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Inside the Sentence: An Evaluation of How Thai University EFL Learners Build Academic Sentences

Pasara Namsaeng
Department of Western Languages and Linguistics, Mahasarakham University, Maha Sarakham, Thailand

Aummaraporn Nooyod
English Language Department, Faculty of Education, Loei Rajabhat University, Thailand

Apisak Sukying*
Department of Western Languages and Linguistics, Faculty of Humanities and Social Sciences, Mahasarakham University, Thailand

***Abstract*—Academic vocabulary is essential for successful university-level writing, yet Thai EFL university learners often struggle to use it productively in context. This study investigates Thai university students' academic vocabulary knowledge through a sentence-writing test that captures three dimensions of productive performance: lexical, semantic, and structural complexity. Thirty English major students enrolled in an English Composition Writing course completed a Sentence Writing Test consisting of 16 Academic Word List verbs, each requiring three sentences. Descriptive and inferential statistics were applied, with strong reliability demonstrated through Cronbach's alpha ($\alpha = .747$) and inter-rater Kappa agreement ($\kappa = .821$, $p < .001$). Results revealed low overall performance, with learners achieving only 17% of the total possible score, indicating limited productive academic vocabulary knowledge despite an estimated general vocabulary size of approximately 10,000 word families. ANOVA findings showed significant differences across the three dimensions, $F(2, 478) = 67.263$, $p < .001$, $\eta^2 = .22$, with pairwise comparisons indicating that learners performed significantly best in lexical complexity, followed by semantic, and weakest in structural complexity. These patterns reflect a developmental progression from reliance on lexical form toward meaning and syntactic application. The findings suggest that productive academic vocabulary requires higher-order cognitive skills and is constrained by limited academic language resources. The study highlights the need for pedagogy that integrates sentence-level production, explicit academic vocabulary instruction, and support for deeper semantic and syntactic development.**

***Index Terms*—academic vocabulary, sentence writing, Thai EFL university learners**

I. Introduction

Academic vocabulary plays a central role in successful university-level writing, yet it remains one of the most challenging components of second language development for many learners. In the Thai EFL context, where English is primarily learned through formal instruction and exposure to academic discourse is limited, students often struggle to integrate academic vocabulary appropriately and accurately into sentence-level writing. Studies across EFL contexts show that learners recognize the importance of academic vocabulary but continue to experience difficulties with register awareness, word choice, collocations, and disciplinary variation, all of which affect academic writing quality (Min & Sukying, 2024; Durrant, 2013; Therova, 2022; Coxhead, 2012). These challenges are amplified in Thailand, where instruction often emphasizes receptive knowledge rather than productive use.

Although previous studies have examined vocabulary size and depth among Thai learners (Jingjit, 2015; Namsaeng et al., 2025), far fewer have investigated how learners actually employ academic vocabulary in productive tasks such as sentence writing. Research consistently shows that vocabulary depth often lags behind breadth, especially for low-frequency academic vocabulary, leading to difficulties when learners attempt to incorporate such words into their writing. Importantly, receptive knowledge alone does not guarantee accurate or contextually appropriate productive use. As Zhong (2012) demonstrates, even learners who recognize academic words may struggle to deploy them flexibly and meaningfully in sentence-level writing, highlighting a persistent gap between knowing a word and being able to use it.

The concept of sentence writing as an assessment of productive vocabulary originated from the Vocabulary Knowledge Scale (VKS) (Paribakht & Wesche, 1996), which measures learners' progression from initial recognition to sentence-level production. Level V, which requires learners to use a target word in a sentence, represents the highest stage of productive knowledge. However, the VKS has been critiqued for its linear and self-reported scoring system. Because the scale treats all stages as sequential and equally spaced, the resulting data are nominal rather than ordinal,

meaning that two learners may receive the same score while demonstrating different underlying lexical abilities (Waring, 2002). To address the limitations of self-reporting, scholars have developed sentence-writing tests evaluated through analytical scoring of the sentences produced. To more accurately capture productive vocabulary knowledge, researchers argue for revising the sentence-writing component by requiring multiple sentences, allowing flexible word forms, and applying analytical scoring to better capture productive academic vocabulary knowledge (Zhong, 2012).

Sentence writing provides a clear window into learners' ability to select, manipulate, and contextualize academic vocabulary in meaningful ways. The sentence writing in this study directly reveals dimensions of lexical, structural, and semantic complexity, features that cannot be fully assessed through vocabulary size or depth tests alone. This study therefore evaluates Thai EFL university learners' use of academic vocabulary in sentence writing, with specific attention to these three dimensions of complexity. Understanding these patterns will not only illuminate learners' lexical strengths and limitations but also offer valuable insights for improving academic writing instruction and vocabulary pedagogy in Thai higher education. Moreover, because current vocabulary assessments rarely capture the multi-dimensional nature of productive academic vocabulary, little is known about how Thai learners actually use academic vocabulary when constructing sentences. Addressing this gap is essential for designing targeted instructional interventions that respond to learners' real lexical needs. Therefore, the two research questions are addressed:

1. To what extent do Thai EFL university learners possess academic vocabulary knowledge in sentence writing?
2. What knowledge do Thai EFL university learners demonstrate in the lexical, structural, and semantic dimensions of sentence writing?

II. Literature Review

A. Academic Vocabulary Knowledge

After learners have mastered the 2,000–3,000 most frequent words in English, the acquisition of more specialised vocabulary becomes increasingly important for advanced academic and professional communication (Nation, 2022). Academic vocabulary, however, is not defined uniformly across the literature. Anderson and Freebody (1981) describe academic vocabulary as sub-technical or semi-technical words, referring to items that are not discipline-specific but are nonetheless essential for understanding academic texts. Corson (1985) highlights another dimension, viewing academic vocabulary as carrying a tone of formality and intellectual sophistication, making it central to the language of scholarly discourse. Earlier, Martin (1976) characterised academic vocabulary as the set of words commonly used in the research process, including vocabulary for analysis, interpretation, and evaluation, which supports critical thinking and academic writing.

To facilitate the effective learning of academic vocabulary, Nation (2022) proposed a framework consisting of four complementary strands: meaning-focused input (exposure to vocabulary through reading and listening), meaning-focused output (use of vocabulary in speaking and writing), language-focused learning (direct instruction of form, meaning, and use), and fluency development (practice in using known vocabulary more automatically). Together, these strands emphasise that academic vocabulary learning requires a balanced approach that integrates both explicit instruction and meaningful communication.

Academic vocabulary knowledge can be measured through several complementary approaches. First, it can be assessed in terms of vocabulary size, using instruments such as the Vocabulary Size Test (Nation & Beglar, 2007) and the Vocabulary Levels Test (Webb et al., 2017), in which learners select meanings, match words to definitions, or choose synonyms. Second, academic vocabulary can be evaluated through depth of knowledge using measures such as the Word Associates Test (Read, 1998), as well as through corpus-based analyses that quantify academic vocabulary use in writing. Tools such as AntWordProfiler, LexTutor, and Coh-Metrix help examine lexical sophistication, lexical density, lexical diversity, and academic vocabulary coverage (Nation, 2022; Read, 2000). In addition, contextualized academic tasks, including summarizing texts, describing processes, writing research reports, or giving presentations, provide evidence of learners' ability to use academic vocabulary appropriately in authentic academic contexts (Corson, 1985). Finally, productive academic vocabulary knowledge can be assessed through tasks requiring the accurate use of target words in context, such as controlled productive word use in context, sentence-writing tasks, or writing samples analyzed for lexical features (Zhong, 2018). This study measures the Thai EFL undergraduate students' academic vocabulary by using the sentence writing test.

B. Sentence Writing in Supporting Vocabulary Knowledge and Vice Versa

The relationship between sentence writing and vocabulary growth is significant, as writing tasks play a crucial role in enhancing vocabulary acquisition and long-term retention. Research demonstrates that engaging in sentence-writing activities not only strengthens learners' vocabulary use but also fosters greater motivation and engagement in writing. First and foremost, writing tasks promote the development of lexical quality, including lexical sophistication, diversity, and collocational competence, key components of effective communication (Laufer, 2024). In addition, task effectiveness studies show that sentence-writing tasks are more beneficial for vocabulary learning than gap-filling activities, regardless of learners' proficiency levels (Park, 2018). Research on multimedia integration further indicates

that combining multimedia input with sentence-writing tasks significantly enhances vocabulary learning outcomes, with learners exposed to richer content formats achieving higher scores (Teng & Zhang, 2024).

Sentence-writing activities also contribute to increased motivation, as structured writing tasks, such as those incorporating FrameNet, have been associated with higher learner engagement and more effective vocabulary application in writing (Tuan, 2010). Moreover, the cognitive demand required to generate meaningful sentences encourages deeper processing of vocabulary items, which supports stronger retention and more robust lexical development (Laufer, 2024). Although the benefits of sentence writing for vocabulary growth are well documented, some studies note that improvements in writing quality may not always align with gains in vocabulary knowledge, suggesting the need for continued exploration of instructional strategies that effectively integrate vocabulary learning with writing development (Laufer, 2024).

This study highlights the benefits of sentence writing by examining three dimensions of complexity: lexical, structural, and semantic. Crossley (2020) investigated linguistic features that contribute to writing quality and identified three primary dimensions—lexical sophistication, syntactic complexity, and text cohesion. The present study adopts the first two constructs but excludes text cohesion, as the analysis focuses on sentence-level production rather than multi-sentence compositions, as in Crossley's work. Regarding the semantic dimension, text cohesion is reconceptualized as semantic complexity, emphasizing the depth, clarity, and contextual appropriateness of meaning within individual sentences. Semantic complexity reflects learners' ability to produce sentences that demonstrate accurate meaning, logical relations, and contextually relevant ideas, aligning with the notion that meaning-making depends on the interplay of lexical choices, semantic relations, and argumentative structures within a text (Halliday & Hasan, 2014).

To conclude, academic vocabulary is essential for advanced academic communication and is generally understood as semi-technical language used across disciplines, vocabulary that conveys formality, and words central to academic reasoning. Effective learning requires balanced exposure, explicit instruction, productive use, and fluency practice, and it can be assessed through vocabulary size tests, depth measures, corpus-based analyses, and productive tasks such as sentence writing. Sentence writing, in particular, enhances vocabulary growth by promoting lexical sophistication, diversity, and collocational accuracy, encouraging deeper cognitive processing, and supporting long-term retention. This study employs sentence writing to measure productive academic vocabulary by examining lexical, structural, and semantic complexity, adapting Crossley's (2020) framework to suit sentence-level performance.

III. Research Methods

A. Research Design

This research employed a cross-sectional study design, collecting data at a single point in time (Paltridge & Phakiti, 2015). A quantitative descriptive research design was adopted to investigate Thai EFL university learners' academic vocabulary knowledge through sentence-writing tasks. This design was suitable for examining learners' performance across multiple dimensions of complexity, lexical, structural, and semantic, and for generating statistical evidence regarding their productive academic vocabulary use. Overall, the research design allowed for a systematic and rigorous examination of participants' sentence-writing abilities, providing meaningful insights into their linguistic strengths and developmental needs.

B. Participants and Setting

The participants consisted of 30 English major students enrolled in an English Composition Writing course at a university in northeastern Thailand. Sentence writing was integrated into the initial stages of the course as part of the developmental process aimed at preparing students to compose various types of essays. The general vocabulary size of the students was approximately 10,000 word families, as estimated by the Vocabulary Size Test (Nation & Beglar, 2007), calculated using the percentage score (50.97%) multiplied by 200.

C. Instruments

The primary instrument used in this study was the Sentence Writing Test, designed to elicit students' productive use of academic vocabulary. Sixteen academic words were selected based on three criteria: (1) inclusion in the Academic Word List (AWL), (2) verb forms classified at the B2 level of the CEFR, and (3) the ability to be derived into at least three additional parts of speech, adjectives, adverbs, and nouns. The final words include *demonstrate, restrict, emphasize, select, vary, interact, structure, integrate, construct, perceive, function, specify, justify, evolve, shift,* and *exclude*.

The participants were required to write three sentences for each target word. Each sentence was evaluated according to three criteria: lexical complexity (0–2 marks), structural complexity (0–3 marks), and semantic complexity (0–2 marks) (Crossley, 2020; Halliday & Hasan, 2014). For lexical complexity, participants who produced a more sophisticated or derived form of the target word, such as nominalizations or abstract nouns, received 2 marks. Use of the base form without modification received 1 mark, while blank responses or misspelled forms were assigned 0 marks. For structural complexity, sentences categorized as complex or compound–complex were awarded 3 marks. Compound sentences received 2 marks, simple sentences received 1 mark, and responses that did not constitute a complete sentence (e.g., fragments, phrases, incomplete clauses) were given 0 marks. For semantic complexity, sentences that

demonstrated depth of meaning and contextually appropriate use received 2 marks. Sentences conveying only basic or literal meaning received 1 mark, whereas blank responses or semantically inappropriate sentences received 0 marks. Each sentence was therefore scored out of 7 marks, and with three sentences per target word, the maximum possible score for each word was 21 marks.

D. Data Collection and Analysis

The researchers sought permission from the institutional gatekeeper to access one intact classroom at the university. The objectives of the study were clearly explained, and informed consent was obtained prior to data collection. Participants were provided with clear instructions in Thai to minimize any potential misunderstanding or language-related burden. After the participants completed the test, the data were double-checked by an interrater to ensure rater consistency. Descriptive statistics, including mean, percentage, and standard deviation, were then employed, followed by additional inferential statistical analyses.

IV. Results

A. Modest Academic Vocabulary Proficiency in Thai EFL University Learners' Sentence Writing

TABLE 1
THAI EFL UNIVERSITY LEARNERS' ACADEMIC VOCABULARY KNOWLEDGE IN SENTENCE WRITING

Word No.	Min	Max	Mean (%)	S.D.	Cronbach's Alpha if Item Deleted
1	.00	100.00	25.24	27.03	.750
2	.00	85.71	15.24	25.46	.733
3	.00	71.43	11.91	17.94	.727
4	.00	76.19	38.41	19.73	.760
5	.00	76.19	17.62	18.85	.718
6	.00	76.19	23.02	23.40	.693
7	.00	61.90	26.20	19.12	.727
8	.00	33.33	2.70	8.45	.744
9	.00	71.43	18.41	22.22	.734
10	.00	23.81	1.90	5.39	.745
11	.00	71.43	30.64	17.63	.741
12	.00	66.67	18.73	17.81	.721
13	.00	38.10	3.33	8.12	.729
14	.00	66.67	19.37	21.37	.743
15	.00	71.43	11.75	16.72	.727
16	.00	38.10	7.14	12.86	.743
Total			16.98	135.97	.747

***Note:** N=30

Table 1 presents Thai EFL university learners' academic vocabulary knowledge in sentence writing across 16 academic words. In order to support the statistical analysis, the raw scores (out of 21) were converted into percentages. The overall results indicate that Thai EFL university learners demonstrated limited academic vocabulary knowledge in sentence writing. The total percent score was 17% of the full score, showing generally low performance across lexical, structural, and semantic dimensions. Most items received low means, with several words scoring close to zero. The consistently low minimum scores and wide score ranges further suggest substantial variation among learners. Cronbach's alpha reliability of the sentence writing is .747 indicating good reliability. Overall, the findings indicate that learners struggled to use most academic words accurately at the lexical, structural, and semantic dimensions in their sentence writing.

Moreover, the inter-rater reliability analysis shows that the inter-rater reliability for the scoring was high, with a Kappa value of .821 based on 480 valid cases. The small standard error (.020) and large test statistic (T = 43.658) indicate that the estimate is stable, and the agreement between raters is statistically significant ($p < .001$). Overall, the results demonstrate strong and reliable agreement in the ratings (see Table 2).

TABLE 2
KAPPA INTER-RATER RELIABILITY ANALYSIS

Measure of Agreement	Value	Std. Error	Approx. T	Sig.
Kappa	.821	.020	43.658	0.000

***Note**: Valid N = 480

B. Academic Vocabulary Knowledge Across Lexical, Structural, and Semantic Complexities in Sentence Writing

The results also indicated that the Thai EFL university learners exhibited differing levels of academic vocabulary knowledge across the lexical, structural, and semantic dimensions of sentence-writing complexity. The ANOVA was conducted to examine whether lexical, structural, and semantic complexities differed significantly in sentence writing. The results revealed a highly significant main effect, $F(2, 478) = 67.263$, $p < .001$, with a large effect size ($\eta^2 = .220$;

Cohen, 1988), indicating that approximately 22% of the variance in participants' scores was accounted for by differences among the three dimensions of academic vocabulary complexity (see Table 3).

TABLE 3
ANOVA RESULTS FOR ACADEMIC VOCABULARY COMPLEXITY IN SENTENCE WRITING

Academic Vocabulary Knowledge	*df*	*F*	*p*-value	Partial η^2
Aspects of Academic Vocabulary Complexity	(2, 478)	67.263	.000*	0.22

The pairwise comparisons further revealed clear differences across the three aspects of academic vocabulary complexity. Learners performed significantly better on lexical than on semantic complexity ($t = 9.001$, $p < .001$), with a small-to-medium effect size ($d = 0.41$). An even larger difference was observed between lexical and structural complexity ($t = 11.510$, $p < .001$), with a medium effect size ($d = 0.53$). Finally, learners also scored significantly higher on semantic than on structural complexity ($t = 6.230$, $p < .001$), although this comparison showed the smallest effect ($d = 0.28$). These findings indicate that learners demonstrated the highest performance in lexical complexity, followed by semantic and then structural complexity. Overall, all three comparisons were statistically significant, suggesting that Thai EFL university learners display uneven proficiency across the lexical, structural, and semantic dimensions of academic vocabulary use in sentence writing (see Table 4).

TABLE 4
PAIRWISE COMPARISONS OF ACADEMIC VOCABULARY COMPLEXITY ASPECTS

Pair Comparison	Mean difference	Std. Error	*t-value*	*p-value*	Effect size	95% confidence Interval	
						Lower	Upper
Lexical vs Semantic	5.208*	.579	9.001	.000	0.41	3.818	6.598
Lexical vs Structural	8.635*	.750	11.510	.000	0.53	6.833	10.437
Semantic vs Structural	3.427*	.550	6.230	.000	0.28	4.748	2.105

To conclude, the Thai EFL university learners performed significant differences among the three dimensions of sentence-writing performance (see Table 5): lexical, structural, and semantic. Learners scored highest on the lexical dimension ($M = 22.29$), followed by semantic ($M = 17.08$), and lowest on the structural dimension ($M = 13.66$).

TABLE 5
ACADEMIC VOCABULARY KNOWLEDGE ACROSS THREE ASPECTS OF COMPLEXITY

Complexity Aspects	Mean (%)	SD	Skewness	Kurtosis
Lexical	22.29	27.43	1.053	0.123
Semantic	17.08	21.37	1.128	0.499
Structural	13.66	18.91	1.470	1.704

V. DISCUSSION

A. Academic Vocabulary Acquisition Order

The finding that lexical complexity achieved the highest mean scores, significantly surpassing semantic and syntactic complexity, aligns with established research on the developmental progression of second language vocabulary acquisition. Early in acquisition, learners tend to rely on lexical form, as the most salient connection between languages is based on word-level associations that mediate L2 performance (Talamas et al., 1999). Less proficient learners experience greater interference with form-related items, while more proficient learners shift toward meaning-based processing, supporting a developmental movement from form to meaning (Talamas et al., 1999). This progression is further reinforced by evidence that direct access to meaning emerges later with increased proficiency, and that fluent use represents an additional stage beyond meaning retrieval (Kroll & Tokowicz, 2001). Vocabulary scholarship similarly notes that acquisition begins with establishing a form–meaning link, yet productive use requires far more extensive lexical knowledge (Schmitt, 2008). Moreover, vocabulary knowledge develops incrementally, with form, meaning, and use unfolding along a continuum rather than being acquired simultaneously (Schmitt, 2007). Taken together, these perspectives corroborate the observed pattern in this study, suggesting that participants were most capable of demonstrating vocabulary form, less able to convey meaning, and least proficient in using vocabulary accurately within syntactic structures.

B. Reflecting Higher-Order Thinking Skills Through Academic Vocabulary Knowledge

The overall mean percentage score (17%) indicates that learners struggled substantially with producing academic vocabulary in sentence writing, despite having an estimated general vocabulary size of approximately 10,000 word families. This discrepancy suggests that academic vocabulary requires higher order thinking skills beyond basic lexical recognition or general word knowledge. Recent research shows that vocabulary knowledge is closely related to students' ability to engage in cognitively demanding tasks, including leading class discussions and formulating abstract meanings (Damayanti & Listyani, 2020; Namsaeng & Phusawisot, 2025). Academic vocabulary has been described as essential for abstract, technical, and disciplinary thinking, functioning as a linguistic tool that enables learners to

articulate nuanced concepts and engage with academic content (Nagy & Townsend, 2012). When students lack proficiency in such vocabulary, their capacity to participate in higher-order reasoning becomes constrained.

Evidence across multiple studies reinforces this association between vocabulary knowledge and higher-order cognitive skills. As such, vocabulary size has been shown to correlate significantly with critical-thinking subskills such as inquisitiveness, confidence in reasoning, and evaluative judgment, suggesting that lexical development supports cognitive sophistication (Ünaldı & Yüce, 2021). Similarly, limited vocabulary knowledge has been found to impede students' ability to comprehend academic texts and progress through higher stages of Bloom's critical reading hierarchy, demonstrating that lexical insufficiency restricts analytical engagement (Lee & Wong, 2020). Instructional research further highlights that approaches integrating semantic reasoning explicitly pair vocabulary learning with critical-thinking development, particularly as learners encounter more abstract and conceptually dense academic words (Fallon et al., 2021). Correspondingly, academic language proficiency has been linked to students' abilities to make inferences and solve problems, indicating that difficulties with academic vocabulary may directly contribute to weaker critical-thinking performance (Grosser & Nel, 2013). Taken together, these findings suggest that learners' low performance in sentence-level academic vocabulary production reflects not only lexical limitations but also insufficient development of higher-order thinking skills, underscoring the intertwined nature of academic language and cognitive complexity.

C. Improper Academic Vocabulary Resources

A range of external factors appear to contribute to learners' limited development of academic vocabulary, particularly the scarcity and inadequacy of learning resources. Studies report that insufficient access to books, technology, and supportive learning tools poses a substantial barrier to vocabulary growth, especially in less-resourced educational contexts (Mediena et al., 2025). Additional challenges stem from motivational and material limitations, including students' lack of interest, vocabulary overload, difficult textbooks, and the absence of authentic input, all of which hinder sustained academic vocabulary acquisition (Tariku, 2024). Research further indicates that learners' linguistic background can influence academic performance, with non-monolingual students demonstrating lower achievement in writing and content subjects, suggesting that language exposure and proficiency shape academic vocabulary development (Schuth et al., 2017). Compounding these issues, the measurement of academic vocabulary itself remains problematic due to the overlap between academic word lists and general vocabulary, making it difficult to isolate academic vocabulary growth and its effects on academic success (Masrai & Milton, 2021). This overlap suggests that low academic vocabulary scores may reflect limited general vocabulary, reinforcing claims that broader lexical development may be more critical for academic attainment than narrow focus on academic word lists.

VI. Conclusion

This study aims to assess academic vocabulary knowledge by using sentence writing to measure productive academic vocabulary across the dimensions of lexical, structural, and semantic complexity. Although learners demonstrated a relatively large general vocabulary size, their low mean score (17%) in producing academic vocabulary indicates that academic vocabulary requires higher-order thinking and the ability to express abstract and discipline-specific meanings. Within this performance pattern, lexical complexity achieved the highest mean scores and was significantly higher than both semantic and syntactic complexity, suggesting that learners found vocabulary form easier to access than meaning or use. This progression reflects a developmental sequence in which learners first recognize lexical form, then construct meaning, and only later apply vocabulary accurately within syntactic structures. The challenges observed in academic vocabulary production may be further explained by external factors, including limited access to books, technology, authentic materials, and supportive learning tools, as well as low motivation, vocabulary overload, difficult textbooks, and language-background influences that hinder academic engagement. Together, these findings highlight the combined impact of cognitive demands, developmental sequencing, and contextual constraints on learners' academic vocabulary performance.

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Pasara Namsaeng is a lecturer and researcher at the Department of Western Languages and Linguistics, Faculty of Humanities and Social Sciences, Mahasarakham University, Thailand. She received a Master of Education in English Language Teaching and is studying a Ph.D. in English Language Teaching. Her research interests are pedagogy and education, vocabulary knowledge, second language acquisition, language assessment, critical thinking, and intercultural communication. Her email is pasara.n@msu.ac.th

Aummaraporn Nooyod, lecturer and researcher at the English Language Department where she also serves as a committee of the Postgraduate (B.Ed. in English) Board, Faculty of Education, Loei Rajabhat University, Thailand. She received Bachelor of Education Program in Teaching English to Speakers of Other Languages (TESOL), a Master of Education in Curriculum and Instruction, and is studying a Ph.D. in English Language Teaching. Her research interests are Pedagogy and Education, Second Language Acquisition, Reading Comprehension and Engagement, Translanguaging, and Vocabulary Knowledge. Her email is aummaraporn.noo@lru.ac.th

Apisak Sukying (PhD) is an assistant professor and the Director of the PhD Program in English Language Teaching (ELT) at the Faculty of Humanities and Social Sciences, Mahasarakham University, Thailand. He earned his PhD in TESOL from the University of Sydney, Australia. His interests include L2 vocabulary acquisition and development, L2 vocabulary assessment, SLA, learner strategies, and academic writing. His email is apisak.s@msu.ac.th