# Examining English-Majored Students' Performance and Attitudes towards ChatGPT and an Online Dictionary for Lookup

Mai Hoang Viet[1*], Tran The Phi[1]

[1] Saigon University, Ho Chi Minh City, Vietnam

[*]Corresponding author's email: mhviet@sgu.edu.vn

[*] https://orcid.org/0009-0003-3900-2492

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## ABSTRACT

**Keywords**: ChatGPT, online dictionaries, lookup, English-Majored students

It is true that the recent boom of artificial intelligence (AI), together with generative AI, has substantially transformed language education in myriad facets. In this context, powerful AI chatbots like ChatGPT, Bing AI, or Gemini have become worthy competitors to dictionaries. Hence, the aims of this study were to (1) compare the performance of English-majored students in doing receptive and productive lexical tasks when using ChatGPT and online Oxford Learner's Dictionaries (OLD) as consultation tools and (2) investigate their attitudes towards these two tools in language learning. A quasi-experiment was conducted with 60 Vietnamese English-majored students at Saigon University to achieve these objectives, followed by a questionnaire. The results revealed that students with the assistance of OLD had higher mean scores than those with ChatGPT in the receptive tasks, while the opposite is true for the productive ones. In addition, ChatGPT contributed to noticeably higher improvement scores between the pre-test and post-test in both receptive and productive tasks. In addition, the students also showed positive attitudes towards these tools for their language learning. These findings can provide valuable insights into the current picture among language education, AI, and dictionaries.

## Introduction

It is true that fostering vocabulary acquisition has always been an important quest for EFL educationalists and teachers around the world. In the past, when students encountered an unfamiliar lexical item, traditional tools like paper dictionaries or more recently, online dictionaries were utilized to elucidate any linguistic uncertainty. Throughout history, the dictionary has maintained its position as a reliable and prevalent source of reference through many technological changes (Kosem et al., 2018). Despite such adaptability, it is still far from perfect. For example, one notable disadvantage of this tool is that users have to scan most or almost all of the entry pages to acquire the desired information (Ptasznik & Lew, 2024). Given the revolution of dictionaries, transitioning from printed, electronic, to online forms, it seems

the future still holds many improvement potentials for them to resolve existing problems. However, the birth and burgeoning of artificial intelligence (AI) have presented a pioneering and captivating alternative to the world.

Atkins and Rundell (2008) opined that a good dictionary can describe some aspects of its users and purposes of consultation. For instance, medical students preparing for their exams would not utilize an economics dictionary to look up the terms; the same goes for economics students. Hence, it is evident that each individual requires a suitable type of dictionary tailored to their distinct fields, needs, and levels. As the name suggests, learners' dictionaries are crafted specifically for language learners with easy-to-understand definitions and other useful lexicographical features like pronunciation, synonyms, or grammar usage. As for the choice of OLD, it can be regarded as a time-honored and prestigious lexicographical work, as the first version was established in 1948, the earliest day of printing. Today, OLD is one of the world's bestselling dictionaries for English learners and has been recognized for many helpful and necessary merits for users. For example, Dirham and Triyuono (2023), who conducted a thorough review on the dictionary, praised OLD for its friendly interface, clear presentation, and ample linguistic information with simple explanations. Therefore, OLD was chosen to be the counterpart of ChatGPT in this study, which is also a leading representative in its respective field.

Although AI had been around years ago, December 2022 marked the launch of ChatGPT, which propelled this up-and-coming technology to worldwide popularity. ChatGPT serves users in the form of chatboxes where questions or commands can be input, and answers will be provided below. What sets ChatGPT apart from its predecessors is how accurate and natural-sounding its responses were in terms of word choice, grammar, or context appropriateness (Ptasznik & Lew, 2024). Atlas (2023) also lauded the ability to comprehend and compose naturalistic texts of ChatGPT, making it eligible for multiple tasks such as brainstorming, writing, and individualized learning.

It is safe to state that ChatGPT has revolutionized how people look up information. Since then, the implications of AI have gradually permeated many important areas. With such a trend, it should come as no surprise that the applications of this technology to the present pedagogical climate, together with its role in comparison with online dictionaries, have been called into question. In addition, few studies have put these two consultation applications into perspective and assessed their usage in the lookup process. The aforementioned reasons explain why this research was conducted: to assess whether a reputable online dictionary could contribute to a higher success rate of lookup than ChatGPT and university students' attitudes towards these two tools for their language learning.

## Literature review

### *The role of dictionary lookup in vocabulary learning*

Evidently, consultation is almost certainly the go-to solution when an English learner encounters unfamiliar words or phrases. Hence, many researchers have conducted studies to examine the correlation between consultation and vocabulary learning. For example, Fraser

(1999) found that the combination of consultation and inferencing is highly beneficial to the performance in reading comprehension and vocabulary acquisition of L2 learners. However, it also poses one drawback: an increase in the time needed to complete reading tasks, which is understandable given the nature of paper dictionaries at that time. Hence, the author also encouraged training in lexical processing strategies along with effective dictionary consultation. Other studies from Laufer and Hill (2000) and Lan (2005) also noticed beneficial impacts on word retention with the use of online dictionaries. In addition, the drawback of increased time for lookup was also alleviated thanks to the digital retrieval system, which interferes little with the flow of reading.

Another merit of dictionaries, in general, is the abundance of lexical guidance packed in each entry page. For example, OLD provides users with symbols and labels that structure words into different classifications like Oxford 3000, Oxford 5000, and Oxford Phrasal Academic Lexicon. These labels indicate that the current looked-up word is commonly used in daily or academic contexts, hence, EFL learners can pay extra attention to it. In addition, the use of dictionaries also promotes learner autonomy. Gairns and Redman (2005) stated that an effective dictionary user will be able to continue learning beyond the classroom, which allows him or her to make autonomous decisions in the self-study process.

Niitemaa and Pietilä (2018) conducted a study to investigate the correlation between word recognition skills and the rate of successful lookup. The participants were Finnish EFL upper secondary students who sat two tests: a vocabulary recognition test and one more vocabulary test with free access to online dictionaries. The results showed that there was a positive correlation between the level of word recognition and successful consultation. To acquire 50% correct lookups, the students, on average, had to score at least 60% on the vocabulary recognition test. In addition, the success of dictionary consultation could be attributed to various factors, including quick vocabulary recognition skills, lexicographical knowledge, persistence, collocating words, and digital skills. The findings of Niitema and Pietilä posit that there is potentially a correlation between consulting dictionaries and vocabulary acquisition. This viewpoint was backed by Fraser (1999), who opined that dictionary lookups can be a productive process that is beneficial to learning new words. This can be a highly valuable advantage of online dictionaries over AI chatbots.

*The role of dictionaries in linguistic reception and production*

Receptive knowledge is reflected in understanding a lexical item well enough to interpret its meaning and purpose from a speech or text (Norbert, 2010, as cited in Hamad, 2013). In a similar vein, Norbert also perceived productive knowledge as knowing the word well enough to use it in spoken or written language appropriately. Besides lexical knowledge, another important element contributing to linguistic reception and production development is deep processing tasks, which involve working out meanings from existing knowledge or contexts (Hamad, 2013). With this view in mind, dictionaries should have beneficial impacts on a language learner's receptive and productive abilities.

To prove this, Li and Xu (2015) conducted a study to determine the influence of Macmillan English Dictionary Online in helping Chinese students identify the meanings of verb phrases.

The research involved 32 students at lower intermediate levels doing a meaning determination task with and without the help of the online dictionary. The test was a multiple-choice question in which the participants chose the option with the closest meaning to the given verb phrases. The results of the study showed a marked improvement in the student's performance before and after using the Macmillan dictionary, with the correct rate increasing from 26.25% to 49.69%. The authors concluded that while dictionaries are useful for meaning determination, which belongs to the category of reception, there were still existing problems during consultation made by the students, necessitating future training.

Chen (2016) investigated the use of an electronic dictionary in the production and retention of collocations. 55 English-majored students at a Chinese university were employed for this study. They were asked to complete gapped sentences with collocations of a verb and a noun in a pretest-posttest design with the intervention of an electronic dictionary. The results suggested that the participants significantly improved their knowledge of productive collocation. However, the increased amount of dictionary consultation did not correlate with better production and retention of collocations. Instead, the author advocated deep processing and attention to lexicographical information in dictionaries, which requires dictionary training.

Nation (2001) listed three important components that contribute to understanding a word: form, meaning, and use. Following this, Filer (2017) pointed out that these three components are fully demonstrated in dictionaries. For example, form, which entails pronunciation, spelling, hyphenation, etymology, inflections, and derived forms, can be found in most dictionaries. It is evident that receptive and productive knowledge is a key indicator to assess whether a learner has truly known a word. In other words, being able to recognize a lexical item in its written and spoken form and to use it in conversations as well as texts should be sufficient to conclude that such a word has fully been acquired. In the opposite direction, the mastery of a wide range of lexical items would also translate to proficient reception and production in language.

## *The emergence of AI chatbots in language learning*

Among a variety of useful and innovative functions of AI in language learning like explaining grammatical errors, composing writings in different genres, or giving feedback on texts, this technological breakthrough has also become able to assume the role of a dictionary (Al-Obaydi et al., 2023). In this day and age, language learners can look up the definitions of new words, grammar usage, collocations, synonyms, and other valuable lexical information with just a few commands with AI chatbots. Integrating AI into language education also offers learners personalized learning, which is the ideal approach to contemporary pedagogy (Pokrivcakova, 2019). Y. Nguyen (2023) opined that ChatGPT can become a virtual tutor and a knowledge provider, which allows users to ask questions and receive answers within a short amount of time. With such powerful and widespread implications, a number of lexicographers have voiced their stance on the disappearance of dictionaries in the years to come with the arrival of tools like ChatGPT or Gemini (de Schryver, 2023; Nesi, 2024). With arguments like a single prompt instruction would basically receive the same results of a sophisticated corpus building inside dictionaries or most language learners nowadays will have a preference for fast and effective consultation in AI over the hard-earned answers in dictionaries, it is justifiable to state that the future of dictionaries is gloomy.

Losi et al. (2024) studied high school students' perception of using AI as an assistive tool for vocabulary learning. The research was carried out at an Indonesian high school with 15 to 17 years old students. Quantitative data was gathered through a questionnaire. The study yielded highly positive results as the students were excited to solve vocabulary exercises with the support of ChatGPT. It was also highly praised for offering multifunctional features, one of which is a search engine. Students, especially those in Generation Z, were enthusiastic and had been familiar with using ChatGPT in vocabulary acquisition as well as language learning. Finally, the technology was associated with multiple positive attributes, such as ease of use, convenience, and trustworthiness.

Ptasznik and Lew (2024) also carried out a study to compare the effectiveness of ChatGPT and Longman Dictionary in supporting Polish university students in completing challenging lexical tasks. The authors held a production test and a reception one. In the former, the students were required to translate twenty Polish sentences into English. As for the reception test, they would read English sentences and provide the meaning of the underlined words. The time taken by each student (with a 90-minute limit) was recorded. The findings reveal that students with the assistance of ChatGPT were superior to those using the Longman Dictionary in both of the tests in terms of accuracy. Regarding consultation speed, ChatGPT only outperformed in the production task. Finally, Ptasznik and Lew praised the merits of interactive and immediate feedback of AI chatbots as well as the facilitation of learner autonomy and language mastery of dictionaries.

On the other hand, some teachers and lexicographers have voiced their concern about the over-reliance on AI technology. For instance, two main possible issues of this tendency were opined by Nesi (2024). Firstly, the overuse of AI chatbots may affect learners' diction, making their word choices similar to journalese, which is unnatural in specific contexts. Secondly, the spoon-fed information provided by AI does not require deep processing, which can be meaningful in comprehension and retention. These two problems are definitely noteworthy in language learning and, therefore, need further research. Another concern was raised by Rundell (2023), which is the question of trust. While the rate of correct answers given by ChatGPT is not absolute, it is also known to be "non-deterministic," which connotes the variation of each answer for the same prompt.

It can be observed that ChatGPT and AI chatbots, in general, are gradually becoming the "default" consultation engine for users around the world. However, much needed clarification is still needed on whether they can completely replace dictionaries in language learning. Therefore, this paper aims to contribute more empirical evidence to the story.

### Research Questions

To fulfill the purpose of the study, the authors aimed to answer the following research questions:

1. Do English-majored students at Saigon University who have the assistance of ChatGPT have higher scores in a vocabulary test than their peers with OLD?

2. What are the attitudes of English-majored students at Saigon University towards using ChatGPT and OLD for word lookup?

## Methods

### Pedagogical Setting & Participants

The research was conducted at the Foreign Language Department of Saigon University, Vietnam. A convenience sampling method was used to recruit 60 participants who were junior students majoring in Applied Linguistics (Business—Tourism) at Saigon University. Students choosing this major are trained to take on responsibilities in English-required organizations like foreign affairs offices, English training centers, or hospitality facilities.

Regarding their English proficiency, in their first and second years, these English-majored students attended six compulsory courses for the four English skills. In addition, they had to achieve an English certificate equivalent to C1 in the CEFR scale to graduate. Hence, it is safe to consider the linguistic level of these students to range between B2 and C1. According to the background survey, their frequency of lookup is exceptionally high, which is as anticipated given their major in English.

### Design of the Study

This study used a quasi-experimental design, using a pre-test and a post-test. The pre-test results will be used as a baseline of the participants' lexical knowledge, while those of the post-test will serve as indicators of the differences between the two tools. In addition, the participants' attitudes were also gathered immediately after the post-test to keep their memories of the consultation tools fresh.

The format of the vocabulary tests in this study was adapted from those of Ptasznik and Lew (2024), who created a comprehensive and meticulous experiment to compare the success rate and speed of consultation between ChatGPT and the Longman Dictionary of Contemporary English. As for this study, the pre-test and the post-test share the same structure: a reception task, followed by a production task.

In the reception task, the participants were asked to read 20 English sentences with specific contexts to choose the word with the closest meaning to the underlined word within the sentences (a four-option multiple-choice exercise). The lexical items were picked out from the English Vocabulary Profile, a taxonomy of English words arranged according to the Common European Framework from A1 to C2. The words used in the reception task were all at the C2 level to necessitate the use of consultation tools.

In the production task, they were then required to translate 10 sentences from Vietnamese to English using a given verb. The author decided to limit the number to 10 sentences to avoid burnout during the test, which promotes meaningless filling or blank answers. In order to successfully translate the text, the students needed to find appropriate prepositions to form phrasal verbs with matching meanings. The chosen phrasal verbs were also not commonly used in daily conversations to facilitate lookup. Since the focal point of this study is the lookup process, mistakes in grammar, spelling, or word choice were tolerated as long as they were not concerned with the phrasal verbs.

Examples of these two tasks are as follows:

**Reception task: Choose the word with the closest meaning to the underlined word in each sentence.**

*0. The manager's <u>lenient</u> approach to deadlines resulted in a lax work environment.*

*A. strict*

*B. forgiving (correct answer)*

*C. indifferent*

*d. confused*

**Production task: Translate the below Vietnamese sentences into English. You must use the given verbs and add prepositions to form appropriate phrasal verbs.**

*0. Tôi cần phải ôn lại tiếng Tây Ban Nha. (to brush)*

*Answer: I need to brush up on my Spanish.*

Finally, to assess the students' attitudes towards ChatGPT and OLD for consultation and language learning, a five-point Likert-scale questionnaire ("Totally disagree," "Disagree," "Neutral," "Agree," and "Totally agree" from one to five, respectively) was delivered to them. The questionnaire asks questions related to the potential benefits of the two tools. They are whether ChatGPT or OLD:

- gives accurate information
- gives clear and understandable information
- helps users look up information quickly
- is useful in memorizing new vocabulary
- provides helpful information such as grammatical usage, pronunciation, or examples
- is useful for self-study

*Data collection & analysis*

1. Pre-test: 60 participants were divided into two groups, 30 participants each. The pre-test was held at their university with the supervision of the authors. Before the test began, the authors informed that the results would be anonymous and inconsequential to their academic scores. Both groups of students then used their smartphones to complete the pre-test through Google Forms without any assistance. The authors decided not to record the time taken to complete both of the tests as there were too many influencing variables.

2. Intervention: Before the post-test, the authors instructed the students on how to employ ChatGPT and OLD effectively to solve the receptive and productive task.

3. Post-test: The post-test setting was identical to that of the pre-test regarding the test format, timing, and other conditions to ensure consistency of measurement. The main difference was that while one group used ChatGPT for lookup, the other employed

OLD. The participants once more used their smartphones to complete the test, which required switching between Google Form and the consultation tools.

4.  Survey: Immediately after the post-test, the questionnaire was delivered to both groups to elicit their views on ChatGPT and OLD.

Afterward, the collected quantitative data was analyzed with the main focus on comparing the pre-test and post-test results using paired-sample t-tests. Regarding the reception task with 20 multiple-choice questions, each incorrect answer translates to a one-point deduction. As for the production task, there were 10 translation exercises, each of which is worth one point. Finally, the authors used descriptive analysis to assess the participants' attitudes toward ChatGPT and OLD.

## Results/Findings and Discussion

Table 1. Total mean score of the frequency of lookup conducted by the participants

| 1 | Frequency of lookup | N | Mean | SD |
|---|---|---|---|---|
| | | 60 | 3.58 | 0.62 |

*Note: N: Total participants; M: Mean scores; SD: Standard deviation*

Table 1 illustrates how frequently English-majored students at Saigon University performed consultation for unfamiliar lexical items (using any supportive tools). The survey questions were on a four-point Likert scale, including Always, Often, Seldom, and Never, and they ranged from four to one ("Always" for four). The results indicate that the participants regularly looked up new words (M=3.58; SD=.62). Such outcomes were expected as they all majored in English fields, which necessitated lookup on a frequent basis.

Table 2. Total mean scores of the pre-test and post-test of the two groups (receptive task)

| **Total mean scores (receptive task)** | | | **Max = 20** | | |
|---|---|---|---|---|---|
| | | | N | M | SD |
| 1 | ChatGPT | Pre-test | 30 | 12.60 | 3.33 |
| | | Post-test | 30 | 18.57 | 1.41 |
| | | | | p < 0.05 | |
| 2 | OLD | Pre-test | 30 | 14.60 | 3.12 |
| | | Post-test | 30 | 18.70 | 1.44 |
| | | | | p < 0.05 | |

*Note: Max: Maximum score, N: Total participants; M: Mean scores; SD: Standard deviation*

Table 2 depicts the average scores of the participants in the receptive task in both of the tests. This is the first section of the pre-test and post-test, which includes 20 multiple-choice questions. As can be seen from the table, there was a two-point difference in the pre-tests between the ChatGPT group (M=12.60; SD=3.33) and the Oxford one (M=14.60; SD=3.12). Surprisingly, the results of the post-tests indicate that the group using ChatGPT (M=18.57; SD=1.41) performed lower than that utilizing OLD (M=18.70; SD=1.44), however, the disparity value is insignificant. Another noteworthy observation is that ChatGPT was able to better improve the scores between the pre-test and the post-test with a 5.97 improvement score while that of OLD is 4.10. The p-values of both of the groups were also recorded to be less than

0.05, suggesting a noticeable improvement between the pre-test and the post-test owing to the intervention of ChatGPT and OLD.

Table 3. Total mean scores of the pre-test and post-test of the two groups (productive task)

| Total mean scores (productive task) | | Max = 10 | | |
|---|---|---|---|---|
| | | N | M | SD |
| 1 ChatGPT | Pre-test | 30 | 1.60 | 1.30 |
| | Post-test | 30 | 8.50 | 1.36 |
| | | p < 0.05 | | |
| 2 OLD | Pre-test | 30 | 3.17 | 1.90 |
| | Post-test | 30 | 8.23 | 1.61 |
| | | p < 0.05 | | |

*Note: Max: Maximum score, N: Total participants; M: Mean scores; SD: Standard deviation*

Table 3 illustrates the comparisons between the results of the productive task of the ChatGPT group and the Oxford group. This is the second and final section of the tests, encompassing 10 translation exercises using phrasal verbs. According to the pre-test outcomes, this section was highly challenging as the Oxford (M=3.17; SD=1.90) and ChatGPT (M=1.60; SD=1.30) groups both achieved below-average mean scores. The Oxford group one more time demonstrated better vocabulary resources than the ChatGPT one with a 1.57 disparity value. However, ChatGPT (M=8.50; SD=1.36) contributed to a higher success rate than OLD (M=8.23; SD=1.61) in the post-test. Hence, the improvement score of the AI chatbot was also superior to that of the online dictionary (6.90 for the former and 5.07 for the latter). The p-values of the two groups are also below 0.05, indicating a significant improvement from the pre-test to the post-test.

Table 4. The mean scores of students' attitudes towards ChatGPT and OLD

| | Students' attitudes towards ChatGPT and OLD | ChatGPT N = 30 | | OLD N = 30 | |
|---|---|---|---|---|---|
| | | $M_1$ | $SD_1$ | $M_2$ | $SD_2$ |
| 1 | The tool I've just used provides accurate information. | 4.17 | 0.79 | 4.33 | 0.84 |
| 2 | The tool I've just used provides clear and understandable information. | 4.53 | 0.63 | 4.30 | 0.84 |
| 3 | The tool I've just used helps me look up words fast. | 4.43 | 0.90 | 3.87 | 1.28 |
| 4 | The tool I've just used helps me memorize words effectively. | 3.27 | 0.94 | 3.63 | 1.10 |
| 5 | The tool I've just used provides useful linguistic information (grammar usage, pronunciation, examples, etc.) | 4.00 | 0.93 | 4.20 | 0.89 |
| 6 | The tool I've just used is useful for my English self-study. | 4.00 | 0.98 | 4.13 | 0.97 |
| 7 | I will continue using this tool to learn English. | 4.37 | 0.77 | 4.27 | 1.17 |

*Note: N: Total participants; M: Mean score; SD: Standard deviation*

Finally, Table 4 depicts how English-majored students perceived their respective lookup tool after completing the post-test. Based on the survey, ChatGPT and OLD were considered to provide accurate and clear information, with mean scores above 4.0 in items 1 and 2. A noticeable disparity can be seen regarding the speed of consultation. While the majority of ChatGPT users agreed that it helped them look up words fast (item 3: $M_1$=4.43; $SD_1$=.90), the mean score for OLD is relatively inferior to that (item 3: $M_2$=3.87; $SD_2$=1.28). Another noteworthy feature is that the participants did not think highly of ChatGPT and OLD when memorizing new words as their mean scores were the lowest among the seven items (item 4: $M_1$=3.27, $SD_1$=.94; $M_2$=3.63, $SD_2$=1.10). The remaining categories related to useful linguistic information, self-study process, and preference witness little difference between the two tools. Generally, the students expressed positive attitudes towards the AI chatbot and the online dictionary during the lookup process.

## Conclusion

This study hopes to provide valuable insights into the efficiency of AI and online dictionaries in the process of lookup. In addition, what English-majored students think about these tools after using them is another topic of research.

According to the results, in the receptive test, which requires students to determine the meaning of words in specific contexts, students using the online Oxford dictionary just closely outperformed those who utilized ChatGPT. However, the AI technology had a noticeably greater improvement score from the pre-test to the post-test compared to OLD, which is the main indicator of how effective each tool is. Regarding the productive test in which the participants translated Vietnamese sentences into English ones with suitable phrasal verbs, ChatGPT also outperformed OLD with a higher mean score. Moreover, a greater improvement score between the pre-test and post-test was recorded on the side of ChatGPT. These results are relatively consistent with the study conducted by Ptasznik and Lew (2024), which indicated that ChatGPT was dramatically more effective in both reception and production tasks in comparison with the Longman Dictionary of Contemporary English. Similar findings were also found in the study of Phoodai and Rikk (2023), who compared the lexicographical data given by ChatGPT and Oxford Advanced Learner's Dictionary (OALD) to assess their effectiveness in consultation for language learners. In this research, ChatGPT one more time outperformed OALD in providing correct lexicographical items.

As for the survey on the attitudes of English-majored students, most of them perceived ChatGPT and OLD as useful applications. The aspects that received highly positive results are accurate information, clear and understandable content, helpful lexical knowledge provision, and self-study facilitation. Such positivity is in line with previous research as synthesized by C. Nguyen (2023), who concluded that a great number of existing studies also share the same results. Particularly, the advantages of ChatGPT's personalized and fast learning assistance were highly merited. As expected, the students did not regard the consultation speed of online dictionaries highly compared to ChatGPT. Finally, the use of these two tools in vocabulary memorization was not of positive attitudes of the students as it received the lowest mean score

among the items surveyed.

From the results of this research, it is evident that ChatGPT was almost better than OLD in every aspect, marking the emergence and prevalence of AI in educational fields. Thanks to its responsive and natural linguistic processor, this technological breakthrough has made finding answers to lexical questions and problems much easier. Nevertheless, we do not believe that the traditional lookup method will completely disappear in the future, as online dictionaries can still be handy in certain situations. For example, when a user knows the exact word to look up, it is definitely faster to type it into dictionaries than in AI chatbots, which still require a short delay to respond. In addition, the overdependence on AI technology also carries unwanted effects like shallow word processing of language learners, repetitive journalese diction, or inaccuracy, as mentioned in the literature review. Thus, future efforts should focus on eliminating such shortcomings and finding appropriate roles for dictionaries and AI to best serve language learners and users in general.

This paper understandably has several limitations. Firstly, due to practical constraints, the sample size of this study was limited to only 60 participants, which reduced its generalizability. Therefore, researchers interested in this topic can increase the number of participants and include students of different majors to achieve more reliable results. Secondly, given the complexity of quasi-experimental or experimental research in general, with a great number of variables to consider, it is important to acknowledge that the data collection and analysis could be further refined. Hence, future studies with stricter and more comprehensive methods are highly encouraged.

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## Biodata

Mai Hoang Viet has been working for the Faculty of Foreign Languages, Saigon University since 2023. Mai Hoang Viet received a master's degree in English language at Ho Chi Minh City University of Technology (HUTECH) in 2022. Mai Hoang Viet's research interest mainly relates to English language skills and teaching development.

Tran The Phi has been working for the Faculty of Foreign Languages, Saigon University since 2010. He received a doctorate in Linguistics and Literature from the University of Social Sciences and Humanities, VNUHCM. His research interests are in cognitive semantics, curriculum development and English teaching methods.