

JIRSEA Issue: Vol. 22 No. 3

Sept/Oct 2024

ISSN 1675-6061

<http://www.seairweb.info/journal/index.aspx>

Submission Timeline

First submission: 25 June 2024

Revised submission: 26 July 2024

Final Submission: 12 October
2024

Acceptance: 29 October 2024

24th SEAAIR Conference "Best Paper"

An Investigation of Vocabulary Learning Strategies Employed by Engineering Students

Nguyen Trang Dung

CITE ARTICLE: Nguyen T. D. (2024). Hybrid Learning at Higher Education Institution: A Needs Analysis for Synergistic Scaffolds. *Journal of Institutional Research South East Asia*, 22(3), 22-46



Publisher: SEAAIR Secretariat

C/O Suan Dusit Rajaphat University
295 Nakhon Ratchasima Rd, Dusit, Dusit
District, Bangkok 10300, THAILAND
email:seair.info@gmail.com
<http://www.seairweb.info/>

DECLARATION: Articles published in JIRSEA adhere to the declaration clauses that: (1) the article is entirely the researcher(s) original work and responsibility, (2) principles of honesty and integrity throughout the research process, and unless otherwise indicated and properly cited, this declaration encompasses all aspects of the article, including but not limited to text, figures, tables, data, and any accompanying material are observed, (3) there is no conflict of interest with JIRSEA in any form, (4) holding to all required JIRSEA policies of publication ethics and practices conforming to the COPE Principles of Transparency and Best Practice in Scholarly Publishing, (5) copyrights assignment to JIRSEA, whereby it is published online in an open access requirement of Creative Commons 4.0, and (6) is not funded by any party unless otherwise disclosed.

CREATIVE COMMONS ATTRIBUTION 4.0



INTERNATIONAL LICENSE

24th SEAAIR Conference "Best Paper" Citation

An Investigation of Vocabulary Learning Strategies Employed by Engineering Students

Nguyen Trang Dung

Ho Chi Minh City University of Technology, Vietnam (nguyentrangdung265@hcmut.edu.vn)

ABSTRACT

In today's digital age, the English language plays a vital role in various fields and aspects of life. For engineering students, they need a thorough command of English to update their knowledge and make the most of innovative technology in their expertise. Those non-major English students are likely to have a great demand for an appropriate and effective vocabulary learning strategy, which may enhance their chances of further education or employment. A study was conducted to identify the most and least commonly used techniques by engineering students to expand their linguistic range. A total of 126 participants were involved in the research at Ho Chi Minh City University of Technology, and data collection was carried out through questionnaires and interviews. According to the findings, students exhibit a preference for employing Cognitive Strategies and express a desire to engage in vocabulary acquisition actively. Teachers, students, and curriculum designers can benefit from this study in developing effective methods to enhance vocabulary learning.

Keywords: EFL, Vocabulary teaching and learning, Vocabulary learning strategies

Introduction

In the words of Wilkins (1972, p.11), "Without grammar, very little can be conveyed. Without vocabulary, nothing can be conveyed." McCarthy (1990) likewise points out that students cannot communicate effectively in the second language (L2) without words to express a broader range of meanings, regardless of how well they learn grammar or sounds. In fact, mastering vocabulary is one of the most significant components of enhancing L2 proficiency. It is estimated that a foreign language (EFL) learner should be able to understand more than 95% of the words in a text in order to comprehend the text or acquire vocabulary (Nation, 2001). Gan et al. (2004) also emphasize that vocabulary learning is one of the most challenging tasks that students are required to undertake.

There is, however, little emphasis placed on vocabulary development in the non-major curriculum of Asian universities (Fan, 2003). A language teacher may use vocabulary learning activities only as an element of other language learning tasks, such as listening to stories, interpreting the meanings of words via contexts, and conducting information gap drills (Coady & Huckin, 1997). To put it another way, vocabulary teaching and learning takes place seemingly incidentally (Fan, 2003; Catalan, 2003), resulting in the gradual accumulation of lexis-based knowledge.

At Ho Chi Minh City University of Technology (HCMUT), students are required to not only handle a large number of English materials associated with their majors but also pass high-stakes exams such as TOEIC and IELTS before they graduate. Even at some of the faculties in this university, the English language is being used as a medium of instruction for the courses offered. However, many students find it difficult to meet the required English skills they need to succeed in their studies, with English proficiency levels ranging from low to upper intermediate. In addition, due to the limited number of lexicons that a teacher can directly teach his or her students, it will be necessary, sooner or later, to prepare students to learn vocabulary on their own. Ultimately, it is the individual learners who do most of the vocabulary acquisition, not the teachers. To bridge the vocabulary gap, students must work individually on improving their vocabulary knowledge. After all, learners are active processors of information, and they process information in a variety of ways. However, as Ellis (1995) illustrates, irrespective of how much target vocabulary becomes clear, it is still important to think about how learners approach language learning. Therefore, it is important to consider the strategies students employ for learning and using vocabulary so that they can gain a better understanding of how language functions and how to use it effectively.

Literature Review

Vocabulary learning strategies (VLS)

According to McCarthy (2014), a language learner cannot fully master a language without developing effective techniques and strategies for learning vocabulary, which is essential for success in foreign/second language learning (Schmitt, 2000). It is on the journey of language acquisition that learners will discover how to expand and enhance their vocabulary knowledge. There are five distinct phases in the process of vocabulary acquisition identified by Brown and Payne (1994, as cited in Hatch & Brown, 1995, p. 373). They involve recognizing sources where new words are encountered, creating a clear mental representation of these new words through visual or auditory means, comprehending the meanings of the words, forming a strong memory association between the words and their meanings, and effectively using the vocabulary in appropriate contexts. In this way, all strategies for learning L2 vocabulary can be viewed as part of these five stages to some degree.

Scholars in the field of linguistics have defined the term "vocabulary learning strategies" (VLS) in a variety of ways. According to Nation (2001), a vocabulary strategy should provide multiple options, have several steps to learn, require knowledge and training, and increase the efficiency of vocabulary learning and vocabulary use. Catalan (2003) defines VLS as "knowledge about the mechanisms (processes and strategies) used in order to learn vocabulary as well as steps or actions taken by students to (a) find out the meaning of unknown words, (b) to retain them in long-term memory, (c) to recall them at will, and (d) to use them in oral or written mode" (p. 56). To put it another way, these learning styles refer to the steps, actions, or mental processes employed by learners to facilitate the acquisition of vocabulary.

Vocabulary acquisition strategies are considered important and have received significant attention in EFL contexts. As Oxford and Nyikos (1989) point out, strategies enhance "learner autonomy, independence, and self-direction." In this way, they enable learners to take charge of their own learning so that they are able to take responsibility for their education (Schmitt, 2000). Additionally, VLS allows L2 students to acquire a large number of new vocabulary items (Nation, 2001). A study by Gu and Johnson (1996) indicates that learners employing selective attending strategies are able to determine which words are important to learn and essential for them to get through the passage. In the case of learners employing self-initiation strategies, a variety of methods can be employed to help them comprehend the meaning of words encountered. With a variety of VLS at their disposal, learners might be able to handle any unfamiliar or new words they come across with relative ease.

The classification of VLS

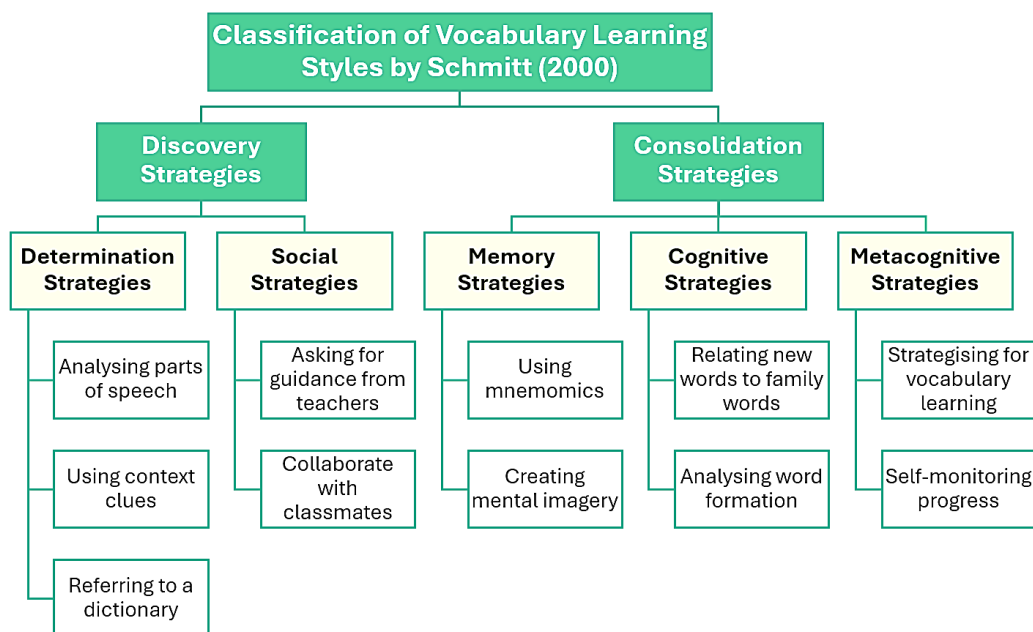


Figure 1: The classification of VLSs by Schmitt (2000)

Despite different ways of classifying VLS, this study adapts Schmitt's taxonomy (2000) to explore how students use VLS to learn vocabulary. The VLS taxonomy, developed by Schmitt (2000), provides a framework for understanding how learners come up with new words and how they acquire them through two main categories: Discovery Strategies and Consolidation Strategies.

Discovery strategies enable learners to discover the meaning of unfamiliar words they come across for the first time. These strategies can be further divided into two subcategories. *Determination Strategies* encourage learners to work independently in order to interpret word meanings. The process might involve analyzing parts of speech, using context clues to make a guess, or referring to a dictionary (bilingual or monolingual) for clarification. Alternatively, learners can utilize *Social Strategies* to comprehend meaning through interactions. Seeking guidance from teachers or classmates when faced with challenges is an effective approach.

Following the initial comprehension of a word's meaning, **Consolidation Strategies** come into play to ensure retention. This involves the use of *Memory Strategies* such as mnemonics (memory aids) or imagery (creating a mental picture) in order to establish a connection between the newly acquired word and something familiar. Learners can also employ *Cognitive Strategies* to relate the new word to other words that they already know or to think about the way the word is formed. Additionally, *Metacognitive Strategies* involve a reflection on the learning process itself. Planning a strategy for learning new vocabulary and monitoring their

progress will help learners become more strategic and self-aware in their effort to acquire new vocabulary.

The factors affecting VLS

Many research publications on VLS have identified factors that contribute to variation in learners' VLS use, which can be divided into two categories: individual differences and learning contexts.

Individual differences

A study by O'Malley et al. (1985) suggests that more effective learners use a variety of VLS throughout their language learning process, whereas learners who demonstrate less competency use VLS that are inappropriate for their needs. It is not clear whether using more strategies is better or which specific strategies are most effective. There is widespread agreement, however, that learning styles and strategies vary from one learner to another, and individual differences have a significant impact on the learning process.

Belief

According to Fan (2003), learners use strategies they perceive as being useful more frequently. O'Malley et al. (1985) report that Asian students are reluctant to apply imagery and grouping strategies to learn vocabulary even though they perform more efficiently than the experimental group with rote memorizing. In the study carried out by Schmitt (1997), it was found that learners who regard dictionary and repetition strategies as the most useful VLS prefer to utilize them and consider imagery and semantic grouping strategies the least effective.

Exposure

A word's frequency of occurrence plays an important role in determining whether it is observed and selected for learning. According to Ellis (2002), words that appear often are easier to recognize than words that appear infrequently. In light of this, it seems that learners are more likely to memorize and learn certain words when they are exposed to them on a frequent basis. In other words, the frequency with which students encounter these words impacts their ability to remember and understand them as they are repeated.

Language proficiency

In comparison with their less advanced counterparts, more advanced learners tend to employ more sophisticated and meaning-focused strategies. As Loucky (2003) observes, students with a high level of language proficiency in college display a greater tendency to utilize VLS than

those with a lower level. Likewise, Chang and Chang (2009) showed a positive correlation between students' use of VLS and their language proficiency. In addition, among language learners, the extent to which they are exposed to natural English input within their learning environments influences the use of a variety of VLS (Kojic-Sabo & Lightbrown, 1999). According to Nassaji (2006), the depth of vocabulary knowledge has a direct correlation with lexical inference strategies, such as inferring meaning from unknown words. Nassaji's findings also reveal that learners with a greater knowledge of vocabulary use VLS more effectively.

Learning contexts

There is strong evidence suggesting that the use of VLS correlates significantly with a student's field of study. The use of VLS by science students differs from that of arts students, according to Gu (2002), while Liao (2004) indicates that English majors use VLS differently from non-English majors. Bernardo and Gonzales (2009) note that Filipino students use VLS differently across different fields of study. A study by Asgari and Mustapha (2011) also demonstrates that the influence of supportive and unsupportive parents varies in terms of the options available to students. Moreover, Kamali et al. (2012) conclude that the use of VLS by Malaysian ESL students is influenced by the interaction between teachers, peers, and the classroom environment.

The effects of VLS instruction

According to Catalan (2003), learning and teaching vocabulary is primarily focused on empowering learners to understand the meaning of unknown words, retain them in long-term memory, recall them at any time without difficulty, and use them orally and in writing. However, deliberate vocabulary teaching is considered to be less efficient in that only a limited number of words and a limited percentage of what makes a word can be taught (Nation, 2005). Hence, VLS instruction should be supported by teachers in order to provide students with direct instruction on how to adopt and use appropriate VLS. As summarized by Nyikos and Fan (2007), "(1) the integration of VLS into instruction appears to be more effective than non-integration, (2) significantly better vocabulary performance is possible with VLS instruction, and (3) that combination of metacognitive and specific VLS seems to work better than either in isolation" (p. 273).

VLS instruction has been demonstrated to enhance vocabulary knowledge in numerous studies. Mizumoto and Takeuchi (2009) find that effective teaching strategies can alter the learners' frequent usage of Memory Strategies, which is positively correlated with participants' language performance. Rahimi's (2012) study confirms the positive effect of VLS instruction on the depth of vocabulary knowledge among Iranian learners. According to Naeimi and Voon

Foo's (2013) study on the effects of direct VLS instruction on reading comprehension skills among Iranian university students, the experimental group that was taught direct VLS performed better than the control group. Additionally, Yang and Liu (2013) report that VLS instruction has a positive effect on vocabulary acquisition and strategy use among Chinese university students majoring in English.

In this paper, the author will explore the current trends in vocabulary learning strategies (VLS) among engineering students at Ho Chi Minh City University of Technology (HCMUT) in light of the never-ending process of vocabulary learning, which often poses overwhelming challenges to EFL learners.

To fulfill the research purpose, three underlying questions shall guide the present study:

1. How do students view vocabulary learning?
2. Which vocabulary learning strategies are the most and least commonly used by students?
3. What are some of the problems students face when learning vocabulary?

Methods

Participants

The study took place during the second semester of the 2023-2024 school year and involved 126 students at HCMUT who are in their first or second year at the university. All of them were native Vietnamese speakers who were proficient in intermediate English. In the beginning, participants were not informed of the research objectives or processes to ensure that data collection would not adversely impact lessons, learning outcomes, or student learning outcomes. During the research, these students actively participated and provided feedback on how they learned vocabulary in their English learning process.

Design of the study

A mixed-methods sequential explanatory design employed in this research involved collecting both quantitative and qualitative data. As a first step, the researcher collected the quantitative data from the participants using the online survey. In accordance with Dörnyei and Csizér's recommendation (1998), conducting research using quantitative methods is a way to maintain objectivity in the sense that it contributes to the validity of results and reduces the risk of researcher bias in the research results.

The second phase of the research process involves collecting qualitative data through a semi-structured interview. This will provide an opportunity to elaborate on the quantitative results obtained in the first phase and provide a general understanding of the research problem. The qualitative results are believed to offer excellent opportunities for further exploration of the quantitative results (Creswell, 2003).

Data collection

For this study, a questionnaire was adapted from Vocabulary Learning Questionnaire Ver. 3 (Gu & Johnson, 1996) and translated into Vietnamese in order to avoid misunderstandings. These questions were designed to evaluate students' perceptions of vocabulary learning and their strategies for approaching new words. Responses were recorded using a five-point Likert scale, ranging from 1 (never) to 5 (always). The questionnaire was administered online through Google Forms, with 126 HCMUT students participating during the midpoint of their semester. After the data had been collected, it was analyzed using SPSS 20.0 and presented in Microsoft Excel for further analysis.

As the next step, 15 out of the 126 samples were chosen at random to participate in a follow-up semi-structured interview to acquire supplementary information and clarifications regarding the questionnaire data. Subsequently, the researcher translated the final extracts obtained from Vietnamese interviews into English. The interview transcripts and notes were then converted into a digital format and carefully classified in line with the research questions.

Findings

In this study, descriptive statistics were used to determine the central tendency results for VLS used by students. According to Cronbach's Alpha values, this scale exhibited a high level of internal consistency, ranging from 0.9 to over 1.0. Accordingly, it can be concluded that the scale is reliable and valid for determining the frequencies and preferences of students' VLS. Additionally, the interview findings underwent meticulous analysis in alignment with the research questions. To gain a comprehensive understanding of the findings and draw meaningful conclusions, the analysis involved comparing the results with those obtained from the questionnaires.

Quantitative data

Table 1 presents a fascinating insight into the strategies students utilize when confronted with unfamiliar vocabulary.

Table 1: Strategies used for discovering the meaning of new words

Discovery Strategies	Mean	S.D.
<i>Determination Strategies</i>		
Analyzing parts of speech	3.36	0.99
Guessing from context	3.54	1.03
Using a dictionary	3.56	1.19
<i>Social Strategies</i>		
Asking teachers	2.57	0.99
Asking friends	2.93	1.08

When encountering new words, students are likely to rely on dictionaries (mean: 3.56) and deduce meanings through context clues (mean: 3.54). In addition, analyzing the word's structure through its parts of speech appears to be another popular method. It is interesting to note that asking for clarification from teachers and classmates seems to be less prevalent than independent strategies, despite the fact that it remains a popular strategy.

Table 2: Strategies used for consolidating vocabulary learning

Consolidation Strategies	Mean	S.D.
<i>Memory Strategies</i>		
Use mnemonics		
- Stick words on a wall for retention	2.37	1.18
- Repeat the words aloud	3.25	1.09
- Keep a vocabulary note	3.53	1.08
Use imagery (make a mental image)	3.22	1.17
<i>Cognitive Strategies</i>		
- Use flashcards	2.67	1.19
- Write a paragraph	2.94	1.01
- Make their own definition	3.27	1.03
- Connect it to an experience	3.29	1.08
- Make a sentence	3.33	0.98
- Use synonyms/antonyms	3.41	1.08
- Use semantic mapping	3.41	0.94
- Use media	3.51	1.06
<i>Metacognitive Strategies</i>		
- Test oneself	3.16	0.98

Table 2 illustrates all of the strategies used by students to review and recite the words they encountered. The strategies yielding the highest mean scores involved reciting for memorization, such as maintaining a vocabulary notebook (with a mean score of 3.53), repeating words aloud, and creating mental images. Additionally, students made use of media (3.53), semantic mapping (3.41), and synonyms/antonyms (3.41) to connect newly acquired words with their existing knowledge. While students displayed a less enthusiastic attitude

toward composing a paragraph with new words (2.67), they displayed a stronger preference for constructing sentences with new words (3.39), formulating definitions, and linking new words to their own experiences.

Qualitative data

The researcher interviewed students to gain insights into their attitudes toward vocabulary acquisition and the difficulties encountered in the vocabulary learning process.

In the interview, 73.33% of interviewees indicated that vocabulary learning is significantly important, while 20% expressed uncertainty about vocabulary learning in relation to grammar knowledge. In general, the majority of the students (60%) learned fewer than ten new words per week.

Table 3: Students' views and attitudes on vocabulary learning

Students' views and attitudes	Subjects (n=15)	Percentage
<i>The importance of vocabulary</i>		
Important	11	73.3%
Not sure	5	26.7%
<i>The number of words learned per week</i>		
More than 10 words	6	40%
Fewer than 10 words	9	60%

A number of interviewees indicated that they rarely practiced vocabulary outside of class, primarily due to the heavy workloads they faced in their other courses. There was a broad awareness among them that vocabulary acquisition was crucial to their academic success. The students, however, felt constrained by their commitments to their major subjects, leaving them little time to learn new words. Having to balance their primary coursework with vocabulary practice posed a challenge that limited their ability to improve their language skills outside the classroom.

Anh: *I am too overwhelmed with assignments and presentations in other classes*

Thien: *It is too hard to maintain the habit of practicing vocabulary regularly.*

Additionally, some students had difficulties with memory techniques (6) and choosing appropriate words according to different contexts (12). They admitted to frequently forgetting words, even shortly after learning them. In other words, students are concerned about the need to acquire new words more efficiently, especially those not frequently encountered.

Toan: *Though I am capable of communicating well in basic situations, I am unable to convey my ideas on more complex topics*

An: *I get confused when choosing words to express my ideas.*

Hieu: *Despite keeping a vocabulary list, I find it difficult to remember the words for an extended period.*

Some respondents referred to dictionaries, particularly bilingual dictionaries, but they were only used to look up meanings.

Nghia: *I prefer to consult an English-Vietnamese dictionary to determine the meaning of the words.*

Thong: *The English definition is sometimes difficult for me to understand*

A few students even complained about their poor English background and proficiency level, which demotivated them to some extent. Another pair of students even found English challenging and uninteresting, resulting in a lack of motivation to learn new words.

Discussions

How do students view vocabulary learning?

The findings show that students are aware of the importance of vocabulary in order to become proficient in a foreign language, which causes them to engage in a variety of strategies to acquire new vocabulary (Schmitt, 1997). This dynamic process involves both input and output, which refers to the words that are learned and how they are used. In the learning process, students take responsibility for their learning, engage in rote memorization, and acquire meaningful information.

There is, however, a lack of commitment to vocabulary learning among engineering students at HCMUT, in spite of the many opportunities they have to engage with English. They may have limited knowledge of the vocabulary they should acquire due to their insufficient dedication to the learning process. This may be due to the fact that the participants in this study possess an intermediate level of English proficiency. Therefore, they do not experience many difficulties when communicating in English. They find it relatively easy to comprehend English materials, even those with complex terminology because they have a sufficient command of vocabulary and grammar to participate in discussions with lecturers or international exchange students. This also contributes to the fact that more than 30 percent of the students interviewed are uncertain about the importance of vocabulary acquisition to their learning process. In addition, this could be because the frequency and importance of some vocabulary items may not be significant enough for them to pay attention to (Ellis, 2002). Since some students tend to review the vocabulary only when examinations are approaching, it is understandable why they do not retain information from hastily reviewed word lists.

Increasing proficiency for high-stakes exams or writing research reports or articles is not straightforward. Nasir et al. (2017) state that proficient learners have a greater vocabulary repertoire and that their performance on vocabulary tests may serve as an indicator of their overall proficiency level. In essence, there is a significant connection between vocabulary knowledge and improvement in proficiency.

Which vocabulary learning strategies are most and least commonly used by students?

The study's findings provide a comprehensive analysis of students' strategies, highlighting those that are most frequently used as well as those that are less commonly adopted. In addition to providing insight into students' preferences and behaviors regarding their learning methods, this data may indicate which methods are likely to be more effective or enjoyable in terms of their academic experience.

When students are first exposed to new words, using a bilingual dictionary seems to be the most frequently used strategy, which is in line with findings from many studies (Ahmed, 1989; Gu & Johnson, 1996). Interestingly, inferring meanings from the context and analyzing parts of speech are among the most popular strategies. According to Nation (2001), the effective use of contextual clues requires a reader to be familiar with approximately 95% of the surrounding words. This preference may be influenced by the fact that the participants had an intermediate level of English proficiency. As a result, enhancing vocabulary knowledge and adopting this strategy seem to be intertwined. Furthermore, their proficiency allows for greater independence in the language learning process as they are less reliant on explanations from teachers or peers.

Additionally, this study indicates that the findings concerning Consolidation Strategies are inconsistent with those of some previous studies since the use of higher-level Cognitive Strategies entails deeper cognitive processes, such as grouping, semantic mapping, and the creation of sentences from words (O'Malley et al., 1985). Based on the study of Cengizhana (2011), it appears that Cognitive Strategies are not the preferred method for learners to utilize. Aside from this, the study also shows that students in this study prefer to maintain a vocabulary journal. At the same time, Hashemi and Hadavi (2015) find that note-taking is generally the least frequently used of the strategies for learning vocabulary.

Further, students expressed an understanding of the importance of active vocabulary learning and utilized a range of Cognitive Strategies as part of their vocabulary acquisition process. The research by Mutalib et al. (2014) focusing on Malaysian second language learners' use of VLS, however, reveals that most students relied on Discovery Strategies, with only a few being familiar with Cognitive Strategies. Likewise, Celik and Toptas (2010) discuss the VLS

employed by Turkish EFL students and find that Determination Strategies were used frequently, whereas most learners did not favor Cognitive Strategies.

What are some of the problems students face when learning vocabulary?

According to the findings, there are two main problems associated with students' use of VLS. Students are likely to face challenges in utilizing the numerous opportunities for practicing vocabulary outside of English classes and in arranging their schedules appropriately to maximize their learning performance. As explained by Asgari and Ghazali (2011), inefficient time management can result in poor language proficiency. A study conducted by Kojic-Sabo and Lightbrown (1999) also demonstrates that learners' independence and study time were closely related to their ability to learn and use vocabulary proficiently.

The second problem students encounter has to do with their confusion about learning strategies. While some students can integrate various VLS into their vocabulary acquisition effectively, others seem to rely more on a trial-and-error approach than a systematic one, even after trying different strategies. As a result, they are not able to keep track of words effectively. Additionally, students are not really aware of how to make effective use of dictionaries. Word-to-word translation becomes problematic as a result of the overuse of bilingual dictionaries, especially online translation applications. As a result, students find it challenging to avoid errors related to word form or usage.

Pedagogical implications

The results of this study can be interpreted in several important pedagogical ways.

An orientation to the importance of ongoing vocabulary development

As a first step, it is essential to teach students how to manage their time efficiently and prioritize their work. This skill will help them allocate specific time for vocabulary improvement. Through this process, students will enhance their vocabulary and be prepared for further learning.

Teachers may emphasize the importance of learning new words for students with high proficiency in English to ensure that their students can communicate more effectively and accurately in complex situations. By introducing and reinforcing positive attitudes and effective VLS, teachers can provide learners with valuable tools to maximize their language learning potential.

Strategy development

In addition, students' metacognition should be developed in order to boost their own autonomy. Metacognition, as defined by Anderson (2002), includes actions such as (1) setting learning goals and defining how to achieve them; (2) making conscious decisions regarding the strategies to be used and how they will be utilized; (3) knowing how to use various strategies concurrently; and (4) evaluating strategy use and learning. The use of metacognitive strategies is, therefore, critical for the control of learning processes and the management of tasks as learners plan, monitor, and evaluate both language use and language learning (Harris, 2003). In this regard, these strategies are of particular importance in the context of vocabulary acquisition.

Teachers could guide students to select sets of meaningful words as well as to use appropriate VLS to learn them. Teachers need to identify the frequency of VLS use and its contribution at the beginning of a class in order to provide their students with the best possible learning experience (Oxford, 2001). When teachers guide students in the exploration of new strategies and in reflecting on what works effectively for their learning rather than just instructing them on what to do and how to do it, students are more likely to become independent learners, which undoubtedly benefits their learning processes. Additionally, teachers need to assist their students in identifying the most appropriate VLS to enhance their vocabulary acquisition. Kayi-Aydar (2018) also concludes that ESL learners can successfully develop their vocabulary knowledge if they are provided with appropriate scaffolding, guidance, and support during their learning process. In other words, students can benefit from teacher-directed instruction, which allows them to manage their study time more efficiently and maximize their learning both inside and outside the classroom (Rogers, 2018).

Furthermore, it is essential to understand that metacognition can be applied in a wide variety of academic fields, allowing students to become more self-aware, independent, and self-directed outside the language classroom as well. As students are trained to set their own goals for learning, monitor their task performance, and evaluate their results at both the content and language levels, they will likely be able to become more capable of learning and recalling information in any subject area when they have set their own learning goals. The development of such skills leads to a deeper understanding of the content of a course as well as the development of a more resilient and adaptable approach to learning in any subject area.

Conclusion

Foreign language learning is a dynamic and complex process that requires learners to take proactive measures to facilitate their learning. Vocabulary plays a key role in that acquisition process. Developing an effective vocabulary learning strategy is critical to L2 learners and instructors since it empowers students to become independent from their teachers.

The present study aims to give an insight into how engineering students at a public university in Vietnam utilize a variety of learning strategies to develop their vocabulary knowledge. Additionally, the findings can serve as an aid to teachers when it comes to selecting and designing appropriate materials and activities that will enhance students' ability to learn. Fostering self-awareness among learners requires an understanding of different strategies students use and how effective they are in fostering their own learning progress. As a result of this self-regulation, students can develop more strategic study habits, which ultimately improve their academic performance, equipping them with the capabilities necessary for success in both their academic as well as professional careers.

However, this study has some limitations, especially in terms of sample size, which may limit the generalizability of its findings. For future research, it would be beneficial to explore this issue with a larger and more diverse sample of students to enable a more comprehensive and detailed analysis.

References

- Ahmed, M. O. (1989). Vocabulary learning strategies. In Meara, P. (ed.), *Beyond words*. London: BAAL/CILT. 3–14.
- Anderson, N. J. (2002). The role of metacognition in second language teaching and learning. *ERIC Clearinghouse on Languages and Linguistics*. Retrieved from ERIC database (ED463659).
- Asgari, A., & Ghazali, M. B. (2011). The type of vocabulary learning strategies used by ESL students at UPM. *English language teaching*.
- Asgari, A. & Mustapha, G. B. (2011). The influence of informal language learning environment (Parents and Home Environment) on vocabulary learning strategies. *English Language and Literature Studies*, 1(1), 7–13.
- Bernardo, A. S. & Gonzales, T. H. (2009). Vocabulary learning strategies of Filipino college students across five disciplines. *TESOL Journal*, 1, 17–27.
- Brown, C., & Payne, M. E. (1994, March). Five essential steps of processes in vocabulary learning. In *TESOL Convention, Baltimore, Md*
- Catalan, R. M. J. (2003). Sex differences in L2 vocabulary learning strategies. *International Journal of Applied Linguistics*, 13(1), 54–77.
- Celik, S., & Toptas, V. (2010). Vocabulary learning strategy use of Turkish EFL learners. *Procedia—Social and Behavioral Sciences*, 3, 62–71.
- Cengizhana, L. (2011). Vocabulary learning strategies: a case of Edirne Anatolian high school. *Procedia Social and Behavioral Sciences*, 15, 1870–1874.
- Chang Tsai, C. & Chang, I. (2009). An examination of EFL vocabulary learning strategies of students at the University of Technology of Taiwan. *International Forum of Teaching and Studies*, 5(2), 32–38.
- Coady, J. & Huckin, T. (1997). *Second language vocabulary acquisition*. New York: Cambridge University Press.
- Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed methods approaches* (2nd ed.). Thousand Oaks, CA: Sage.

Dörnyei, Z., & Csizér, K. Ten commandments for motivating language learners: results of an empirical study. *Language Teaching Research*. 1998; 203–229.

Ellis, N. C. (1995). The psychology of foreign language vocabulary acquisition: implications for CALL. *Computer-assisted Language Learning*, 8, 103–128.

Ellis, N. (2002). Frequency effects in language processing: A review with implications for theories of implicit and explicit language acquisition. *Studies in Second Language Acquisition*, 24(2), 143–188.

Fan, Y. M. (2003). Frequency of use, perceived usefulness, and actual usefulness of second language vocabulary strategies: A Study of Hong Kong Learners. *The Modern Language Journal*, 87(2), 222–241. <https://doi.org/10.1111/1540-4781.00187>.

Gan, Z., Humphreys, G., & Hamp-Lyons, L. (2004). Understanding successful and unsuccessful EFL students in Chinese universities. *Modern Language Journal*, 88, 229–244.

Gu, P. Y. & Johnson, R. K. (1996). Vocabulary learning strategies and language learning outcomes. *Language Learning*, 46(4), 643–679.

Gu, P. Y. (2002). Gender, academic major and vocabulary learning strategies of Chinese EFL learners. *RELC Journal*, 33(1), 35–54.

Harris, V. (2003). Adapting classroom-based strategy instruction to a distance learning context. *TESL-Electronic Journal*, 7(2), 1–19.

Hashemi, Z., & Hadavi, M. (2015). Investigation of vocabulary learning strategies among EFL Iranian medical sciences students. *Procedia—Social and Behavioral Sciences*, 192, 629–637.

Hatch, E., & Brown, C. (1995). *Vocabulary, semantics, and language education*. Cambridge University Press.

Kamali, S., Mostapha, G., B. & Baki, R., B. (2012). The influence of formal language learning environment on vocabulary learning strategies. *Journal of Language Teaching and Research*, 3(1), 23–29.

Kayi-Aydar, H. (2018). Scaffolding vocabulary development. *The TESOL Encyclopedia of English Language Teaching*, 1–6. <https://doi.org/10.1002/9781118784235.eelt0733>.

Kojic-Sabo, I. & Lightbown, P. M. (1999). Students' approaches to vocabulary learning and their relationship to success. *Modern Language Journal*, 83, 176–192.

Liao, Y. F. (2004). A survey study of Taiwan EFL freshmen vocabulary learning strategies. *Journal of National Pin-Tung Normal College*, 21, 271–288.

Loucky, J. P. (2003). Enhancing the learning, teaching, and testing of new vocabulary by systematically using a depth of lexical processing scale and vocabulary learning strategies taxonomy. Retrieved from <http://ww7.tiki.ne.jp/~call4all/EnhanSys.htm>.

Mizumoto, A., & Takeuchi, O. (2009). Examining the effectiveness of explicit instruction of vocabulary learning strategies with Japanese EFL university students. *Language Teaching Research*, 13, 425–449.

McCarthy, M. J. (1990). *Vocabulary*. Oxford: Oxford University Press.

McCarthy, M. (2014). Some vocabulary patterns in conversation. In *Vocabulary and Language Teaching*. 181–200. Taylor and Francis.

Mutalib, A., Abdul Kadir, R., Robani, R., & Majid, F. (2014). Vocabulary learning strategies among Malaysian TEVT students in German-Malaysian Institute (GMI). *Procedia—Social and Behavioral Sciences*, 123, 361–368.

Nasir, N., Manan, N. & Azizan, N. (2017). Examining the relationship between vocabulary knowledge and general English language proficiency. *ESTEEM Journal of Social Sciences and Humanities*. 1. 15–22.

Nassaji, H. (2006). The relationship between depth of vocabulary knowledge and L2 learners' lexical inferencing strategy use and success. *Modern Language Journal*, 90(3), 387–401. <https://doi.org/10.1111/j.1540-4781.2006.00431.x>

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

Nation, I. S. P. (2005). Teaching vocabulary. *Asian EFL Journal*, 7(3), 1–9.

Naeimi, M., & Voon Foo, T. (2013). The study of direct vocabulary learning strategies in reading comprehension: the case of Iranian context. *Advances in English Linguistics*, 2, 95–98.