiar with and can utilize in both spoken and written form. In this current paper, vocabulary is defined based on a holistic view of the descriptions mentioned. Thus, it encompasses the range of words an individual knows and actively uses to perform a specific task in language learning.

Nation (2001) broadens the definition of vocabulary by classifying it into three broad areas: form, meaning, and use. These areas are further subdivided into 12 specific aspects, such as spoken form, written form, word parts, form and meaning, concept and referents, association, grammatical functions, collocations, and constraints on use. This comprehensive view of vocabulary somewhat underscores its complexity and the importance of a well-rounded approach to vocabulary learning. Nevertheless, due to time constraints and the scope of this study, the paper only investigated three vocabulary aspects, including meaning, part of speech, and context. As noted in the literature, meaning is foundational to vocabulary learning because it directly impacts a learner's ability to comprehend and use words correctly in communication. Schmitt (2000) and Nation (2001) both emphasize that understanding the meaning of a word is essential for grasping its full significance within a language. Similarly, part of speech is crucial because it helps learners understand how words function grammatically, which is necessary for constructing correct sentences. This aspect of vocabulary knowledge allows learners to use words appropriately in both spoken and written form.

Furthermore, it is impossible to overstate the significance of context. To be more specific, context illustrates how words are used in real-life situations; hence, learners can understand different nuances of meaning. Laufer and Nation (1995) highlight that contextual learning not only aids in memorizing vocabulary but also in applying it accurately in various communicative scenarios.

Chat GPT and its significance in language learning

The development of technology has stimulated the appearance of various AI tools within the domain of education. Among diverse tools, Chat-GPT, a dialogue agent providing interactive exchanges with human users (Rosmayanti, 2023), has garnered significant interest from educators and researchers in recent years. Created by OpenAI, Chat-GPT, an AI-driven chatbot, applies large language models to generate texts resembling human language. Its updated version, the so-called Chat-GPT 3.5, released in 2022, has more advanced features than the previous versions, including large vocabulary, task flexibility, the potential for language generation, and multilingual proficiency (Tran et al., 2024).

Due to its advanced features, Chat-GPT 3.5 is considered a potential tool offering diverse advantages in language learning. ChatGPT demonstrates the potential for delivering personalized learning experiences, making the language learning process more effective by addressing individual learners' specific needs (AbuSahyon et al., 2023; Tran & Tran, 2023). Besides, the AI-powered chatbot is capable of producing authentic dialogues in language learning, thus providing learners with authentic instances of the target language's usage (Rosmayanti, 2023). Moreover, this AI tool's real-time feedback is considered more effective than human feedback (Fuchs, 2023). As a result, it stimulates learners' self-learning skills (Ali et al., 2023).

In addition to the ability to facilitate learning in general, this AI-driven tool can offer assistance in learning specific skills. Due to its ability to translate texts, ChatGPT can offer additional possibilities for practicing language skills (Atlas, 2023). Besides, this chatbot can enhance students' writing skills by generating writing prompts and offering constructive feedback on their written assignments (Baidoo-Anu & Owusu-Ansah, 2023). As a result, Schmidt-Fajlik (2023) stated that Chat-GPT clarifications on grammatical mistakes in students' writing are more concise and comprehensive than other tools. Ali et al. (2023) demonstrated that Chat-GPT positively affects learners' reading and writing abilities but did not significantly improve their listening and speaking capabilities. However, Baskara (2023) asserted that students had observed improvements in their pronunciation and listening comprehension when they frequently had verbal communication with Chat-GPT.

Regarding lexical knowledge, language learners need to interact with linguistics input to enhance vocabulary acquisition. Considering that, AI-powered chatbots, particularly Chat-GPT, provide interactive learning with genuine language environments; thus, allowing learners to use and apply new vocabulary in practical settings (AbuSahyon et al., 2023). Furthermore, the personalized nature provided by AI can enhance vocabulary retention rates compared to traditional methods (AbuSahyon et al., 2023). For instance, Alam & Asmawi (2023) demonstrated that the integration of Chat-GPT can enhance law students' lexical knowledge, allowing them to retain word definitions and pronunciations while also fostering bilingual comprehension of specialized terms. Additionally, AI can increase learners' confidence by offering a low-pressure environment (Nguyen & Pham, 2024) in which students are not apprehensive about making errors, which are regarded as a natural part of the learning process. In Vietnam, this AI-powered tool also attracted interest from the educational sector. Chat-GPT was recognized to be a useful tool to support students' learning (Pham & Le, 2024) and enhance

motivation (Lam, 2024; Pham & Le, 2024). Although Chat-GPT's potential for English language learning is recognized, its significance for learning vocabulary, specifically evaluated by tertiary students, has not garnered sufficient attention from researchers.

Perceptions

In contemporary educational settings, the integration of technology has become widespread. Although their developers strongly emphasize the convenience and advantages of educational tools, their precise impacts on the teaching and learning process remain uncertain. To assess the effectiveness of these advanced applications, it is essential to consider students' perceptions.

Numerous studies on students' perceptions have recently been published in the existing literature. One of the very first definitions of perception is in Schiff's study (1970), in which it was defined as involving the impression formed of a set of stimuli, influenced by the perceiver's past experiences, prior encounters with similar stimuli, as well as their current state at the time of observation. In other words, the combination of past and present experiences shapes an individual's perception in response to the same or comparable stimulus or set of stimuli. However, the contemporary concept of perception is slightly distinct. McDonald (2012) described perception as "an individual's or group's unique way of viewing a phenomenon that involves the processing of stimuli and incorporates memories and experiences in the process of understanding." (p.8). Perception involves three fundamental characteristics: (a) sensory awareness of the event, (b) personal experiences that shape the interpretation and understanding of a reality, and (c) comprehension that can result in a response (McDonald, 2012).

Furthermore, Goldstein and Cacciamani (2021) identified perception as a conscious process that occurs when individuals are conscious of their sensory experiences and collect information from the surrounding environment. The definition provided by McDonald (2012) can be considered a more precise examination within the scope of this research context. Therefore, this study used McDonald's (2012), which looks at how a student perceives a stimulus (in this case, Chat-GPT) to see how well it helps them learn vocabulary.

Technology Acceptance Model (TAM)

Davis (1989) introduced the Technology Acceptance Model (TAM) to assess individuals' acceptance and technology usage behaviors. According to the model, perceived usefulness (PU) and perceived ease of use (PEOU) are the two key factors that influence learners' attitudes toward a new technology and their perceptions regarding information technology (Davis, 1989). These perceptions, in turn, have a major role in influencing their behavioral intention to use (BITU), or, in other words, determining whether the user will accept or reject the system (Venkatesh & Davis, 1996).

In the sphere of education, TAM has recently become a prominent framework for examining the acceptance of different learning applications by educators, learners, and other stakeholders (Davis, 2011); hence, it is inevitable that different modified TAM models are proposed to be appropriate to the study objective, comprising the modified model presented by Maziriri et al. (2020) (Figure 1). In this study, the researchers suggested a modified TAM framework as a suitable framework for examining students' perceptions of using YouTube to assist language learning. Concerning the subject of the current paper, some adjustments were made to fit with

the purpose of assessing students' perceptions regarding the integration of Chat-GPT in vocabulary learning (Figure 2).

Figure 1.

Modified TAM model for the use of YouTube (Maziriri et al., 2020, adapted from Davis, 1989)

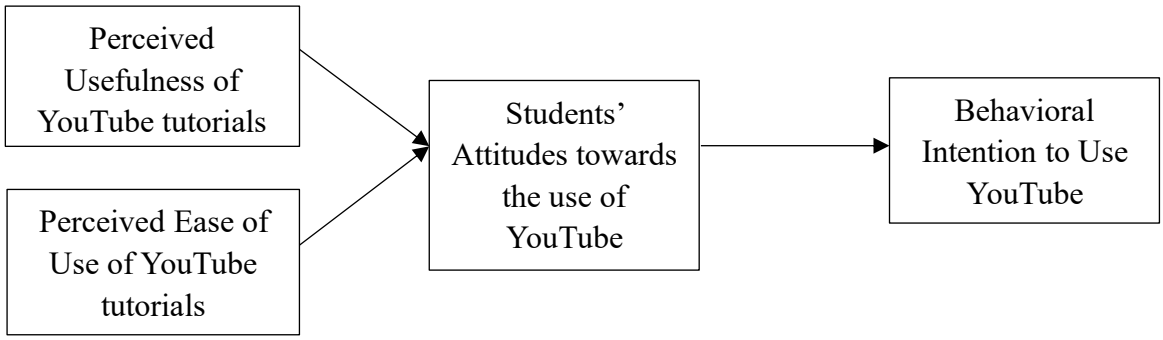
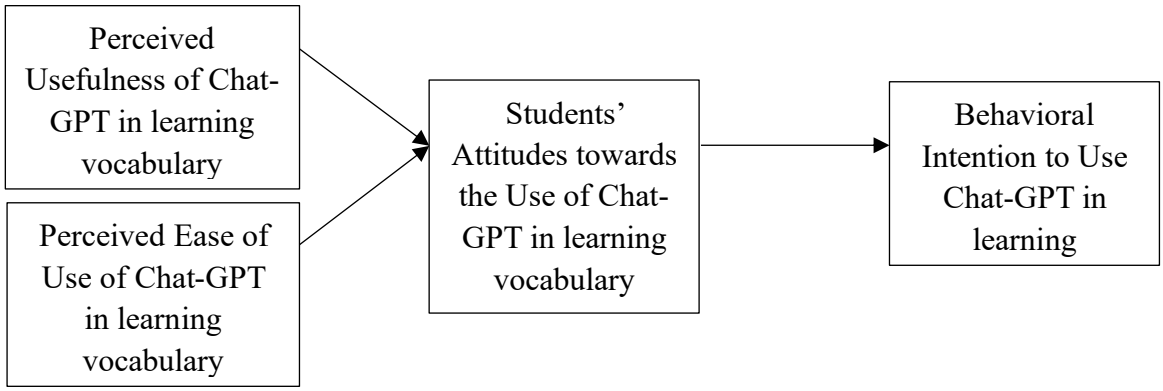


Figure 2.

Adapted TAM model for the use of Chat-GPT in learning vocabulary



Perceived Usefulness (PU)

Perceived usefulness (PU) refers to an individual's belief about the extent to which technology would improve their performance of a specific activity (Davis, 1989). Similarly, Venkatesh & Davis (2000) defined PU as the extent to which an individual believes their work performance will improve using a certain technology. Besides, PU is considered a significant factor influencing users' adoption and intention to use new technology. This study defined PU as the degree to which students perceive Chat-GPT as a facilitator in supporting their vocabulary learning.

Perceived Ease of Use (PEOU)

Perceived ease of use (PEOU) is defined by Davis (1989) as the degree to which an individual perceives that the system is user-friendly and requires minimal effort. In other words, if an individual finds the technology simple to use, they are more likely to intend to use and accept it (Cheung & Vogel, 2013). Given the context of the current paper, PEOU was considered a factor demonstrating how students perceive sophistication when using Chat-GPT in learning

vocabulary.

Behavioral Intention to Use (BITU)

Behavioral intention to use (BITU) is defined as an individual's intention to engage in a specific behavior (Lavidas et al., 2022). Generally, these meanings are convergent in terms of willingness to use. Besides, the BITU has a somewhat robust relationship and is influenced by an individual's perceptions (Venkatesh & Davis, 2000). This indicates that people were more inclined to use a specific technology if they found the technology's potential. BITU, in this study, was considered as students' willingness to embrace Chat-GPT to learn vocabulary.

Previous studies

Despite the recent launch of Chat-GPT 3.5, the number of academic papers investigating this tool is increasing. Scholars have begun taking initial steps to explore its potential across various aspects of education in general and English language learning in particular. Preliminary research has started to examine the benefits and challenges associated with integrating ChatGPT 3.5 into educational contexts, providing a foundation for future, more comprehensive studies.

Concerning the investigation into perceptions towards the employment of Chat-GPT, the number of studies examining teachers' viewpoints was likely to be dominant. Ali et al. (2023) investigated both instructors and students' perceptions, regardless of the influence of Chat-GPT on students' motivation and English language learning. The study indicated that this chatbot indeed enhanced students' motivation and language learning skills, comprising two macro skills (reading and writing) and two micro skills (grammar and vocabulary). Though the paper demonstrated a positive finding regarding the use of Chat-GPT, the data collected from two groups of participants was not presented clearly. Also, the authors acknowledged a lack of qualitative data to enrich the investigation.

Kanwal et al. (2023) conducted an extensive quantitative study involving 600 university teachers in Pakistan, revealing both favorable and critical perspectives on the integration of Chat-GPT in education. While the tool was praised for providing easy access to information and assisting with personalized learning, concerns were raised about its potential misuse by students. Similarly, Mohamed (2023) employed in-depth interviews with EFL faculty, identifying two viewpoints: one praising Chat-GPT for facilitating learning, and the other cautioning that it could hinder students' critical thinking and research skills.

Shedding some light on studies related to students' perceptions, Xiao and Zhi (2023) conducted a small-scale qualitative study exploring tertiary students' experiences with Chat-GPT in general English language learning, highlighting the tool's potential as a language assistant but noting inconsistencies in output quality. Liu (2023) likewise investigated Chinese university students' perceptions of Chat-GPT, revealing positive attitudes toward its role in supporting English language learning. Conversely, both studies emphasized issues such as output quality and information security. Though the two papers made initial contributions to the existing literature related to students' perceptions, neither addressed specific language skills, particularly vocabulary.

Algraini (2024) examined students' perceptions of integrating Chat-GPT into vocabulary

learning. The study found that Chat-GPT enhanced students' motivation and engagement in learning vocabulary. Additionally, the researcher demonstrated that the tool helped improve vocabulary skills by offering useful suggestions and facilitating exposure to new words. However, concerns were noted about the accuracy of responses, repetitive responses, and affordability.

In the Vietnamese educational context, the integration of ChatGPT into language learning has garnered notable attention. In a recent study, Nguyen and Tran (2023) explored the application of ChatGPT in language instruction, specifically focusing on its role in evaluating writing tasks. Their findings suggest that the tool's capability to assess essays and provide detailed feedback can significantly alleviate the workload of educators. Additionally, Nguyen (2024) investigated university lecturers' perspectives on the use of Chat-GPT in teaching. The study revealed that while some educators acknowledged its potential, the majority expressed concerns, emphasizing the need for comprehensive training to ensure effective integration of the technology.

In terms of students' perceptions, a study undertaken by Lam (2024) explored 100 undergraduate students' perceptions regarding the integration of Chat-GPT in English language learning. The research indicated that students generally perceived its value in facilitating their learning process. To be more specific, the implementation of this AI-driven tool helped students maintain their motivation to learn English and promoted self-directed learning. Conversely, issues of plagiarism and inaccurate responses were identified.

Vo and Nguyen (2024) conducted a similar study with a larger sample, reporting comparable results. Participants appreciated Chat-GPT's convenience and instant feedback but identified challenges, including errors, ethical concerns, and dependency, highlighting the need for guidance from educators.

In terms of using Chat-GPT in learning vocabulary, Ho (2024) revealed that the efficacy of Chat-GPT in supporting participants in learning specialized vocabulary was acknowledged. However, some students abused this AI generator when they encountered learning difficulties; therefore, it was important to provide students with guidance on how to effectively employ Chat-GPT.

As previously stated, the introduction of Chat-GPT has sparked widespread interest from researchers around the world. However, the investigation into students' perceptions of integrating this AI tool into vocabulary learning, particularly in the Vietnamese context, has been relatively underexplored, leaving a gap in the literature that requires further attention.

Research Questions

To fulfill the purpose of the study, the paper was conducted to answer the following research question:

What are students' perceptions towards the utilization of Chat-GPT for vocabulary learning?

Methods

Pedagogic Setting and Participants

International University (IU) is the pioneering higher education institution in Vietnam that employs English as a medium of instruction for all academic disciplines. To begin their major studies, students must complete the English prerequisite and successfully complete two academic English courses, demonstrating B2 proficiency. At the time the data were obtained, the institution did not officially endorse the use of Chat-GPT 3.5 for teaching and learning purposes; however, due to its availability and usefulness, lecturers and students utilized it to facilitate the learning process.

A convenient sample was employed since it can satisfy practical criteria of easy accessibility and availability (Dornyei, 2007). The study's participants ranged from first-year to fourth-year students across all majors at IU. The distribution of a cohort of 70 participants was presented in Table 1.

Table 1.

Participants demographic profile

Participants	Student	
Age	18-22	
Year	1st-year	39
	2nd-year	8
	3rd-year	12
	4th-year	11
	Total	70
English proficiency level (N=70)	Elementary	0
	Intermediate	52
	Advanced	18
	Total	70

Design of the Study

In order to best address the research question, the study utilized a cross-sectional design, which is widely recognized as the most appropriate approach for examining the prevalence of perceptions among the population (Levin, 2006). In addition, the paper adopted a mixed-method approach to achieve a comprehensive and accurate observation of an issue (Rocco et al., 2003). A questionnaire was administered to collect both quantitative and qualitative data, in which numerical data were gathered through 5-point Likert scale items while non-numerical data were obtained through open-ended questions. Combining quantitative and qualitative data can create a more extensive and detailed understanding, as one method complements the limitations of the other (Burns, 2009).

Data collection and analysis

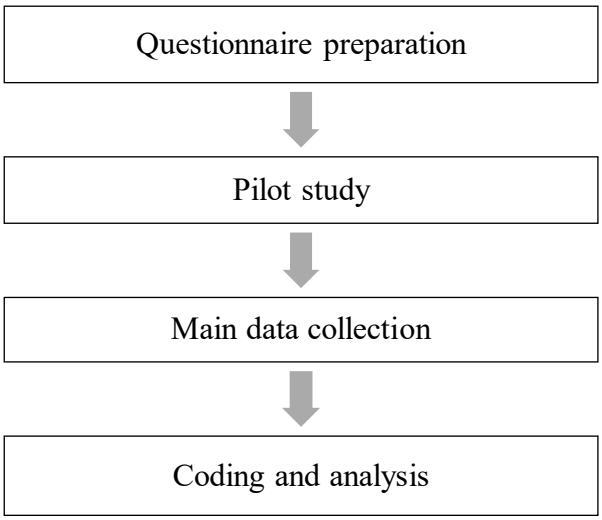
Procedure of the study

The data collection procedures are illustrated in Figure 3. After first deciding on a topic, the researchers designed a questionnaire and developed an outline for the paper. A pilot survey was thereafter carried out to establish the validity and reliability of the survey as well as identify

any questions that were perceived as being vague or confusing. In this study, a group of 14 participants who had experience with Chat-GPT 3.5 for learning vocabulary volunteered to complete the questionnaire. The survey was distributed through Google Forms on Facebook to collect data. After concluding the pilot testing, no comment was given about the statements' intelligibility and lucidity. In addition, Cronbach's alpha was calculated with a value of 0.848, ensuring the reliability of the questionnaire. Concerning the widespread data collection, a consent form was attached at the beginning of the survey, and it was important to note that participants were given information about their rights through this form. After gathering the data, the two researchers proceeded to initiate the coding and analysis procedures. Finally, the work underwent a careful process of drafting and refining.

Figure 3.

Data collection procedure



Data instrument

The data for this study were gathered through the use of questionnaires, comprising three sections. Commencing with the survey was the attached consent form to assure the ethics of confidentiality and some background information related to participants' experience of using Chat-GPT. Following the first part, the numerical data were obtained through 14 5-point Likert scale items, which can enhance the paper's data collection process by enabling a substantial number of respondents (Nemoto & Beglar, 2014). Moreover, the data obtained from these respondents can be supplemented with other qualitative data techniques, namely open-ended questions (Nemoto & Beglar, 2014). In terms of tool, Google Forms was selected to administer the survey. This platform is both user-friendly and efficient for the distribution of surveys and the collection of data, as it allows individuals to access and respond without the necessity for in-person interactions (Ruliyanti et al., 2021).

Regarding the survey content, the questionnaire adapted the TAM model constructed by Davis (1989) and Maziriri et al. (2020), primarily focused on the three main constructs: perceived usefulness, perceived ease of use, and behavior intention. The 14 items of the survey were modified to specifically fit with the study's purpose, which investigated students' perceptions

towards the utilization of Chat-GPT to facilitate vocabulary learning based on the three main constructs: meaning, part of speech, and context, and extracted exercises for vocabulary practice. Additionally, the reliability of the questionnaire items was assessed using Cronbach's alpha. A value of 0.841 was calculated, indicating that the survey was reliable. Besides, the open-ended questions sought participants' insights about their experiences with three important issues: (1) the benefits of facilitating Chat-GPT to learn vocabulary, (2) the challenges encountered when utilizing Chat-GPT, and (3) students' perspectives on the role of professors or peers to support when using it.

Data analysis

After the online survey was conducted, quantitative and qualitative data gathered from the questionnaire were exported to Google Sheets, which has an automatic connection with Google Forms, simplifying the data transfer process (Vasantha & Harinarayana, 2016). For the purpose of making the calculation procedure performed by SPSS more manageable, the data were subsequently exported to Microsoft Excel. The unprocessed information was thereafter filtered to exclude inappropriate data, ensuring the integrity and accuracy of the dataset. Besides, quantitative and qualitative data were separated to expedite the analysis process. The questionnaire consisting of fourteen statements, assigned codes S1 to S14, were analyzed using SPSS, which is commonly used to obtain descriptive statistics, allowing researchers to calculate measures (Fields, 2013), including the mean (M) and standard deviation (SD).

Regardless of the qualitative data, the answers that were in Vietnamese were first translated into English. The two researchers performed the translation process separately; thereafter, the translations were compared to ensure the accuracy and consistency of the data. The responses from three open-ended questions were uniquely coded as P1 to P70 and underwent thematic analysis. According to Braun & Clarke (2006), this systematic approach is appropriate to investigate and report the recurring patterns or themes with detailed descriptions of the dataset. Concerning inter-reliability, a second rater with convergent data analysis procedures was used to obtain the data (Morse, 2015). In the current paper, the two researchers conducted separate themes' analyses and engaged in further discussion to address any inconsistencies until reaching a consensus.

Findings and Discussion

On the basis of data collected from the questionnaire, the purpose of this section was to address the predefined research question on students' perceptions towards the utilization of Chat-GPT to assist their vocabulary learning. There were two primary parts within this section: quantitative and qualitative. The numerical data would be illustrated in three distinct tables, with interpretations and correlations provided to elucidate the results. In the second part, responses from open-ended questions were analyzed and demonstrated to provide deeper insights for the quantitative data.

Quantitative data

Perceived Ease of Use

Table 2.

Descriptive Statistics for PEOU (N=70)

Item	Statement	M	SD
S1	It is easy to use Chat-GPT to know the meaning of the new vocabulary.	4.32	.713
S2	It is easy to use Chat-GPT to identify the part of speech of the new vocabulary.	4.32	.752
S3	It is easy to use Chat-GPT to generate the context of the vocabulary (make sentences using the new vocabulary).	4.46	.581
S4	It is easy to use Chat-GPT to generate vocabulary lists based on my needs.	4.35	.719
S5	It is easy to use Chat-GPT to generate different kinds of exercises to practice vocabulary.	4.10	.897
	Overall Mean	4.31	

Table 2 demonstrated the mean (M) and standard deviation (SD) of items related to the PEOU aspect. Generally, the data reflected a positive evaluation of the PEOU of Chat-GPT for vocabulary learning (M = 4.31), with most statements receiving high mean scores. Specifically, the ease of using Chat-GPT to generate contexts for vocabulary (M = 4.46, SD = .581) received the highest rating, indicating that participants found this feature particularly intuitive. Similarly, students believed that it was easy to use Chat-GPT to generate vocabulary lists, to know the meaning of new vocabulary as well as to identify their part of speech (M = 4.35, SD =.719; M = 4.32, SD = .713; and M = 4.32, SD = .752, respectively). The generation of different kinds of exercises scored slightly lower (M = 4.10, SD = .897) than the other four surveyed features; however, it was still obtained positively.

Perceived Usefulness

Table 3.

Descriptive Statistics for PU (N=70)

Item	Statement	M	SD
S6	Chat-GPT helped me generate relevant meaning for the specific vocabulary I wanted to search.	4.10	.658
S7	Chat-GPT helped me generate relevant parts of speech for specific vocabulary I wanted to search.	4.14	.761
S8	Chat-GPT helped me generate relevant contexts (examples) for the specific vocabulary I wanted to search.	4.17	.956
S9	Chat-GPT helped me generate relevant vocabulary lists based on my needs.	4.10	.848
S10	Chat-GPT helped me generate relevant exercises for vocabulary to practice.	4.01	.918
S11	Using Chat-GPT to learn vocabulary helped me use vocabulary in a more precise context.	3.86	.883
S12	Using Chat-GPT to learn vocabulary helped me personalize my own way of learning vocabulary.	4.00	.894

Overall Mean	4.05

The results from Table 3 presented the mean (M) and standard deviation (SD) of seven items examining students' perceptions of Chat-GPT's usefulness. Although there were slightly more varied responses compared to PEOU, the data revealed that participants had a favorable opinion towards the usefulness of Chat-GPT (M = 4.05), with most of the surveyed statements receiving relatively high mean scores. To be more specific, the ability to generate relevant contexts (M = 4.17, SD =.956) and parts of speech (M = 4.14, SD =.761) were considered as particularly useful features. Additionally, the usefulness in generating vocabulary lists and providing meanings had high convergent mean scores (M = 4.10, SD =.848), indicating that these features were valued. With the value of around 4, students still perceived Chat-GPT to be useful in generating relevant exercises and personalizing the vocabulary learning process. Nonetheless, the item related to using vocabulary in a more precise context received the lowest score (M = 3.86, SD =.883).

Behavioral Intention

Table 4.

Descriptive Statistics for BI (N=70)

Item	Statement	M	SD
S13	I plan to continue to use Chat-GPT to learn vocabulary.	4.25	.874
S14	I recommend that my friends use Chat-GPT to learn vocabulary.	4.18	.915
	Overall Mean	4.22	

Concerning the findings for the last aspect of TAM, the data in Table 4 indicated a positive behavioral intention towards using Chat-GPT for vocabulary learning (M = 4.22). Particularly, participants expressed a strong intention to continue using Chat-GPT (M = 4.25, SD =.874) and were also likely to recommend it to others (M = 4.18, SD =.915).

In general, the integration of Chat-GPT into the vocabulary learning process received favorable perceptions, particularly in all three aspects, including PU, PEOU and BI. The results were somewhat in line with those of previous investigations. To be more specific, participants acknowledged the usefulness of utilizing Chat-GPT to assist their language learning, specifically vocabulary, exhibiting a congruence to results reported in papers conducted by Algraini (2024) and Ho (2024). However, the assessment of PU in Vo and Nguyen's study (2024) yielded a neutral stance about the efficacy of this tool in language learning. This discrepancy can be explained by the difference in the skills that were investigated. More precisely, the current study merely inspected the incorporation of Chat-GPT into vocabulary learning, whereas Vo and Nguyen broadly examined its functions in English learning. Besides PU, PEOU was perceived rather positively, with a fairly high mean score of 4.05. This finding is aligned with the notion that individuals who find a technology easy to use tend to embrace it (Cheung & Vogel, 2013). Furthermore, the majority of participants showed a strong inclination to persist in using Chat-GPT and endorse the program to their friends. This finding was consistent with the assertion made by Vo and Nguyen (2024), in which students were motivated to continue employing the AI-generated chatbot. Overall, the positive perceptions of PU and

PEOU resulted in the participants' willingness to use Chat-GPT. The results were, therefore, congruent with TAM's notion that these perceptions are the significant determinants influencing technology adoption (Venkatesh & Davis, 1996).

Qualitative data

Aside from the quantitative data, the qualitative method was utilized to obtain a more profound understanding of students' insights towards the effectiveness of Chat-GPT in assisting their vocabulary learning. The qualitative data were collected through the following open-ended questions:

Q1. How did Chat-GPT help you in learning vocabulary?

Q2. What problems did you face when using Chat-GPT to learn vocabulary?

Q3. What are your opinions about the role of a teacher or a peer to support you on how to use Chat-GPT to learn vocabulary?

Responses' analysis for Q1

Regarding the answers to the first question about the benefits of Chat-GPT in assisting vocabulary learning. The data generally indicated that most students observed the improvement in their vocabulary knowledge. The participants underscored the positive impacts of Chat-GPT on their vocabulary learning experience in three main aspects, namely (1) convenience, (2) supportive learning environment, and (3) personalization.

Convenience

Notably, most participants showed a positive perception regarding the accessibility of this AI-driven tool. Specifically, they were able to access Chat-GPT whenever desired, provided they had an Internet connection.

> *"...I can access it whenever I need."* (P4)

> *"...only need an Internet connection, it can handle all questions."* (P41)

In addition, the tool's user-friendly and intuitive interface somewhat facilitated its effective utilization by the students (P44, P48). Some students noted the ease of using, in which they stated that with just some prompts and a click or just a detailed description at the first time giving prompts, Chat-GPT can generate responses that they wanted (P25, P48, P49, P61).

> *"...you just need prompts to put into the sending space and click send."* (P25)

> *"I just set commands for it, and it will give me the information that I need to learn."* (P49)

> *"I only have to write detailed prompts and click the mouse the first time; later, I just copy and paste the prompts and replace the words or key phrases I want to search for the meaning of or make similar sentences." (P48)*

> *"I just need to input the prompts in it, e.g., Give me the definition of the "adequate" in this sentence."* (P61)

Another aspect that participants reported contributed to the convenience factor was its time-saving aspect. Some students expressed that using Chat-GPT to learn vocabulary was time-

saving because they could simply input their commands, and the tool would respond almost simultaneously (P9, P33, P40, P43, P52, P56, P64).

> *"When I type a question, Chat-GPT will respond to my question immediately."* (P40)
>
> *"I just type what I want Chat-GPT to do, and the response appears in a very short time."* (P43)
>
> *"I can simply type my queries or requests, and ChatGPT responds almost instantaneously with relevant information."* (P52)

Furthermore, the natural language processing feature increases time efficiency. P54 stated, "I use it to search for vocabulary context without spending time going around the online dictionaries," and P63 similarly remarked, "I don't need to look it up in different sources." Furthermore, P1, P28, and P47 agreed that the tool's ability to perform various tasks within a tab streamlined the vocabulary learning process, making it more efficient.

> *"Instead of searching for a lot of information in different tabs, I have an all-in-one tab to learn vocabulary with GPT."* (P1)
>
> *"It's time-saving since it can be asked to do different tasks."* (P47)
>
> *Supportive learning environment*

Responses from the survey showed that Chat-GPT can provide a supportive learning environment, improving students' lexical knowledge. A substantial number of participants believed that this AI-powered tool benefited them in the vocabulary learning process. To be more specific, based on the given words, Chat-GPT can generate examples with clear context clarification to help students understand words thoroughly rather than just knowing their definitions.

> *"I can easily find explanations for a word on the internet, but Chat-GPT can provide further clarifications with examples in different contexts for me."* (P34)
>
> *"For any word you want to learn, ChatGPT can give you different sentences using that word."* (P35)
>
> *"When there is a new word, I often use it to find some examples so that I can better understand its meaning in many different contexts."* (P44)
>
> *"In addition to the context provided in the book, the fact that Chat GPT can create many more statements related to the specific topic of the lesson I am studying makes me understand and remember the meaning of the new words faster and deeper and therefore use the words more effectively."* (P2)

Some participants even highlighted this advantage with a more detailed description of their experience.

Furthermore, some participants appreciated Chat-GPT's ability to support their personalized learning. They noted that the tool allowed them to tailor their vocabulary learning experience according to their individual needs, emphasizing the adaptive features of Chat-GPT that cater to different learning styles and preferences.

> *"It can personalize my vocabulary learning process by adapting to my interests, pace, and preferred learning style through conversations and prompts."* (P36)
>
> *"It allows me to generate plenty of exercises based on the given list of words to practice myself." (P58)*
>
> *"I can learn as well as practice vocabulary at my own pace and schedule with very responsive and detailed feedback from Chat-GPT."* (P61)
>
> *"I like the fact that I have many different sentences using specific new words in the contexts I like, such as education, technology, business, or the context of the lesson I am studying. As a result, I can create my own sentences."* (P2)

Generally, the responses to question one gathered from participants emphasized the convenience and efficacy of the AI-powered chatbot, Chat-GPT, in assisting vocabulary learning, which supported the positive findings observed from the quantitative analysis.

A large number of responses for two themes, namely supportive learning environments and personalized learning, were observed, demonstrating a consensus with the positive result of PU. Some prior studies also observed its potential in facilitating students' vocabulary learning. To be more precise, the tool's ability to foster a supportive learning environment was similarly acknowledged by Shaikh et al. (2023). The ability to provide various contexts and vocabulary expansions based on the given words furthered students' lexical knowledge, which was consistent with the assertion from Algraini (2024). This function enhances students' vocabulary depth, moving beyond mere knowledge of words' meaning and form, thus helping to advance language competency. Additionally, personalized learning helped students easily address their unique learning needs, including exercise generation, learning paces, and topics of interest, supporting the report from Algraini (2024).

Besides, the favorable perceptions regarding PEOU were elucidated by many responses from participants who considered Chat-GPT convenient owing to its accessibility, user-friendliness, and efficiency. This aligned with findings from Algraini (2024) and Shaikh et al. (2023), in which the chatbot is recognized as an intuitive and valuable tool from language learners' perspectives.

Responses' analysis for Q2

Although many benefits were recognized from the analysis of the first question, it was essential to highlight disadvantages from question two. The data revealed that participants highlighted several challenges they encountered while using ChatGPT for vocabulary learning, although some did not report any significant issues. The problems they faced primarily revolved around (1) the unsatisfying responses, (2) prompt formulation, and (3) information accuracy.

Unsatisfying responses

Some participants reported that Chat-GPT's responses did not meet their expectations, with users noting that the responses were either ambiguity or repetition. According to P31, "ChatGPT may provide ambiguous or unclear responses, particularly when dealing with words that have multiple meanings or nuanced usage if I forget to provide detailed prompts." *Thus, during the first time I used this app, I needed to rewrite the prompts and ask ChatGPT to regenerate the*

responses" (P31). Besides, P70 also highlighted his problem, saying, *"When I asked for a list of 30 B1-level vocabulary words related to the environment in general, I occasionally encountered repeated words."*

Another issue related to this theme is the responses' complications. Some participants reported that Chat-GPT's explanations were sometimes too complex or verbose, making it difficult for them to understand the information provided. A sharing from P14 stated that *"In some cases, Chat GPT used too many unintelligible languages."* Similarly, P64 had the same thought: *"Its language sometimes terrified me because the words explaining the meanings are hard to understand."*.

Prompt formulation

Another key theme that emerged from the data was prompt formulation, which highlighted the difficulties participants encountered when trying to craft effective prompts to interact with Chat-GPT. Many respondents noted that the tool's performance largely depended on the clarity and specificity of the input they provided. However, a significant number of participants admitted to struggling with how to structure their prompts to yield accurate or relevant results.

> *"I remember my first try to use this service, I could not ask the assistant with the appropriate statement. Therefore, it does not give me the right result of my need."* (P4)
>
> *"It is quite hard for me to give prompts to utilize chat-GPT because of the lack of knowledge in making long sentences."* (P17)
>
> *"When I first started using GPT to learn vocabulary, I didn't know how to create commands."* (P33)
>
> *"When first using Chat-GPT to learn vocabulary, I didn't know how to set commands for it to understand me."* (P47)

Information accuracy

Information accuracy was also a significant theme that emerged from the data, reflecting participants' concerns about the reliability and credibility of the content provided by Chat-GPT. Many participants expressed frustration with the tool's tendency to deliver incorrect or imprecise information, which in turn affected their confidence in using it as a reliable educational resource.

> *"Sometimes, the suggested information is inaccurate and doesn't include sources for me to double-check."* (P52)
>
> *"We need to be careful with Chat-GPT, and we must check again if we want to use the information provided."* (P58)
>
> *"Chat-GPT can occasionally generate incorrect responses, which may lead to misunderstandings or confusion with the vocabulary I want to learn. Hence, it's really important to me to evaluate the information provided critically and seek clarifications from the more reliable sources."* (P61)

However, they also admitted that, later, they realized the reasons underpinned those problems

coming from the unclear prompts. For example, they forgot to provide the relevant level of proficiency, did not provide the context of the vocabulary in the lesson so that ChatGPT can generate the relevant meaning, or did not mention in detail how and what they want ChatGPT to create to fit their requirements. More precisely, P63 had an issue when he demanded the tool to generate a sentence for the term “visual illusion." Instead of providing a comprehensive instruction, he directly entered the term, and the consequent result was a definition. Furthermore, others have also documented the same problem.

> *"I can't receive the relevant meaning that I want because I used the wrong prompt in ChatGPT."* (P7)

> *“I did not provide enough information the first time I used chatGPT, so it didn’t give me the specific meaning in specific situations.”* (P28)

Responses’ analysis for Q3

Regarding the third question, participants shared a variety of perspectives on the role of teachers or peers in supporting their use of ChatGPT for vocabulary learning. The dominant answer, highlighted by a majority of participants, emphasized the significance of teacher or peer support in effectively using the tool. On the other hand, the less prominent side reflected the view that Chat-GPT can be used independently without requiring much external assistance.

A large proportion of respondents underscored the critical role that guidance from teachers or peers plays in helping them effectively navigate Chat-GPT. Participants frequently expressed that without such guidance, they struggled to fully utilize the tool’s features or to generate the appropriate prompts for their learning needs.

> *“It is necessary for me to have someone guide me because sometimes I don’t know how to instruct Chat GPT to give me the correct information.”* (P11)

> *“I want to know how to command Chat GPT to do the right thing like I expect.”* (P15)

> *“They can provide guidance on effective strategies, offer feedback on usage, and share tips for optimizing your learning experience.”* (P36)

> *“They can help me understand the strengths and limitations of this AI tool, suggest appropriate strategies, and offer tips for optimizing my interactions with this tool.”* (P61)

These responses highlighted how external guidance can significantly enhance the user experience, especially for individuals new to the platform. Additionally, P34 acknowledged that *“not everyone can write good prompts or is familiar with how to write one for Chat-GPT to yield the answers you need."* Therefore, teachers or peers provide useful suggestions for crafting prompts that generate relevant vocabulary lists, examples, and exercises.

> *“Teachers can give prompts for students to interact and make good use of Chat-GPT.”* (P58)

> *“For me, creating prompts is quite important because Chat-GPT sometimes misunderstands my requests. If someone could show me how to give better prompts, it would be very helpful.”* (P66)

> *"As AI tools are new for us and we are too lazy to read, the teacher's guidance can help me understand how to use the tool and then provide the prompts easily. It seemed difficult at first as I didn't know about the principles of giving prompts, but when being instructed, everything is just a habit for me, super easy."* (P2)

Moreover, respondents emphasized that teachers or peers can help them solve problems encountered while using the tool, especially for the first time using the apps. P32 remarked, *" We will not have enough experience to solve problems, so having someone who can demonstrate and give advice on how to solve them will help us deal with them easily."* According to P61, teachers and peers were also considered supporters who could clarify "misconceptions that may arise during my interactions with Chat-GPT." This problem-solving assistance was particularly valued by users, as it prevented frustration and allowed for smoother learning experiences. In addition to resolving technical or content-related issues, guidance from teachers or peers was seen as essential for maintaining motivation in learning. Two participants, namely P31 and P35, noted that encouragement and support helped them stay motivated and consistent with their vocabulary practice. Besides, as mentioned by P60, *"There is a need for being guided on how to use Chat-GPT to prevent overuse or being too dependent on AI," which* underscored the significant role of instructors in helping students avoid overreliance upon the AI-powered chatbot.

Responses from Q2 and Q3 signal the challenges related to unsatisfactory responses, prompt formulation difficulties, and information accuracy concerns. These issues correlated with the findings mentioned by several researchers.

For instance, unsatisfactory responses, including ambiguous or repetitive outputs, have been a recurring challenge in AI-based tools, which was noted by Algraini (2024), Liu (2024), Shaikh et al. (2023) and Xiao and Zhi (2023). The complexity of responses, which some participants found overwhelming, aligns with previous research by Mondal et al. (2024), which emphasized the importance of crafting clear and detailed prompts to avoid misunderstandings.

Similarly, the challenge of prompt formulation, identified by some participants, is well documented in the literature. Studies such as those by Ali et al. (2023) highlight that AI tools like ChatGPT heavily rely on user input clarity. This is particularly evident during the initial use of these tools, where users, especially students, struggle with crafting effective prompts. However, when participants were guided on how to properly structure their prompts, their satisfaction with the tool increased significantly, a finding that echoes Shaikh et al.'s (2023) assertion on the critical role of prompt formulation in AI interactions.

Finally, information accuracy is a challenge that is not unique to ChatGPT. Inaccurate or incomplete information has been reported in studies involving various AI tools, such as Algraini (2024), who explored the importance of verifying information obtained from AI-powered systems. Even though some participants in this study noted that initial interactions with Chat-GPT sometimes led to inaccuracies, these issues were often linked to the lack of context or specificity in the prompts provided. When these were corrected, the accuracy of the tool's responses improved, reinforcing the importance of clear prompt design, as both Algraini (2024) and Shaikh et al. (2023) emphasized. Furthermore, the indispensable role of teachers or peers

in providing instruction and guidance can help bridge the gap between students' knowledge and potential provided by AI; hence, enhancing students' learning process. This somewhat aligned with the notion of scaffolding in Vygotsky's sociocultural theory (1986), in which learners who have limited ability to perform a specific task need support from the experienced ones to maximize learning potential.

Conclusion

In conclusion, this current study explored students' perceptions of using Chat-GPT 3.5 as a tool for vocabulary learning. The findings indicated that the employment of Chat-GPT 3.5 both offers benefits and presents challenges. The qualitative and quantitative data demonstrated that the majority of students appreciated the tool's convenience, supportive learning environment, and personalization, which helped them improve their vocabulary learning process. Although the study identified several limitations, namely unsatisfactory responses, prompt formulation difficulties, and information inaccuracy, these challenges were mostly encountered during the initial stages of use, when participants were unfamiliar with crafting prompts.

From a theoretical perspective, the current research contributes to the growing literature on AI-based tools for vocabulary learning, particularly employing the TAM to understand students' perceptions and how they interact with Chat-GPT. The findings also highlight the importance of teachers or peers in scaffolding, in which learners should be carefully instructed to formulate prompts and supported when they encounter problems.

Regarding practical implications, Chat-GPT offers a significant potential for enhancing vocabulary learning beyond classroom context. This AI-powered chatbot can promote self-directed learning by the ability to provide immediate responses. As a result, students have more opportunities to practice and improve their lexical knowledge independently. However, information accuracy is the issue that should be aware of. Students, therefore, should critically evaluate and cross check with other reliable sources to ensure correctness. Additionally, educators and teachers have an indispensable role in providing support to assist learners to maximize Chat-GPT's benefits.

Although the study observed positive results, there are some limitations that should be improved in further research. Firstly, the sample size was relatively small, and it was limited to students from a particular university. Therefore, it restricts the generalizability of the findings to wider contexts. Additionally, the study only focused on vocabulary learning, neglecting other language competencies such as listening, speaking, reading and writing. Consequently, the conclusions drawn may not fully capture the potential of Chat-GPT in a broader situation. Moreover, the study relied on self-reported data, which cannot avoid the issue of bias, as students' perceptions might not always align with their actual learning outcomes.

For future research, it is recommended that studies be conducted with larger and more diverse populations to enhance the generalizability of the findings. Researchers could also investigate the integration of Chat-GPT across a wider range of language skills to evaluate its full potential in language education. Furthermore, longitudinal studies could be valuable to assess the long-term impacts of using AI-powered tools in learning. Besides, the importance of guidance in

maximizing the effectiveness of Chat-GPT is emphasized in the current study; hence, educators' roles in providing support should also be explored.

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