

The Role of Vocabulary Knowledge in L2 Speaking and Writing Abilities of Thai EFL Undergraduates

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ABSTRACT

Research has shown the essential role of vocabulary knowledge in achieving second language (L2) proficiency. This study investigates the nature of vocabulary knowledge and its role in L2 speaking and writing abilities. Five vocabulary knowledge tests were administered to 63 English major students who completed speaking and writing tasks to assess their productive language abilities. Speaking and writing tasks were rated by two trained, experienced raters. Results showed that vocabulary is incremental and multifaceted, with foundational knowledge acquired earlier and more thoroughly than the more complex aspects. This progression highlights the sequential nature of vocabulary learning, where basic recognition and understanding establish the foundation for deeper comprehension and active vocabulary use. Regression analyses confirmed that vocabulary is cumulative and integrative, with each layer of understanding enhancing language proficiency. Specifically, the form and meaning of vocabulary, measured by the VLT and WAT, account for 28.8% of the variance in L2 speaking ability, while depth of vocabulary knowledge, measured by the PVL and WAT, significantly predicted 71.2% of the variance in L2 writing performance. These results highlight the critical role of vocabulary knowledge in productive language skills and that different aspects of vocabulary knowledge contribute differently to language proficiency. Future research should focus on the need for targeted vocabulary assessments and instruction that align closely with the specific demands of language learning and proficiency development.

Keywords: Vocabulary knowledge; speaking ability; writing ability; L2 proficiency; vocabulary assessment

INTRODUCTION

The relationship between vocabulary knowledge and language proficiency, particularly in second language (L2) learners, has long been a focal point in English language teaching (ELT) research. Vocabulary is a foundational aspect of language learning that significantly influences overall language proficiency (Milton, 2013; Nation, 2022; Qian & Lin, 2019; Schmitt, 2010). Indeed, Wilkins (1972) stated that “Without grammar, very little can be conveyed; without vocabulary, nothing at all can be conveyed” (p. 111). Overall, mastery of vocabulary enables L2 learners to express themselves more accurately and fluently, making it a crucial focus area for both learners and educators.

Learners often recognise that limited vocabulary hinders their communication, and it is well-established that vocabulary is essential for L2 proficiency (Schmitt, 2008). Recent research has demonstrated a strong correlation between vocabulary size and overall language proficiency (Ha, 2021; Janebi Enayat & Derakhshan, 2021; Qin & Lin, 2020; Suzuki & Kormos, 2024; Uchihara & Clenton, 2020). The multidimensional nature of vocabulary knowledge has also been widely studied, encompassing both breadth (the number of words known) and depth (the richness of word knowledge). These dimensions are critical in determining a learner's proficiency in reading, listening, speaking and writing (Cheng & Matthews, 2018; Ha, 2021; Janebi Enayat & Derakhshan, 2021), indicating that vocabulary knowledge is foundational to effective language acquisition. However, despite the widely recognised role of vocabulary knowledge in determining L2 proficiency, few studies have explored how different dimensions of vocabulary knowledge predict both L2 speaking and writing in parallel. A better understanding of these vocabulary knowledge dimensions will shed light on their role in contributing to overall L2 language development.

A MULTIDIMENSIONAL CONSTRUCT OF VOCABULARY KNOWLEDGE

Vocabulary knowledge is a critical and multidimensional aspect of language mastery. Researchers (Nation, 2022; Schmitt, 2014) emphasise that knowing a word involves more than just understanding its meaning. It encompasses knowledge of its spelling, pronunciation, grammatical functions, and appropriate use in context. This multidimensional perspective highlights the essential role of vocabulary in language learning and effective communication.

Several frameworks have been used to conceptualise vocabulary knowledge. The partial-precise continuum describes vocabulary acquisition as a gradual process (Henriksen, 1999; Laufer, 1998), progressing from partial knowledge to complete mastery, including the ability to understand word associations and collocations. The breadth and depth framework distinguishes between breadth, or the number of words a learner knows, and depth, which refers to how well a learner knows each word, including its multiple meanings and related words (Schmitt, 2014). The receptive-productive dimension differentiates between receptive knowledge, which involves recognising words during reading and listening and productive knowledge, which consists of using words in speaking and writing.

Building on these frameworks, Nation's (2022) model provides a comprehensive view of three dimensions of vocabulary knowledge, including form, meaning, and use, and their hypothesised connections with productive language performance. Knowledge of form (e.g., spelling, pronunciation, and morphological relations) assists lexical access, particularly for speaking. Meaning, which encompasses polysemy and collocations, enables both semantic accuracy and fluency. Use refers to the ability to use words appropriately in grammatical and discourse contexts, which plays an essential role in writing. Each dimension is further divided into receptive (recognition) and productive (application) domains. In the form domain, learners must recognise and produce both the spoken and written versions of a word, including understanding its morphological components, such as prefixes and suffixes. In the meaning domain, learners need to understand the connection between a word's form, meaning, and associations with other words. The use domain requires learners to understand how words function grammatically, their common collocations, and the constraints on their use in various contexts. Nation (2022) also provides a well-adjusted framework for language learning through three interrelated strands: meaning-focused input, meaning-focused output, and language-focused learning. The meaning-focused

input involves learners understanding messages through listening and reading, while meaning-focused output involves learners producing meaningful language through speaking and writing. The language-focused learning strand includes explicit attention to linguistic features (e.g., grammar, vocabulary and pronunciation). In the context of this study, the framework is used as a theoretical foundation that connects vocabulary knowledge with productive language use. Specifically, the investigation of Thai EFL undergraduates' productive language performance is closely tied to the meaning-focused output strand. In contrast, the assessment of vocabulary aspects, including size and depth of knowledge, reflects the language-focused learning strand. Guided by Nation's (2022) model, this study positions vocabulary knowledge as both a foundation for and a product of communicative language use, which forms the study's purposes, research questions, and measurement tools.

Although Nation's model offers the most comprehensive explanation of vocabulary knowledge, it remains unclear how individual aspects of this knowledge contribute to language learning, particularly in productive skills: speaking and writing. Understanding the role of various dimensions, including form, meaning, and use, could reveal which elements are most critical for language mastery and how they influence communicative proficiency. By exploring how these dimensions interact, researchers can identify which aspects should be prioritised in vocabulary acquisition and instruction. This research can potentially enhance language teaching methods and ultimately improve learners' productive language abilities.

RESEARCH ON THE MULTIDIMENSIONAL CONSTRUCT OF VOCABULARY KNOWLEDGE

Extensive research has revealed a strong relationship between vocabulary knowledge and overall language proficiency, particularly among ESL and EFL learners. Vocabulary knowledge plays a significant role in speaking and writing abilities (Cheng & Matthews, 2018; Ha, 2021; Janebi Enayat & Derakhshan, 2021; Qin & Lin, 2020; Suzuki & Kormos, 2024; Uchiyara & Clenton, 2020). For example, Nontasee and Sukying (2023) explored Nation's comprehensive framework in a Thai EFL context and found that receptive vocabulary knowledge typically develops before productive knowledge, with a positive correlation between the two. The study further demonstrated that vocabulary is acquired along a developmental continuum, with some productive aspects mastered before the full acquisition of all receptive knowledge is achieved.

Vocabulary size is often considered a reliable indicator of overall proficiency, particularly in academic contexts such as IELTS (Stæhr, 2008). Sukying (2023) found that vocabulary depth plays a more significant role than size in predicting L2 writing performance, especially in argumentative writing tasks. It was shown that vocabulary size and depth correlated with writing performance among postgraduate EFL learners, although depth was a stronger predictor of lexical quality and diversity. Although these studies highlight the importance of vocabulary knowledge in productive language use, they are prone to focus on either a single productive skill or a specific dimension of vocabulary knowledge (e.g., form, meaning, and use) in both L2 speaking and writing, employing a parallel predictive design.

The relationship between vocabulary knowledge and productive skills, particularly speaking and writing, has been a focal point in recent research. Vocabulary use in speaking is closely linked to fluency and accuracy, with productive vocabulary knowledge being a significant predictor of speaking proficiency (Suzuki & Kormos, 2024; Uchiyara & Saito, 2019). Vocabulary

diversity and lexical depth are key predictors of writing quality, with some studies showing that vocabulary size accounts for up to 73% of the variance in writing accuracy (Stæhr, 2008). However, many learners struggle with deep word knowledge and its effective use, especially in writing, where lexical errors can undermine clarity and coherence (Llach, 2015).

Research has also shown the importance of vocabulary knowledge in L2 receptive skills, including reading comprehension (Cheng & Matthews, 2018; Stæhr, 2008) and listening (Cheng & Matthews, 2018; Matthews & Chen, 2015; Stæhr, 2008). Vocabulary knowledge is also a strong predictor of productive skills, such as speaking (Derakhshan & Janebi Enayat, 2020; Koizumi & In'nami, 2013; Suzuki & Kormos, 2024) and writing performance (Dabbagh & Janebi Enayat, 2019; Stæhr, 2008; Sukying, 2023). While these studies highlight the significant role vocabulary plays in developing both receptive and productive skills, most focus on either speaking or writing without exploring both skills together. Indeed, Schmitt (2014) noted that it remains an “interesting, but unexplored question” whether vocabulary knowledge equally predicts speaking and writing abilities (p. 939). Furthermore, few studies have investigated how distinct dimensions of vocabulary knowledge predict both L2 speaking and writing in parallel. This study addresses this gap by employing a parallel predictive design in an EFL context, which may shed light on the shared and distinct vocabulary demands of spoken and written language production.

Additionally, research has shown contrasting findings regarding the roles of vocabulary knowledge dimensions in predicting productive language abilities. While González-Fernández and Schmitt (2020) demonstrate that vocabulary size is a stronger predictor than depth in language production, especially in writing performance, Yanagisawa and Webb (2020) argue the opposite, emphasising the role of vocabulary depth in speaking performance. This difference may necessitate further research that investigates both vocabulary size and depth in parallel across multiple productive abilities. Moreover, different vocabulary tests measure distinct components of vocabulary knowledge (Read, 2020; Yanagisawa & Webb, 2020), underscoring the need for further empirical exploration of the multidimensional nature of vocabulary knowledge, particularly its impact on speaking and writing. Much of the existing research has focused on vocabulary size or depth in isolation, overlooking the interplay between these dimensions (Nation, 2022; Schmitt, 2014). Despite extensive research on the role of vocabulary in receptive skills, such as reading and listening, fewer studies have explored its influence on productive skills, like speaking and writing, making this a central area for further investigation.

More recent research has employed analytical methods to investigate how various aspects of vocabulary knowledge impact L2 language use. For example, Min and Sukying (2024) examined the role of six measured vocabulary components in productive academic word use and L2 writing ability among Chinese university EFL learners, highlighting the distinct roles of word knowledge elements in language use. Another study (Suzuki & Kormos, 2024) demonstrated that L2 proficiency moderates the predictive relationship between L1 and L2 speaking fluency, indicating that vocabulary-related fluency in speaking is influenced not only by lexical access but also by learners' overall language proficiency. It is also found that vocabulary instruction in EFL contexts, especially in Thailand, tends to focus on isolated word lists and definitions, as well as standardised test preparation, with insufficient attention to deeper vocabulary knowledge or contextual use. These challenges result in shallow vocabulary learning and impede learners' ability to use language effectively in actual communication. Accordingly, there is a need for further investigation into the role of different dimensions of vocabulary knowledge in productive language performance in the Thai EFL context. This study aims to address this gap by examining the

predictive role of multidimensional vocabulary knowledge in L2 speaking and writing among Thai university undergraduates.

The current study investigated the multidimensional construct of vocabulary knowledge by examining various aspects of Nation's (2022) word knowledge framework and its relationship to productive skills, including speaking and writing performance. The study employed a speaking task, a writing task, and five distinct measures of vocabulary knowledge: the Vocabulary Levels Test (VLT), the Word Part Levels Test (WPLT), the Word Associates Test (WAT), the Affix Knowledge Test (AKT), and the Productive Vocabulary Levels Test (PVLt). Each of these tests targets different dimensions of vocabulary knowledge, providing a comprehensive approach to understanding how these aspects contribute to productive language proficiency in L2 university learners. The following research questions guided the study in order to explore the contributive role of vocabulary knowledge in enhancing speaking and writing performance:

1. What is the hierarchical sequence of acquisition across the five measured dimensions of vocabulary knowledge in Thai university learners?
2. To what extent does vocabulary knowledge predict L2 speaking ability in Thai university learners?
3. To what extent does vocabulary knowledge predict L2 writing performance in Thai university learners?

METHODS

PARTICIPANTS

This correlational study was conducted at a government university in northeastern Thailand, focusing on undergraduate students majoring in English Education. These students, who study English as a foreign language (EFL) in a setting where English is rarely spoken outside classes, were chosen because they aspire to become English teachers, making English proficiency crucial for their careers. Invitations to participate were extended to all 65 students, with 63 ultimately completing all vocabulary tests and writing and speaking tasks. Recruitments were facilitated via program convenors, emails, and face-to-face interactions, and convenience sampling, which may limit the generalisability of the findings to broader EFL populations, was used as the researcher worked at the same university. However, this population provides valid and meaningful insights, as Thai EFL learners share common instructional, curricular, and sociolinguistic characteristics typical of many EFL settings. Therefore, the results contribute to understanding vocabulary knowledge and productive language use in similarly constrained input environments. Ethical compliance was also ensured through consent forms.

To ensure data reliability, participants who left answers blank or repeated five consecutive answers were excluded, resulting in a final sample of 63 students, comprising 21 males and 42 females, aged between 21 and 22 years. All participants were native Thai speakers without prior experience studying in an English-speaking country. They received an average of 12 hours of English instruction per week from experienced Thai lecturers and were enrolled in EFL classes for at least 12 years, from primary education to university studies. Despite access to English media, participants primarily used it for entertainment, limiting their English exposure mostly to classroom settings.

RESEARCH INSTRUMENTS

THE VOCABULARY LEVELS TEST (VLT)

The study adopted Webb, Sasao, and Ballace's (2017) version of the Vocabulary Levels Test (VLT) to assess the participants' receptive vocabulary knowledge, specifically the form-meaning links of words. The VLT consists of five frequency levels (1000, 2000, 3000, 4000, and 5000 most frequent word families) and focuses on critical word families for learners. The test features a matching format with ten 3-item clusters per level, providing a balanced mix of nouns, verbs, and adjectives. The test items are sourced from the British National Corpus (BNC) and the Corpus of Contemporary American English (COCA). Its table-like grid format improves clarity and usability, ensuring accurate assessments of learners' knowledge at specific frequency levels.

The VLT provides a comprehensive measure of receptive vocabulary, focusing on the form-meaning relationship. It also offers educators and researchers a reliable tool to assess vocabulary learning progress, as this test uses lexical items from relevant corpora and features an updated presentation format. The VLT emphasises word frequency levels rather than overall vocabulary size, making it a focused and dependable measure of language development. The participants were asked to check the correct item box for each definition instead of writing down the item number. One point is given for one correct answer, with a total score of 150. An example from the 1000-word level is illustrated below:

	date	forest	mistake	news	record	shop
latest information						
place with many trees						
something that is not right						

THE WORD ASSOCIATES TEST (WAT)

The Word Associates Test (WAT), developed by Read (1993), is a widely recognised tool for assessing depth. It evaluates learners' understanding of a word's multiple facets, such as synonyms (paradigmatic relationships), collocates (syntagmatic relationships), and connotations (analytic relationships). The WAT presents a target word with four related words and four distractors, allowing for a multidimensional assessment of lexical knowledge. For instance, for the word "bright," associated words might include "clever" and "shining" (synonyms), "happy" (analytic), and "colour" (collocate). The total score for the WAT is 160, based on four possible answers for each of the prompt words. Although relatively dated, the WAT remains a valuable tool for tapping various aspects of lexical knowledge, offering a detailed picture of learners' vocabulary depth.

THE WORD PART LEVELS TEST (WPLT)

The Word Part Levels Test (WPLT) assesses three aspects of receptive affix knowledge: form, meaning, and use (Sasao & Webb, 2017). The test covers 244 items, including 118 affixes, divided into three difficulty levels. Each correct answer is awarded one point, resulting in a maximum possible score of 244. The WPLT uses a multiple-choice format to evaluate learners' understanding of affix forms, meanings, and grammatical functions. For example, the form section assesses affix recognition by presenting plausible letter combinations. In contrast, the meaning section provides two example words for each affix, asking test-takers to choose the correct

meaning. The use section requires test-takers to identify the grammatical function of affixes. The WPLT provides a detailed measure of affix knowledge, making it a valuable tool for assessing students' ability to recognise and understand English affixes.

THE AFFIX KNOWLEDGE TEST (AKT)

The Affix Knowledge Test (AKT), developed by Sukying (2018), measures learners' productive knowledge of English words and their derivatives. The test includes two tasks: (1) completing sentences with the correct word form and (2) identifying and completing missing word classes. For example, participants must provide the correct word forms in the sentence "The taxi driver was unfamiliar with my suburb, so he used a car navigator" (prompt word: familiar). Participants are then asked to identify the missing word form as an adjective (unfamiliar) and complete all derivative forms across grammatical categories: noun, verb, adjective and adverb. If a particular grammatical category does not exist, participants may mark a cross (X) in the blank space. One point is awarded for each correct answer, with a maximum of six points for each target word. With 40 target words, the total maximum score for the AKT is 240. It assesses learners' ability to use word derivatives in context, offering insights into their productive vocabulary knowledge. Scoring focuses on correct word forms, with penalties for incorrect answers to discourage guessing, ensuring the accuracy and reliability of the test.

THE PRODUCTIVE VOCABULARY LEVELS TEST (PVLТ)

The Productive Vocabulary Levels Test (PVLТ), developed by Laufer and Nation (1995), assesses learners' ability to recall and use words from different frequency levels. The test features a gap-filling format, where learners complete sentences with missing words. For example, in the sentence, "He takes cr_____ and sugar in his coffee," the target word is "cream." The PVLТ includes four frequency word bands (2000, 3000, 5000, and 10,000) containing 18 items, with a maximum score of 72. This is a reliable measure of vocabulary depth, focusing on the learners' ability to use words in meaningful contexts. Its gap-filling format encourages genuine vocabulary use and minimises guesswork, ensuring the test's reliability and validity.

IELTS SPEAKING TEST

The IELTS Speaking Test was used to assess participants' oral proficiency. This test consists of three parts: (1) an introduction and interview, (2) a long turn where the test-taker speaks on a given topic, and (3) a discussion based on the topic from Part 2. Each section tests different aspects of speaking, from conversational skills to more complex argumentative language use. The structured format of the IELTS ensures a comprehensive evaluation of speaking proficiency. To ensure topic familiarity, the task was piloted with 10 Thai EFL undergraduates who shared similar qualifications with the participants in the main study. Based on their feedback, adjustments were made to ensure that the IELTS speaking task was appropriate and reflective of real-world academic contexts. This process ensures the content validity of the task, which assesses test-takers' ability to communicate in various contexts, thereby ensuring reliability and validity.

IELTS WRITING TASK

The IELTS Writing Task 2 was used to assess participants' writing proficiency. Participants were required to write a short essay of at least 250 words in response to a prompt. This task evaluates the ability to present a logical argument, support points with evidence and demonstrate clear, coherent writing. The writing task was chosen to align with participants' English proficiency. To ensure topic familiarity and relevance, the writing task was piloted with 10 Thai EFL undergraduates who had similar backgrounds to those of the participants in the main study. The study uses standardised evaluation criteria, including coherence, cohesion, and language accuracy, making it a reliable tool for assessing writing skills. The rigorous training and certification of raters further ensure the reliability of the test, providing an accurate measure of participants' writing proficiency.

PROCEDURES

Participants were first informed about the research objectives and procedures. The vocabulary knowledge tests, distributed in paper-based formats, were administered onsite over two days. The PVLТ and the WAT were conducted on the first day, with the PVLТ administered first, followed by the WAT. On the second day, the AKT, WLPT, and VLT were administered in that order. The order of the tests was designed to avoid overlap between different aspects of vocabulary knowledge, primarily to minimise the opportunity for participants to draw a connection between written lexical forms appearing on the productive vocabulary measures. Each test was allotted 60 minutes, with a 10-minute break to prevent fatigue. Instructions and examples were given and explained in the participants' native Thai language to ensure clarity and avoid any misunderstanding that could arise from limited English proficiency.

One week later, the participants completed a 60-minute argumentative writing task. The following day, speaking tasks were conducted. A one-week gap was introduced between vocabulary tests and productive tasks to avoid test-retest effects and minimise participant fatigue. The interval allowed for an independent assessment of how established vocabulary knowledge supports language production. While this decreases practice effects, it is acknowledged that the time gap may introduce potential gains in language exposure due to uncontrolled English language activities. Two experienced PhD students in the English Language Teaching (ELT) Program were trained to proctor the vocabulary tests, while two university professors, certified IELTS examiners with advanced English proficiency, rated the speaking and writing tasks. These raters, native Thai speakers with C2-level certification on the Common European Framework of Reference (CEFR) and an IELTS score of 8.0, attended two workshops to ensure consistency in assessing speaking and writing performance. More specifically, before scoring the full set of speaking and writing samples, a total of 10 speaking recordings and 10 essays were randomly selected and used for rater calibration. This approach to test administration and assessment ensured the reliability and validity of the study's findings, as well as an accurate reflection of the participants' abilities.

DATA ANALYSIS

Descriptive statistics were calculated for participants' performance on the five vocabulary tests, including means, standard deviations, minimum and maximum scores, skewness, and kurtosis. Inferential statistics, including an independent-samples *t*-test and stepwise multiple regression, were also applied to determine the predictive relationship between vocabulary knowledge and L2

speaking and writing abilities. The stepwise multiple regression was employed because it is regarded as appropriate for identifying the most predictive vocabulary knowledge variables, especially when theoretical guidance on relative contributions is limited. Before the data analysis, all key assumptions were tested. Tolerance for the vocabulary knowledge predictors was 0.606 (VLT), 0.630 (PVLT), 0.682 (WAT), 0.628 (WPLT), and 0.538 (AKT), and the VIF values are 1.651 (VLT), 1.588 (PVLT), 1.467 (WAT), 1.592 (WPLT), and 1.859 (AKT). These findings suggest that multicollinearity was not a significant issue. Furthermore, the visual examination of residual plots and normal probability plots indicated that the normality of residuals and homoscedasticity assumptions were met, which strengthens the justification for regression analysis. Moreover, a sensitivity analysis using G*Power was conducted to determine a minimum effect size of $f^2 = 0.15$ ($N = 63$) for multiple regression with five predictors, indicating a medium effect size (Cohen, 1988). R^2 values and associated statistics confirmed the statistical significance of the regression models, ensuring a reliable interpretation of the data.

L2 speaking tasks were assessed by two experienced university lecturers using IELTS speaking band descriptors. After a calibration session to align their assessments, the raters independently assessed anonymised tasks to minimise bias. A Pearson correlation analysis revealed a strong inter-rater reliability of .86 ($p < .001$). Similarly, the L2 writing tasks were evaluated using IELTS writing task 2 band descriptors. These raters underwent training, assessed anonymised essays, and demonstrated high inter-rater reliability of .89 ($p < .001$), confirming the validity and reliability of the writing task evaluation.

RESULTS

Table 1 presents the descriptive statistics for Thai university students' performance on various vocabulary knowledge tests (VLT, WPLT, WAT, AKT, PVLT) and productive skill tasks, including speaking and writing. The data reveal that the students exhibit varying proficiency levels across these tests, reflecting an incremental acquisition of vocabulary knowledge. Notably, the highest average performance was observed on the VLT, with an average score of 77.81% ($SD = 10.73$). This was followed by the WPLT with a mean score of 74.90% ($SD = 9.53$), the WAT with 55.87% ($SD = 11.41$), and the AKT with 52.65% ($SD = 11.97$). The lowest average performance was recorded on the PVLT, with a mean score of 41.38% ($SD = 16.53$). The combined average vocabulary knowledge performance across all tests was 60.97% ($SD = 16.53$). These results indicate that Thai university students possess incomplete vocabulary knowledge, with different aspects of vocabulary being acquired at various stages.

TABLE 1. Descriptive statistics for vocabulary tests and L2 speaking and writing tasks

Test	Total maximum scores	Mean (Scores)	Mean (%)	SD
VLT	150	116.71	77.81	10.73
WPLT	244	182.75	74.90	9.53
WAT	160	89.40	55.87	11.41
AKT	240	126.35	52.65	11.97
PVLT	72	120.60	41.38	16.53
Combined vocabulary	866	527.96	60.97	7.00
Speaking	9	5.63	62.52	8.46
Writing	9	5.58	47.33	13.16

Note: $N = 63$

Table 1 also displays the performance of Thai university students on productive language tasks, specifically speaking and writing. The analysis revealed a mean performance score of 62.52% (SD = 8.46) on speaking tasks and a mean score of 47.33% (SD = 13.16) on writing tasks. These findings indicate that the students possess an intermediate level of language proficiency, corresponding to a B1 level on the CEFR scale. This suggests that the students are modest and independent language users capable of managing their everyday communication needs.

A one-way ANOVA was performed to evaluate whether there were significant differences among the means of five vocabulary knowledge tests: PVLТ, WAT, AKT, WPLT, and VLT. The results indicated a significant variance among these tests, demonstrating a notable effect ($F(4, 310) = 24.193, p < .001$). To further explore these differences, Post Hoc comparisons were conducted using Tukey's HSD test. The comparisons revealed significant differences between the PVLТ and the other four vocabulary tests (WAT, WPLT, AKT, and VLT). Additionally, significant differences were observed between the WAT and both the WPLT and VLT, as well as between the WPLT and AKT and between the VLT and AKT. These findings, detailed in Table 2, suggest that Thai university students acquire different dimensions of vocabulary knowledge at varying stages.

TABLE 2. Multiple comparisons of vocabulary knowledge test scores

Test	Test	Mean difference	Std. Error	Sig.
PVLТ	WAT	-14.49*	2.186	.000
	WPLT	-33.52*	2.186	.000
	VLT	-36.43*	2.186	.000
	AKT	-11.27*	2.186	.000
WAT	WPLT	-19.02*	2.186	.000
	VLT	-21.94*	2.186	.000
WPLT	AKT	22.25*	2.186	.000
VLT	AKT	25.16*	2.186	.000

Note: $N = 63$

As illustrated in Table 3, the findings reveal significant correlations between vocabulary knowledge tests and vocabulary knowledge, as well as speaking and writing skills, among Thai university participants. The results indicate a positive linear relationship between various vocabulary tests, corroborating the findings of previous studies (Nontasee & Sukying, 2023; Sukying, 2023). Specifically, significant correlations were observed between the PVLТ and WAT ($r = .52, p < .01$), indicating a moderate positive relationship. The AKT showed significant correlations with the WPLT ($r = .53, p < .01$) and VLT ($r = .55, p < .01$), suggesting that these tests measure similar aspects of vocabulary knowledge. The WPLT and VLT were also significantly correlated ($r = .44, p < .01$), further supporting the interrelatedness of these vocabulary assessments. The composite measure of overall vocabulary knowledge demonstrated strong correlations with individual tests, notably with the AKT ($r = .83, p < .01$), WPLT ($r = .67, p < .01$), and VLT ($r = .78, p < .01$). This highlights the comprehensive nature of the vocabulary knowledge assessment.

Speaking performance also showed significant correlations with the WAT ($r = .33, p < .05$), AKT ($r = .30, p < .05$), WPLT ($r = .32, p < .05$), and VLT ($r = .47, p < .01$). This indicates that better vocabulary knowledge is associated with improved speaking abilities. Similarly, writing performance was strongly correlated with the PVLТ ($r = .82, p < .01$), WAT ($r = .60, p < .01$), and AKT ($r = .47, p < .01$), indicating that vocabulary knowledge significantly correlates with productive language skills.

TABLE 3. Correlations between vocabulary test scores and L2 speaking and writing performance

Tests	1	2	3	4	5	6	7	8
PVLT (1)	1							
WAT (2)	.52**	1						
AKT (3)	-.04	.07	1					
WPLT (4)	.25	.22	.53**	1				
VLT (5)	.19	.01	.55**	.44**	1			
Vocabulary (6)	.25*	.41**	.83**	.67**	.78**	1		
Speaking (7)	.24	.33*	.30*	.32*	.47**	.51**	1	
Writing (8)	.82**	.60**	.47**	.23	.19	.36**	.37**	1

Notes: ** $p < 0.01$ (2-tailed), * $p < 0.05$ (2-tailed),

Stepwise multiple regression was also conducted to determine the role of individual aspects of vocabulary knowledge in the L2 speaking ability of Thai university students, as predicted by various vocabulary knowledge tests. As shown in Table 4, the overall stepwise regression provides a meaningful explanatory model ($R^2 = .177$, $F(1,61) = 13.162$, $p < .001$), demonstrating that 17.7% of the variance in L2 speaking performance is explained by VLT performance. The VLT significantly contributes to L2 speaking ability, with a standardised regression coefficient (β) of .42 ($p < .001$). The relative effect size for the predictor on speaking performance, denoted as sr^2 , is .421 ($p < .001$), indicating that the VLT has a more significant impact on L2 speaking performance than other vocabulary tests. The unstandardised regression coefficient or slope (B) for the VLT was .332 ($t = 3.628$, $p < .001$), meaning that for each percentage increase in VLT performance, there is an average 0.332 percentage increase in speaking performance, holding other variables constant. For example, if a Thai university participant improves their VLT score by 10%, their L2 speaking performance is expected to increase by approximately 3.32%. The confidence intervals indicate 95% confidence that the VLT regression coefficient lies between 0.15 and 0.52.

Model 2 incorporated both the Vocabulary Levels Test (VLT) and the Word Associates Test (WAT), indicating that the model significantly improves the explanatory power of the regression model ($R^2 = .288$, $F(2,60) = 12.130$, $p < .001$). With the addition of the WAT, the variance explained increased to 28.8%, indicating that these two tests better predict L2 speaking ability than the VLT alone. In Model 2, the VLT remained a significant predictor ($B = .332$, $t = 3.861$, $p < .001$), with a 95% confidence interval of 0.16 to 0.50. This suggests that for each unit increase in VLT performance, L2 speaking performance increases by 0.332 percentage points, and there is a 95% chance that the actual value of this increase lies between 0.16 and 0.50 percentage points. The WAT also emerged as a significant predictor ($B = .247$, $t = 3.050$, $p = .003$), with a 95% confidence interval of 0.09 to 0.41. This indicates that each unit increase in WAT performance leads to a 0.247 percentage point increase in L2 speaking performance, with a 95% confidence that this effect is between 0.09 and 0.41 percentage points.

These findings underscore the significance of VLT and WAT in predicting second language (L2) speaking proficiency. The VLT, with a relative effect size (sr^2) of .421, had a more substantial impact on L2 speaking ability than the WAT ($sr^2 = .366$). This suggests that improvements in vocabulary knowledge, as measured by the VLT, are more strongly associated with gains in L2 speaking performance than those measured by the WAT. The significant contributions of both tests indicate that they assess different yet complementary aspects of vocabulary knowledge that are crucial for speaking proficiency.

TABLE 4. Regression analysis of vocabulary knowledge explaining L2 speaking performance

Variable	B	Std. error	β	<i>t</i>	Sig.	<i>sr</i> ²	<i>R</i> ²	Adjusted <i>R</i> ²
Model 1								
Constant	36.664	7.194		5.097	.000		.177	.164
VLT	.332	.092	.421	3.628	.001	.421		
Model 2								
Constant	22.932	8.113		2.827	.006		.288	.264
VLT	.332	.086	.421	3.861	.000	.446		
WAT	.247	.081	.332	3.050	.003	.366		

Notes: $F(1,61) = 13.162, p < .001$ for Model 1, SEE = 7.74; $F(2,60) = 12.130, p < .001$ for Model 2, SEE = 7.26

The stepwise multiple regression analyses presented in Table 5 were also conducted to determine the predictive role of vocabulary knowledge in L2 writing performance among Thai university participants. Model 1 reveals that the Productive Vocabulary Levels Test (PVL) robustly predicts L2 writing performance. The constant 20.298 represents the baseline writing score when the PVL score is zero, indicating the foundational writing ability of participants, regardless of their productive vocabulary knowledge. The coefficient of 0.653 signifies that for every unit increase in PVL score, the writing performance is predicted to increase by 0.653 percentage points. This model is highly significant ($F(1,61) = 125.867, p < .001$) and explains 67.4% ($R^2 = .674$) of the variance in writing performance. The high standardised regression coefficient ($\beta = .821$) highlights the strong positive relationship between productive vocabulary knowledge and writing proficiency, indicating that participants with higher productive vocabulary scores tend to perform better in writing tasks.

Model 2 expands on the first by including both PVL and the Word Associates Test (WAT) as predictors. In this model, the constant value of 9.388 represents the baseline writing performance when both PVL and WAT scores are zero. The coefficient for PVL (0.558) indicates that each unit increase in PVL score contributes to a 0.558 percentage point increase in writing performance. In contrast, the coefficient for WAT (0.266) indicates that a one-unit increase in WAT score corresponds to a 0.266 percentage point increase in writing performance. This model is also highly significant ($F(2,60) = 74.299, p < .001$) and explains 71.2% ($R^2 = .712$) of the variance in L2 writing performance. The standardised regression coefficients for PVL ($\beta = .701$) and WAT ($\beta = .231$) highlight that while PVL remains the stronger predictor, WAT also significantly explains the variation in writing performance. This finding emphasises the productive word recall in language instruction.

TABLE 5. Regression analysis of vocabulary knowledge explaining L2 writing performance

Variable	B	Std. error	β	<i>t</i>	Sig.	<i>sr</i> ²	<i>R</i> ²	Adjusted <i>R</i> ²
Model 1								
Constant	20.298	2.592		7.831	.000		.674	.668
PVL	.653	.058	.821	11.219	.000	.821		
Model 2								
Constant	9.388	4.552		2.062	.044		.712	.703
PVL	.558	.065	.701	8.646	.000	.745		
WAT	.266	.093	.231	2.845	.006	.345		

Notes: $F(1,61) = 125.867, p < .001$ for Model 1, SEE = 7.58; $F(2,60) = 74.299, p < .001$ for Model 2, SEE = 7.17

DISCUSSION

THE HIERARCHICAL SEQUENCE OF ACQUISITION OF VOCABULARY LEARNING IN THAI EFL LEARNERS

This study aimed to explore the nature of vocabulary knowledge acquisition among Thai EFL learners at the tertiary level. The findings offer valuable insights into the vocabulary knowledge and language proficiency of Thai university students. The results reveal a distinction in vocabulary acquisition among Thai university students, characterised by varying proficiency levels across different vocabulary knowledge tests. This variation reflects the incremental nature of vocabulary acquisition, where foundational knowledge is progressively built upon over time. The analysis showed the following average performances across five vocabulary knowledge tests: Vocabulary Levels Test (VLT), Word Part Levels Test (WPLT), Word Associates Test (WAT), Affix Knowledge Test (AKT), and Productive Vocabulary Levels Test (PVLt). This indicates that students have the highest proficiency in the VLT, followed by the WPLT, with the lowest proficiency in the PVLt. This pattern suggests that students acquire different aspects of vocabulary knowledge at different stages, with foundational aspects (measured by the VLT and WPLT) being acquired earlier and more completely than more complex and productive aspects (measured by the PVLt).

The observed acquisition aligns with previous claims that vocabulary acquisition is a progressive process. Foundational knowledge, such as recognising and understanding primary word forms and meanings, is typically acquired first (Nation, 2022; Nontasee & Sukying, 2023; Schmitt, 2010). As learners' exposure and experience with the language increase, they gradually acquire more complex aspects of vocabulary, including word associations and productive use of vocabulary.

Initially, the foundational knowledge involves recognising and understanding high-frequency words and their meanings, as measured by the Vocabulary Levels Test (VLT) and Word Part Levels Test (WPLT). This is followed by associative knowledge, which entails understanding the relationships between words and their appropriate use in context, assessed through the Word Associates Test (WAT). Affix knowledge, measured by the Affix Knowledge Test (AKT), involves the ability to understand and apply prefixes and suffixes to form new words. Finally, productive knowledge, as measured by the Productive Vocabulary Levels Test (PVLt), requires the ability to accurately and fluently use vocabulary in both speaking and writing. The relative difficulty of these tests is linked to the specific cognitive demands they place on learners. The VLT focuses on word recognition, which is typically considered more accessible because it involves matching words to definitions or synonyms with minimal cognitive processing (Nation, 2022; Schmitt, 2014). Yet, the WAT is more challenging, as it requires a deeper comprehension of complex word relationships, such as synonyms, antonyms, and collocations, which involves higher-level semantic knowledge (Read, 2020; Schmitt, 2010). The PVLt, the most demanding of the three, assesses productive vocabulary knowledge by requiring learners to actively recall and produce words in appropriate forms and contexts, making it a more cognitively demanding task. This progression, from recognition to deep semantic analysis and finally to active word production, reflects the increasing cognitive challenges each test imposes. The form-meaning connection of a word is a foundational component of vocabulary knowledge, and understanding lexical networks and semantic relationships can further develop this foundational knowledge, enhancing a learner's overall vocabulary proficiency.

The relative ease of the Word Part Levels Test (WPLT) compared to the Affix Knowledge Test (AKT) can be attributed to the different cognitive and linguistic demands each test imposes. The WPLT primarily focuses on recognising and understanding word parts, such as roots, prefixes, and suffixes, often through tasks that involve matching or combining these components to form complete words. Since the WPLT relies heavily on recognition and recall, it is generally less cognitively demanding than tasks that require active word production. Additionally, the WPLT provides more contextual clues, allowing learners to deduce the meanings of unfamiliar words by recognising familiar components. This context helps reduce the cognitive load on learners and makes the test relatively easier (Nation, 2021; Sukying, 2022).

On the other hand, the AKT requires a deeper understanding of affixes, their functions, and their effects on word meanings and grammatical structures. Learners must not only recognise affixes but also comprehend and apply them correctly in various contexts, considering both forms and meanings. This demands more advanced linguistic analysis and active recall, making the AKT more challenging due to the need for a more thorough understanding of word formation and affix application in diverse linguistic contexts (Sukying, 2018, 2022). For instance, the prompt “If we cannot believe that something is true, it is _____ (believe)” requires learners to apply the affix “un-” to correctly form the word *unbelievable*. This example highlights the more profound knowledge of affixation needed for the AKT, as learners must identify and apply the appropriate affix to create a word that fits the given context. In brief, the WPLT is easier due to its reliance on recognition and contextual support, whereas the AKT is more complex because it requires the active application of affix knowledge in varied contexts.

Altogether, the current study supports previous studies that vocabulary knowledge entails the incremental and multifaceted process of vocabulary acquisition (González-Fernández, & Schmitt, 2020; Min & Sukying, 2024; Nontasee & Sukying, 2023; Schmitt, 2014). Specifically, the study suggests that foundational vocabulary knowledge, as measured by the VLT and WPLT, is acquired earlier and more thoroughly than the more complex aspects of vocabulary knowledge assessed by the WAT, AKT, and PVL. This highlights the progressive nature of vocabulary learning, where basic recognition and understanding form the foundation for deeper comprehension and active vocabulary use.

The results of this study also indicate the distinction between the WPLT and AKT scores, although they both assess morphological knowledge. The different scores of these two assessment instruments could be attributed to cognitive processing demands. The WPLT captures students’ recognition of word parts, requiring them to identify the form, meaning, or grammatical functions of affixes within given items. However, the AKT requires active manipulation, prompting students to produce derived forms across syntactic categories (nouns, verbs, adjectives, adverbs). Such differences represent a continuum from receptive affix knowledge to productive affix manipulation. Pedagogically, this highlights the importance of progressing from affix recognition activities to tasks in which students are required to manipulate and use derivational forms in actual contexts, i.e., writing or speaking. Integrating both recognition and manipulation is likely to be more efficient in facilitating students’ realisation of morphologically complex vocabulary and then leveraging it with accuracy and flexibility in productive language use.

The significant relationships between various aspects of vocabulary knowledge provide strong evidence of the interconnected nature of vocabulary acquisition. These findings demonstrate how different dimensions of word knowledge reinforce and build upon one another. For instance, knowing the form and meaning of a word (as measured by the VLT and WPLT) forms a foundation for comprehending its associations and collocations (as measured by the

WAT). This deeper understanding supports the ability to use the word productively in context (measured by the PVLТ). Therefore, the present study argues that vocabulary knowledge is cumulative and integrative, with each layer of understanding enhancing overall language proficiency. The findings of this study also imply that instruction should scaffold vocabulary use from form recognition toward productive deployment, especially in writing-focused curricula. However, learners' performance on the vocabulary tests alone may not fully reflect underlying cognitive acquisition processes. Vocabulary development is a gradual, context-dependent process influenced by factors such as exposure, use, and interaction over time, which cannot be observed through this cross-sectional test data. Future studies should adopt longitudinal designs that track vocabulary use and development across extended periods, as well as productive language tasks.

The significant correlations between vocabulary knowledge and productive language skills (speaking and writing) highlight the critical role of a strong vocabulary foundation in articulating thoughts clearly and precisely in both speaking and writing. The present findings reflect the multifaceted and complex nature of vocabulary knowledge, which includes recognition, understanding, and productive use in various contexts. Vocabulary is not a singular construct; it involves knowledge of word forms, meanings, and use, measured by different vocabulary tests that capture overlapping but distinct aspects of word knowledge (Nation, 2022; Schmitt, 2014; Webb & Nation, 2017). The incremental nature of vocabulary acquisition also plays a key role in these findings. Vocabulary learning is a gradual process of acquiring basic word forms and meanings. As learners progress, they develop a deeper understanding of word relationships and associations. The most advanced stage of vocabulary acquisition is productive use, where learners actively recall and use words in appropriate contexts (Laufer, 2024; Webb & Nation, 2017).

THE ROLE OF VOCABULARY KNOWLEDGE IN L2 SPEAKING ABILITY IN THAI UNIVERSITY LEARNERS

The stepwise multiple regression analyses highlight the significant but varied impact of different vocabulary knowledge tests on L2 speaking ability among Thai university students. The VLT alone explained 17.7% of the variance in speaking performance, with a 10% increase in VLT score correlating to an approximately 3.32% increase in speaking performance. When combined with the Word Associates Test (WAT), the explanatory power increased to 28.8%, indicating that these tests together provide a better prediction of L2 speaking ability than the VLT alone. These findings underscore that while vocabulary knowledge, mainly measured by the VLT and WAT, is crucial for L2 speaking proficiency, not all vocabulary tests contribute equally. The differential contributions of the VLT, WAT, WPLT, AKT, and PVLТ can be attributed to the specific aspects of vocabulary knowledge they measure. The VLT focuses on basic word recognition and definition matching, which forms a foundation for language use. The WAT, however, requires a deeper understanding of word relationships, which is essential for nuanced communication.

The WPLT, AKT, and PVLТ assess more specific or advanced aspects of vocabulary knowledge, such as word parts, affixes, and productive use, respectively. These aspects, while necessary, may not be as directly influential on speaking ability as the more foundational and relational knowledge assessed by the VLT and WAT. Instead, the PVLТ's focus on productive vocabulary knowledge, involving active recall and word production, is more challenging and may not immediately impact speaking ability compared to the recognition and relational understanding tested by the VLT and WAT. Another possible explanation is that the speaking tasks may not have stimulated the use of words with sufficient complexity or academic vocabulary, thereby limiting the use of derivations or advanced lexical items as measured by these tests. Likewise, the PVLТ,

with its controlled format, is not designed to capture productive vocabulary recall in context, such as the spontaneous, real-time lexical demands of speech production. These results suggest a potential discrepancy between test constructs and task requirements, highlighting the need for more ecologically valid measures of vocabulary use in future studies. Moreover, while the study focused on the predictive role of vocabulary knowledge in L2 speaking ability, other related variables, such as task-topic familiarity, general English proficiency, and participants' L1 transfer, may influence learners' speaking performance. Notably, task-topic familiarity can influence content creation and fluency in speaking, while general language proficiency may mediate access to lexical and grammatical resources. These uncontrolled variables in this study may be competing predictors of variance in participants' speaking performance. Future studies should consider including these variables.

In summary, the predictive role and contribution of vocabulary knowledge to L2 speaking skills among EFL learners are not equal because different vocabulary tests measure different facets of lexical knowledge. The VLT and WAT have more direct and significant impacts due to their focus on foundational and relational vocabulary knowledge, which are more readily applicable to speaking tasks. This highlights the need for a balanced vocabulary instruction approach that addresses fundamental and advanced aspects to enhance language proficiency.

THE ROLE OF VOCABULARY KNOWLEDGE IN L2 WRITING PERFORMANCE IN THAI UNIVERSITY LEARNERS

This study aimed to reveal the predictive role of vocabulary knowledge in enhancing L2 writing ability among university learners. The Productive Vocabulary Levels Test (PVLTV) emerged as a significant predictor of L2 writing performance, explaining 67.4% of the variance. This means that for each unit increase in PVLTV score, there is a predicted 0.653 percentage point increase in writing performance. The strong predictive power of the PVLTV emphasises the critical role of productive vocabulary knowledge in enhancing L2 writing ability. This finding aligns with earlier research (Nation, 2022; Schmitt & Schmitt, 2020; Sukying, 2023).

When the Word Associates Test (WAT) was added to the regression model, the explanatory power of the model increased, with the combined predictors (PVLTV and WAT) explaining 71.2% of the variance in writing performance. This additional explanatory power demonstrates the significant contribution of the WAT to writing performance. While the PVLTV remains the stronger predictor, the inclusion of the WAT adds a valuable dimension to the model. The increased variance from 67.4% to 71.2% when the WAT is included highlights the importance of word associations in writing proficiency. The WAT measures learners' ability to understand and use word relationships and contexts, which are crucial for effective written communication. This suggests that students who can make connections between words and appreciate their contextual meanings are better equipped to produce coherent and contextually appropriate written texts.

The significant contribution of the PVLTV and the WAT underscores the multifaceted nature of vocabulary knowledge and its impact on writing skills. Productive vocabulary knowledge, as measured by the PVLTV, is essential for generating written content. In contrast, the ability to understand and use word associations, as measured by the WAT, enhances the quality and coherence of writing (Read, 2020). The disparity in the predictive power of the different vocabulary knowledge tests for L2 writing skills can be attributed to the specific aspects of vocabulary knowledge each test measures. The PVLTV and WAT were statistically significant predictors of writing performance, while the VLT, WPLT, and AKT were not.

The PVLTL measures productive vocabulary knowledge, directly assessing learners' ability to recall and use words in appropriate contexts. This ability is crucial for writing, where generating and using a diverse range of vocabulary accurately and fluently is essential. The high predictive power of the PVLTL, explaining 67.4% of the variance in writing performance, underscores its relevance. This test's focus on active vocabulary production aligns closely with the requirements of effective writing, making it a strong predictor of writing ability (Nation, 2022; Webb & Nation, 2017).

The WAT measures the ability to understand and use word associations, which is essential for creating coherent and contextually appropriate texts. Understanding how words relate to each other and using them effectively within different contexts enhances the quality of writing. The addition of the WAT to the regression model increased the explained variance in writing performance to 71.2%, highlighting its significant complementary role alongside the PVLTL (Schmitt & Schmitt, 2020; Sukying, 2023). In contrast, the VLT, WPLT, and AKT focus on different aspects of vocabulary knowledge that may not directly translate into writing proficiency. The VLT primarily assesses receptive vocabulary knowledge, which involves recognising and understanding words rather than producing them. While this is foundational, it does not directly measure the ability to use vocabulary in writing. Similarly, the WPLT focuses on understanding word parts, such as prefixes and suffixes, which are more relevant to reading and comprehension than writing. The AKT evaluates knowledge of affixes and derivational morphology, which, although necessary, may not capture the full scope of vocabulary use required for proficient writing (Laufer, 2024; Sukying, 2022).

The under-predicted predictive productive L2 skills could be explained by Nation's (2022) form-meaning-use triad. Specifically, the AKT used in this study assesses Thai learners' recognition of word forms and partial meanings through morphological patterns. Still, it provided only limited insight into their use, particularly their ability to apply affixed words accurately and appropriately in writing tasks. While the AKT required the identification of derivational forms across syntactic categories, it did not measure whether learners could use these forms accurately in productive L2 tasks. This finding may explain its lower predictive power for productive L2 performance. Additionally, in the Thai EFL context, where explicit instruction on affixed words is limited, and English affixation patterns are rarely practised in authentic use, learners may recognise affixed forms without having procedural control over their deployment in context. This disconnect between receptive affix knowledge and productive lexical use underscores the importance of incorporating more comprehensive 'use' measures into future assessments to more accurately capture learners' ability to integrate affixed words into productive language use.

The lack of significant predictive power from the VLT, WPLT, and AKT suggests that these tests measure aspects of vocabulary knowledge that are less directly applicable to writing tasks. These tests may primarily measure recognition and controlled knowledge rather than productive or contextual use of vocabulary in writing. Therefore, learners may perform well on these measured tests without being able to effectively integrate those words into grammatically accurate, contextually appropriate, and stylistically coherent writing. Furthermore, participants' L1 transfer effects may influence L2 writing in ways that these measured tests do not capture. In this regard, Thai is an analytic language with minimal inflectional morphology, lacking the rich derivative forms or patterns in English. Consequently, Thai learners may struggle with producing the grammatical forms (i.e., changing a base word into an appropriate derivative form, such as a noun, an adjective, or an adverb, in context). However, they can recognise these forms on a gap-filling task. Moreover, direct L1-L2 translation strategies may lead to unnatural lexical

combinations or misuse of derivational forms, which are more apparent in productive writing tasks than in receptive vocabulary tests. In brief, L1 transfer may influence participants' lexical choices and syntactic structures in L2 writing. In this regard, writing requires a broad vocabulary and the ability to use words flexibly and appropriately within various contexts, skills that the PVL and WAT assess more effectively. This finding aligns with recent research emphasising the need for vocabulary assessments that capture the productive and associative aspects of vocabulary knowledge, which are critical for writing proficiency (Read, 2020; Schmitt & Schmitt, 2020).

The predictive role and contribution of different vocabulary knowledge tests to L2 writing skills are influenced by the specific aspects of vocabulary each test measures. The PVL and WAT are significant predictors of writing performance due to their focus on productive use and word associations. At the same time, the VLT, WPL, and AKT are less predictive because they assess aspects of vocabulary knowledge that are less directly applicable to writing tasks. These findings underscore the importance of targeted vocabulary assessments and instruction that closely align with the demands of writing proficiency.

Taken together, the results of this study provide evidence for the multifaceted and discriminating contributions of different aspects of L2 vocabulary knowledge to L2 productive performance. Depth measures, such as WAT and WPL, predicted speaking and writing, while more form-based or rule-governed tests, such as the AKT and PVL, did not emerge as strong predictors. This trend implies that effective language use is more strongly supported by learners' ability to access and use vocabulary in context in a flexible manner than to recognise or produce it in decontextualised form. Predictive power also differed by modality, such that some vocabulary dimensions were more aligned with writing than with speaking. These findings emphasise the need to consider both lexical richness and contextual appropriateness simultaneously in vocabulary learning, especially within EFL settings where opportunities for spontaneous output are limited.

CONCLUSION

This research examined the nature and the role of vocabulary knowledge in English language use among Thai university learners. The findings indicate that vocabulary acquisition is an incremental process, with foundational knowledge, as measured by the Vocabulary Levels Test (VLT) and Word Part Levels Test (WPL), being developed earlier than more complex, productive skills assessed by the Productive Vocabulary Levels Test (PVL). Indeed, the study highlights the incremental and multifaceted nature of Thai university learners' vocabulary learning, indicating that vocabulary acquisition is not uniform, as some dimensions of vocabulary knowledge are more accessible and less challenging to learn than others.

The study also demonstrated significant positive correlations between vocabulary knowledge and speaking and writing skills, confirming that as vocabulary knowledge increases, so does learners' performance in productive language tasks. Writing, in particular, showed a stronger relationship with vocabulary knowledge than speaking, likely due to the more deliberate and planned nature of writing, which allows for precise word selection. The VLT and the WAT together accounted for 28.8% of the variance in speaking performance, while the PVL and the WAT explained 71.2% of the variance in writing performance. Taken together, not all dimensions of vocabulary knowledge provide equal predictive values of vocabulary knowledge to productive L2 use.

IMPLICATIONS

The results of this study yield fruitful implications for EFL teaching, assessment, and curriculum design. First, the results indicate that not all dimensions of vocabulary knowledge play an equal role in productive language use. That is, productive skills like speaking and writing may be more dependent on learners' depth of vocabulary knowledge and their use of derived forms, as opposed to the recognition of word forms or receptive knowledge. This finding illustrates the need for teaching that extends beyond learning word lists and encourages the context-rich, productive use of vocabulary. Second, the relatively low predictive value of AKT highlights the necessity to include rich and meaningful morphological instruction. Explicit practice in the identification and appropriate use of affixed forms within a range of grammatical and communicative contexts should be offered to EFL learners. Moreover, it could be even more effective as a tool for training students to use their language flexibly and fluently. The study also highlights the importance of using a balanced measurement approach with both receptive and productive vocabulary measures. Integrating spoken and written vocabulary into classroom assessments can more accurately demonstrate what learners have at their command, pointing to better-focused vocabulary instruction. From a research perspective, the results of this study also underscore the importance of employing a parallel design to investigate how vocabulary knowledge operates across diverse language modalities. Further studies may extend this examination to examine the developmental trajectory of lexical use and other influencing factors, including task familiarity, general proficiency, and L1 transfer.

LIMITATIONS AND RECOMMENDATIONS

The relatively small sample size of 63 participants from a single university may limit the broad applicability of the findings to other contexts or large populations. Stratified sampling should also be considered for future studies to ensure a more balanced representation across proficiency levels. Additionally, the study was conducted with Thai EFL undergraduates, whose language learning is heavily influenced by cultural, educational, and instructional values and practices, such as a heavy reliance on test-driven instruction, limited use of communicative language, and low exposure to English in naturalistic settings. These situational factors might shape the processes of word learning and its transfer to language production. Therefore, the results might not generalise to students from other EFL contexts. Future studies should aim to replicate the investigation in other EFL learning societies to examine the generalisability of the current findings. Another limitation of the study relates to the possibility of test-practice contamination across the receptive and productive vocabulary measures. While receptive vocabulary tests and productive tasks were not administered in the same session, the proximity in time may have primed some lexical items or form influences learners on the subsequent productive tasks. As such, correlations between receptive knowledge and productive outcomes may be artificially inflated. For future studies, counterbalancing the order of the tasks or increasing the time between measures should be employed to reduce the likelihood of such contamination.

The cross-sectional design provides only a snapshot of vocabulary knowledge and its impact on language skills at a single point in time, underscoring the need for longitudinal studies employing mixed-effects growth modelling to track the development of vocabulary knowledge and language skills over time. Moreover, experimental or quasi-experimental designs should be used in future research to demonstrate the causal relationship between vocabulary instruction and productive language performance. For example, experimental interventions that manipulate

instructional conditions, such as explicit derivational morphology instruction, context-based training, or integrated form-meaning-use teaching, can be employed to better understand the extent to which targeted vocabulary intervention translates into gains in productive language use. These designs would complement correlational studies and inform evidence-based teaching practices. Finally, the vocabulary assessments used in this study may not fully capture all aspects of vocabulary knowledge, highlighting the need for future studies to employ a broader range of assessments for a more comprehensive understanding of vocabulary proficiency. These limitations emphasise the importance of further research to validate the findings and deepen our knowledge of vocabulary development in varied educational contexts.

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