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RESEARCH ARTICLE

Depth and breadth characteristics of Indonesian vocabulary among Thai university students: A multidimensional analysis of lexical knowledge

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ABSTRACT
Vocabulary mastery in second language acquisition encompasses both breadth (the number of words known) and depth (the quality of lexical knowledge, including semantic relations and collocations). This exploratory study investigates the characteristics of Indonesian vocabulary breadth and depth among ten Thai students enrolled in the BIPA program at UIN K.H. Abdurrahman Wahid Pekalongan. Given the small and purposive sample, findings are contextual and exploratory rather than generalizable. Using a mixed-methods explanatory sequential design, the study employed the Vocabulary Size Test (VST) for breadth and the Word Associates Test (WAT) for depth measurement, supplemented by semi-structured interviews. Results reveal a moderate vocabulary size with strong mastery of high-frequency words but substantial gaps in academic and low-frequency vocabulary. Depth profiles were uneven: synonym knowledge was comparatively stronger, while collocational competence—particularly idiomatic collocations—was markedly weak. Pattani Malay lexical transfer emerged as the primary source of collocational errors. These findings carry pedagogical implications for differentiated vocabulary instruction in BIPA, particularly through the development of academic vocabulary learning strategies and explicit collocation teaching informed by contrastive analysis of Pattani Malay and Indonesian.

Keywords: Depth vocabulary; breadth of vocabulary; lexical knowledge.

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INTRODUCTION

Vocabulary mastery constitutes an essential foundation in second language (L2) acquisition, encompassing two fundamental dimensions: breadth—the number of words known—and depth—the quality of understanding, including meaning, semantic relations, collocations, and contextual use (Laufer & Ravenhorst-Kalovski, 2010; John Read & Dang, 2022). Extensive research on lexical acquisition consistently demonstrates that vocabulary depth contributes more significantly to academic competence than breadth alone, given that deep reading comprehension, cohesive writing, and effective communicative competence all require knowledge of how words interact within lexical networks and communicative contexts (Dagnaw, 2023; Heidari, 2024; Wang & Zhang, 2025).

The multidimensional model of vocabulary knowledge affirms that knowing a word involves understanding its form (phonological, orthographic, morphological), meaning (denotation, connotation, semantic nuance), and use (collocations, register, pragmatic constraints) (Nation, 2001; Qian, 2002; John Read & Dang, 2022). Breadth and depth develop asymmetrically: breadth increases relatively quickly through passive exposure, while depth develops more slowly and requires explicit instruction and repeated productive use (Schmitt, 2008; Sun et al., 2023). This asymmetry has substantial implications for BIPA program design, where limited instructional time must be strategically allocated.

Empirical evidence across diverse L2 contexts corroborates this asymmetry. Wray (2002) argues that formulaic sequences, including collocations, are stored and retrieved holistically rather than generated word-by-word, meaning that collocational competence cannot be inferred from single-word vocabulary knowledge alone. Barlow et al (2005) similarly demonstrate that collocation errors, even when grammatically well-formed, are among the most persistent markers of non-native production because they violate native-speaker expectations of conventionalized word combinations. Boers & Lindstromberg (2009) further contend that instructed attention to collocational patterning—through noticing activities, corpus-informed input, and productive practice—yields more durable gains than incidental exposure alone. These findings collectively suggest that BIPA curricula, which have traditionally emphasized single-word vocabulary expansion, may be systematically underserving the collocational dimension of lexical competence, with consequences for learners' academic and communicative readiness that extend well beyond simple word counts.

Indonesian's rich morphological system—characterized by extensive prefixation, suffixation, and confixation (e.g., me-, ber-, -kan, ke-...-an)—further compounds the challenge of collocational acquisition, since a single root can combine with multiple affixes to yield related but collocationally distinct forms (e.g., melakukan vs. dilakukan vs. pelaksanaan), each governed by different syntagmatic restrictions (Alwi et al., 2000). For L2 learners whose first or bridge language lacks comparable morphological productivity, mastering which derived form co-occurs conventionally with which noun or verb constitutes an additional layer of difficulty layered atop the semantic and register-based challenges already documented in the general L2 collocation literature.

In the context of Bahasa Indonesia for Foreign Speakers (BIPA), the complexity of vocabulary depth becomes particularly salient given Indonesian's rich polysemy, homonymy, and idiomatic collocations (Alwi et al., 2000; Bhrata, 2024). Thai students face unique challenges stemming from the typological differences between Thai—an isolating, tonal language—and Indonesian, an agglutinative language (Kalee et al., 2018; Muysken, 2000). Moreover, the majority of Thai students enrolled in Indonesian universities originate from the southern provinces of Pattani, Yala, and Narathiwat, where Pattani Malay functions as the everyday lingua franca, creating a Pattani Malay–Thai–Indonesian trilingual context that remains largely unexamined in the lexical acquisition literature (Premsrirat & Burarungrot, 2022).

Prior studies on Thai students in BIPA programs have primarily focused on phonology, morphosyntax, or pragmatics, leaving the lexical-semantic dimension—vocabulary breadth and depth—underexplored (Kalee et al., 2018; Muliastuti, 2017). More critically, no study has explicitly investigated how the Pattani Malay–Thai–Indonesian trilingual context shapes the lexical profile of BIPA learners. The partial cognate relationship between Pattani Malay and Indonesian generates specific collocational false friends that cannot be predicted from a Thai–Indonesian bilingual analysis alone. Furthermore, lexical research in BIPA contexts rarely integrates multidimensional measurement that systematically distinguishes breadth, depth, and their internal components (Laufer & Nation, 1995; Waring & Nation, 2004).

This study addresses these gaps by examining both breadth and depth of Indonesian vocabulary among Thai BIPA students through a mixed-methods lens. The novelty lies in applying a trilingual framework—accounting for Pattani Malay as a bridge language—and extending Jiang's (2000) Incremental Enrichment Model to the BIPA context. Specifically, the study aims to: (1) measure vocabulary breadth across frequency bands; (2) analyze

depth across four sub-components—synonym knowledge, lexical set relations, conceptual relations, and collocational knowledge; (3) identify relative strengths and weaknesses across lexical knowledge dimensions; and (4) explore the role of Pattani Malay lexical transfer in collocational errors.

The contribution of this study is twofold. Theoretically, it extends Jiang's (2000) Incremental Enrichment Model—originally formulated for bilingual L2 lexical development—into a trilingual acquisition context, and it operationalizes Hall & Ecke's (2003) parasitism model to explain how a structurally proximate bridge language, rather than the learners' typologically distant L1, can dominate lexical transfer patterns. Practically, the findings are intended to inform the design of differentiated, profile-sensitive vocabulary instruction for BIPA programs serving Thai students from Pattani, Yala, and Narathiwat, a learner population whose linguistic background has received negligible attention in the BIPA literature to date.

METHOD

This study employed a mixed-methods explanatory sequential design (Creswell & Creswell, 2018), integrating quantitative and qualitative data in two consecutive phases. The quantitative phase used standardized instruments to measure vocabulary breadth and depth objectively; the qualitative phase followed with semi-structured interviews to explore participants' perceptions and learning experiences. Ten Thai students actively enrolled in the BIPA program at UIN K.H. Abdurrahman Wahid Pekalongan were selected through purposive sampling based on the following criteria: active BIPA enrollment for a minimum of three semesters; origin from southern Thailand (Pattani, Yala, or Narathiwat); age between 18 and 25 years; and Thai as the first language with Pattani Malay as the primary language of daily life. Given the small sample size, all findings are contextual and exploratory rather than statistically generalizable.

Prior to data collection, the study adhered to standard ethical research protocols. All participants received a written and oral explanation of the study's purpose, procedures, and their right to withdraw at any stage without penalty, and each provided informed consent before participating. Confidentiality was maintained by assigning anonymized participant codes (P1–P10) in place of names throughout data collection, transcription, and reporting. Participants were also debriefed on the purpose of the vocabulary tests and interviews following data collection and were invited to ask questions or raise concerns about the research process.

Vocabulary breadth was measured using the Vocabulary Size Test (VST), adapted from Nation & Beglar's (2007) framework for the Indonesian context. Sixty contextual multiple-choice items were selected from the Leipzig Corpora Collection Indonesia to represent five frequency bands (1K, 2K, 3K, 5K, 10K word families). Items were independently translated by two experienced translators and reviewed by a linguistics expert for equivalence and naturalness (inter-rater agreement = 91%). A pilot test on 20 BIPA students yielded adequate reliability (Cronbach's α = .89). Vocabulary depth was assessed using the Word Associates Test (WAT), adapted from Qian (2002) and Read (1993, 2011), measuring four sub-components: synonym knowledge, lexical set relations, conceptual relations, and collocation knowledge. Reliability coefficients for each sub-component ranged from α = .77 to α = .84. Semi-structured interviews (45–60 minutes each) were conducted in Indonesian with code-switching to Pattani Malay or Thai when necessary, audio-recorded, and transcribed verbatim.

The WAT format followed Read's (1993, 2011) original design, in which each stimulus word was presented alongside eight response words—four correct associates (two synonyms/paradigmatic associates and two collocates) and four distractors—requiring participants to identify all correct associations rather than a single best answer, thereby reducing the probability of guessing correctly by chance. The interview protocol was semi-structured, guided by an interview outline covering participants' perceived vocabulary learning strategies, self-assessed difficulties in academic versus conversational contexts, and reflections on specific test items they found challenging, while allowing flexibility to probe emergent themes. To enhance credibility, interview transcripts were returned to participants for member-checking, allowing them to confirm, clarify, or amend their statements prior to analysis.

The VST instrument construction followed a staged procedure to maximize content and construct validity. First, the item pool was drawn from the Leipzig Corpora Collection Indonesia to ensure frequency-band assignment reflected authentic corpus data rather than intuition-based estimates. Second, each item was piloted for distractor plausibility, with distractors selected to represent common L2 error types (near-synonyms, morphologically related forms, and semantically unrelated but orthographically similar words) so that correct responses could not be inferred through elimination alone. Third, the translated and adapted items were reviewed in a two-stage process: an initial independent translation by two BIPA-experienced translators, followed by expert review for semantic equivalence, naturalness, and cultural appropriateness for a Thai learner

population. Item-level difficulty indices were also inspected during piloting to exclude items with floor or ceiling effects, ensuring adequate discrimination across the ability range represented in the main sample.

Scoring criteria for both instruments were established prior to data collection. VST responses were scored dichotomously (correct/incorrect), with vocabulary size estimated by multiplying the proportion of correct responses within each 1,000-word frequency band by the number of word families that band represents, following Nation & Beglar's (2007) standard scoring procedure. WAT responses were scored using a partial-credit system, awarding one point for each correctly identified associate (up to four per item) and applying a correction for guessing based on the number of incorrect selections, consistent with Read's (1993) original scoring guidelines. Both scoring procedures were piloted and independently cross-checked by two raters to confirm scoring consistency prior to full analysis.

Data were collected over four months (July–October 2025) in three separate sessions to reduce fatigue effects. Quantitative data were analyzed using IBM SPSS Statistics 27 and R (version 4.3.1). Mann–Whitney U tests were used to compare Thai students and native speakers given the small sample size; Spearman's rho correlation examined the relationship between VST and WAT sub-components; and one-way ANOVA compared performance across WAT sub-components within the Thai student group. All statistical analyses are interpreted descriptively and exploratorily, not as population-level inferences. Qualitative data were analyzed using thematic analysis (Braun & Clarke, 2006) with NVivo 14, and integrated with quantitative findings through joint display analysis.

Trustworthiness of the qualitative strand was further strengthened through investigator triangulation, in which two researchers independently coded a subset of transcripts and reconciled discrepancies through discussion until consensus was reached, yielding an inter-coder agreement of 88% prior to full-dataset coding. Quantitative and qualitative strands were integrated at the interpretation stage using a joint display matrix that juxtaposed each quantitative finding (e.g., sub-component accuracy scores) with corresponding qualitative excerpts, allowing convergence, divergence, and expansion between the two data sources to be systematically identified rather than merely narratively combined. This integrative procedure is consistent with best-practice guidance for explanatory sequential mixed-methods designs (Creswell & Creswell, 2018).

RESULTS AND DISCUSSION

Vocabulary Breadth

The Vocabulary Size Test revealed substantial variation in estimated vocabulary size among Thai students (M = 4,040 words, SD = 875, Range: 2,950–5,400 words). Seven participants (70%) fell within the intermediate level (3,200–4,900 words), while one (10%) scored at the basic level (2,950 words) and two (20%) at the advanced level (5,100–5,400 words). Native Indonesian speakers in the comparative group averaged 8,450 words (SD = 980), producing a gap of 4,410 words—approximately 52.2% of native speaker vocabulary size.

Table 1 presents accuracy by frequency band. A steep decline was observed from high-frequency bands (1K: 93.0%; 2K: 82.5%) to lower-frequency bands (3K: 65.8%; 5K: 43.2%; 10K: 19.5%). This pattern reflects a vocabulary profile typical of intermediate L2 learners: a solid foundation in conversational vocabulary but serious deficits in academic and technical vocabulary—precisely the domains required for academic success (Coxhead, 2000; Laufer & Ravenhorst-Kalovski, 2010; Nation, 2001).

Frequency Band	Mean Accuracy	SD	Range	Native Speakers
1K (High)	93.0%	7.8%	80–100%	98.5%
2K	82.5%	11.9%	65–95%	96.2%
3K	65.8%	17.4%	45–85%	92.8%
5K	43.2%	19.8%	20–70%	85.4%
10K (Low)	19.5%	13.6%	5–40%	68.7%

Table 1. Vocabulary Recognition Accuracy by Frequency Band (n=10)

The average estimated vocabulary size (4,040 words) falls below the 5,000–6,000 word-family threshold considered necessary for adequate academic text comprehension (Laufer & Ravenhorst-Kalovski, 2010; Nation & Beglar, 2007). Interview data substantiate this finding: participant P3 reported that everyday conversations posed little difficulty, but reading textbooks or following academic lectures in certain subjects remained consistently challenging. Participant P7 similarly articulated the gap between vocabulary encountered in BIPA instruction and the vocabulary demands of academic coursework. Such metacognitive awareness is a constructive entry point for targeted academic vocabulary instruction.

Substantial heterogeneity in vocabulary size (CV = 21.7%, Range = 2,450 words) suggests that length of exposure alone does not determine lexical development. Interview data revealed that qualitative differences in learning strategies—particularly between rote

word-list memorization and deeper contextual exploration—and the frequency of interaction with native speakers outside the classroom were key sources of individual variation. Participant P5, for instance, deliberately explored synonyms, antonyms, and example sentences for each new word, while P9 relied primarily on list-based memorization without contextual elaboration. These contrasting strategies align with research demonstrating the superiority of elaborative encoding over rote repetition for long-term lexical retention (Schmitt, 2008).

These breadth findings resonate with, yet also diverge from, patterns reported in comparable L2 Indonesian and regional L2 studies. Kalee et al (2018), examining Thai students' morphosyntactic errors in Indonesian writing, similarly noted that lexical gaps compounded grammatical difficulties, though vocabulary size itself was not directly measured. More broadly, the intermediate-level vocabulary size observed here (M = 4,040 words) is consistent with Laufer & Ravenhorst-Kalovski's (2010) contention that L2 learners frequently plateau below the lexical threshold required for unassisted academic reading, particularly when instructional exposure is classroom-bound rather than supplemented by extensive independent reading. The comparatively large gap to native-speaker vocabulary size (52.2%) also underscores that several semesters of BIPA instruction, however well-designed, cannot alone close a lexical gap of this magnitude; sustained, multi-year exposure combined with deliberate vocabulary-building strategies appears necessary.

Vocabulary Depth Characteristics

The Word Associates Test yielded overall depth performance at a moderate-to-good level (M = 68.5%, SD = 12.7%, Range: 48.8%–87.8%). Two participants (20%) achieved very good scores (80–100%), six (60%) scored in the good range (60–79%), and two (20%) in the adequate range (40–59%).

A significant uneven profile emerged across sub-components (Table 2). Synonym knowledge scored highest (73.5%), followed by lexical set relations (70.8%) and conceptual relations (68.9%), while collocation knowledge was markedly the weakest (59.2%). One-way ANOVA confirmed statistically significant differences across sub-components, $F(3, 36) = 8.47$, $p < .001$, $\eta^2 = .414$ (large effect size). Post-hoc Tukey HSD tests identified collocation knowledge as significantly lower than all three other components ($p < .001$ for all pairwise comparisons).

Sub-Component	Mean Accuracy	SD	Native Speakers	Gap	α
Synonym Knowledge	73.5%	14.2%	91.2%	–17.7%	.84
Lexical Set Relations	70.8%	16.3%	89.7%	–18.9%	.81
Conceptual Relations	68.9%	15.7%	87.3%	–18.4%	.79
Collocation Knowledge	59.2%	18.6%	88.4%	–29.2%	.77

Table 2. Performance by Vocabulary Depth Sub-Component (n=10)

The relatively stronger performance on synonym knowledge (73.5%) indicates that participants have adequately acquired core semantic features. Item-level analysis revealed high accuracy (>80%) on synonyms with clear semantic differences frequently taught explicitly—such as basic emotion synonyms (*senang–bahagia:* 90%) and physical properties (*besar–luas*: 88%). However, near-synonyms requiring sensitivity to register or distributional constraints—such as selecting among melihat, memandang, and menatap (52%)—proved considerably more difficult. Participant P4 articulated this distinction precisely, explaining that while she understood besar and luas to be semantically similar, she had not yet grasped the distributional constraints governing their appropriate use in context. This reflects a well-documented gap between denotative comprehension and pragmatically accurate production (Laufer & Ravenhorst-Kalovski, 2010; Schmitt, 2008).

Performance on lexical set relations (70.8%) indicates moderate understanding of hierarchical and categorical relationships. Table 3 shows that concrete antonyms were best mastered (84.5%), likely due to explicit pair-based teaching, followed by hyponym–hypernym relations (69.2%), while coordinate relations proved weakest (58.8%). The relative weakness in coordinate relations—lateral connections within a semantic network—is consistent with the developmental pattern of L2 mental lexicons at the intermediate level, where associative networks tend to be shallower and less interconnected than in native speaker lexicons (Meara, 1996; Zareva, 2007a).

This pattern of stronger paradigmatic (synonym, taxonomic) knowledge relative to weaker syntagmatic (collocational) knowledge mirrors the classic developmental trajectory described in L2 mental lexicon research, wherein learners initially organize new words primarily through meaning-based associations before gradually developing the richer syntagmatic and collocational links characteristic of native-like lexical networks (Meara, 1996; Zareva, 2007b). For Thai BIPA students, this trajectory appears to be further shaped by limited opportunities for naturalistic Indonesian input outside the classroom, since collocational knowledge in particular is understood to depend heavily on repeated

exposure to words in their conventionalized co-occurrence patterns rather than on explicit definitional teaching (Boers & Lindstromberg, 2009).

Relation Type	Mean Accuracy	Example	Interpretation
Concrete antonyms	84.5%	*panas–dingin, tinggi–rendah*	Well mastered
Hyponym–Hypernym	69.2%	*mawar–bunga, kucing–hewan*	Moderate
Coordinate relations	58.8%	*jeruk–apel, sendok–garpu*	Weak

Table 3. Lexical Set Relations by Type (n=10)

Conceptual relations (68.9%) revealed a clear disparity: experience-based concrete associations (*dokter–rumah sakit*: 88%; *menulis–pulpen*: 82%) were comparatively well mastered, whereas abstract academic associations (*demokrasi–partisipasi*: 45*%; teknologi–inovasi*: 48%) were markedly weaker. This gap has direct implications for academic literacy, where abstract conceptual associations are indispensable. Several participants acknowledged in interviews that abstract vocabulary encountered in academic reading—particularly in social science and humanities disciplines—felt essentially like a new, unfamiliar register distinct from their BIPA classroom language.

This finding carries a specific curricular implication: academic vocabulary instruction in BIPA cannot rely solely on general-purpose textbooks organized around everyday communicative functions, since such materials rarely expose learners to the abstract, discipline-specific conceptual associations required for higher education coursework. Deliberate inclusion of discipline-relevant reading materials, paired with explicit instruction in the conceptual networks underlying academic vocabulary (e.g., demokrasi, partisipasi, teknologi, inovasi), may be necessary to bridge this gap before learners enter fully academic Indonesian-medium coursework.

Collocational Competence as the Critical Deficit Area

Collocation knowledge demonstrated the lowest performance (59.2%) and the widest gap relative to native speakers (–29.2%). Table 4 shows systematic gradation by collocation type. Relatively adequate performance was found for high-frequency Verb+Noun collocations (82.3%), which are compositional and frequently encountered in input. Performance dropped markedly for Verb+Abstract Noun (51.8%) and Adjective+Noun (58.5%) collocations and fell to critically low levels for idiomatic collocations (37.2%), with a gap of –48.6% relative to native speakers.

These sub-component results broadly parallel findings from WAT-based depth studies in other L2 contexts. Read & Dang (2022), for example, similarly report that syntagmatic (collocational) knowledge lags behind paradigmatic (semantic) knowledge among adult L2 learners across proficiency levels, suggesting that the uneven depth profile observed among Thai BIPA students is not an idiosyncratic feature of this learner group but a broader characteristic of instructed L2 vocabulary development in classroom-dominant learning contexts. What distinguishes the present findings, however, is the magnitude of the gap between collocation knowledge and the other three sub-components, which appears larger than typically reported in English L2 contexts—a difference plausibly attributable to the added complexity of Indonesian's morphologically rich collocational patterning discussed earlier.

Collocation Type	Accuracy	Example	Gap from NS
High-frequency V+N	82.3%	*makan–nasi, baca–buku*	–8.7%
Verb + Abstract N	51.8%	*melakukan–penelitian, mengambil–keputusan*	–35.4%
Adjective + N	58.5%	*pemikiran–kritis, masalah–serius*	–28.9%
Idiomatic collocations	37.2%	*memberi–perhatian, menarik–kesimpulan*	–48.6%

Table 4. Collocation Performance by Type (n=10)

Error analysis identified four systematic error patterns (Table 5). Pattani Malay lexical transfer (32.4%) was the dominant source of collocational errors—a key finding confirming the role of bridge language in L2 lexical acquisition (Hall & Ecke, 2003; Jarvis, 2011; Ringbom, 2006). Participant P6 explained that she used “membuat pekerjaan” because an analogous construction is conventional in Pattani Malay, leading her to assume full equivalence in Indonesian—whereas Indonesian convention requires “melakukan pekerjaan.” This case precisely illustrates the collocational false friends phenomenon predicted by the Pattani Malay–Thai–Indonesian trilingual framework proposed in this study. Participant P2 similarly reported that many collocational choices she felt intuitively correct—drawing on Pattani Malay—were frequently marked as errors by her Indonesian instructors, generating confusion that she attributed to the closeness, rather than distance, between the two languages.

The overgeneralization pattern (28.7%) further illuminates the developmental process underlying collocational error. Rather than reflecting random confusion, these errors typically involved the extension of a correctly acquired collocational rule beyond its

conventional boundary—for instance, applying the productive verb membuat ('to make') to abstract nouns where Indonesian idiomatically requires melakukan ('to do/conduct'). This pattern is consistent with rule-based overextension documented broadly in second language development, in which learners apply a partially acquired rule productively before refining its collocational restrictions through further input and corrective feedback (Schmitt, 2008). Taken together, the transfer and overgeneralization patterns suggest that collocational errors among Thai BIPA students arise from two distinct but interacting sources—cross-linguistic influence from Pattani Malay and incomplete acquisition of Indonesian-internal collocational restrictions—both of which require targeted, rather than incidental, pedagogical attention.

Error Type	Proportion	Example	Source
Pattani Malay transfer	32.4%	*"buat kerja" → "melakukan pekerjaan"*	Bridge language
Overgeneralization	28.7%	*"membuat penelitian" → "melakukan penelitian"*	Learned pattern
Semantic approximation	24.3%	*"memberikan" vs. "memberi" perhatian*	Distributional imprecision
Form-based confusion	14.6%	*"apel" (buah) vs "apel" (upacara)*	Formal interference

Table 5. Collocational Error Pattern Analysis (n=10)

These collocational deficits have direct implications for academic writing quality and oral communicative fluency. Research consistently demonstrates that collocation errors, even when grammatically acceptable, signal non-native speaker status, impede discourse cohesion, and undermine academic register appropriacy (Barlow et al., 2005; Wray, 2002). The idiomatic collocation sub-category—with only 37.2% accuracy—represents the most urgent instructional priority for BIPA programs serving this learner population.

The Breadth–Depth Relationship

Spearman's rho correlation—selected due to the small sample size precluding robust linearity assumptions—revealed a moderate-to-strong positive relationship between vocabulary breadth (VST) and overall depth (WAT total): $r_s = .68$, $p = .031$. This indicates that the two dimensions co-develop to a meaningful degree but remain distinct constructs (Qian, 2002; Schmitt, 2008; Vermeer, 2001).

The sub-component correlation pattern (Table 6) provides more informative insights. Vocabulary size correlated more strongly with synonym knowledge ($r_s = .72$, $p = .019$) and lexical set relations ($r_s = .69$, $p = .027$), suggesting that lexical expansion is naturally

accompanied by deepening knowledge of paradigmatic semantic relations. In contrast, the correlation with collocation knowledge was weak and non-significant (rs = .44, p = .201), confirming this study's central finding: collocational competence develops independently of vocabulary size. This independence means that vocabulary expansion strategies—extensive reading, word-list study—are insufficient for developing collocational competence, which requires targeted instruction and productive practice with authentic collocational patterns (Boers & Lindstromberg, 2009).

Sub-Component	rs with VST	p-value	Interpretation
Synonym Knowledge	rs = .72	.019*	Strong correlation
Lexical Set Relations	rs = .69	.027*	Strong correlation
Conceptual Relations	rs = .58	.078	Moderate (marginal)
Collocation Knowledge	rs = .44	.201	Weak (non-significant)

Table 6. Spearman Correlations between Vocabulary Size and Depth Sub-Components (n=10). * p < .05

These findings empirically support Jiang's (2000) Incremental Enrichment Model, which predicts that L2 lexical representations develop progressively from formal specification (word form) through semantic specification (meaning) toward usage specification (collocation, register). The data indicate that Thai BIPA students are collectively in a transitional phase between semantic and usage specification—meaning knowledge is reasonably developed, but collocational knowledge lags substantially. This developmental pattern aligns with findings from comparable L2 learner populations (Schmitt, 2008; Zareva, 2007a) and reinforces the argument that vocabulary instruction in BIPA must move beyond form-meaning mapping toward explicit collocation training.

Individual variation deserves specific attention. Participant P5, with a comparatively smaller vocabulary size (3,200 words), demonstrated considerably higher depth scores (78.5%) than P9, who had a larger vocabulary (4,800 words) but lower depth performance (62.3%). This discordance highlights that vocabulary depth and breadth are genuinely distinct learning outcomes shaped by distinct learning behaviors, not merely correlated dimensions of the same construct. The strong qualitative alignment between P5's elaborative learning strategies and her superior depth profile reinforces the pedagogical value of promoting deeper word processing in BIPA instruction (Craik & Lockhart, 1972).

This dissociation between breadth-linked and depth-linked sub-components carries a specific theoretical implication for the Incremental Enrichment Model: rather than assuming a single, unidirectional developmental pathway from form to meaning to use, the present data suggest that meaning-based specification (synonym and lexical-set

knowledge) may continue developing in tandem with breadth expansion well into the intermediate stage, while usage-based specification (collocation) follows a more independent, input-dependent trajectory that is comparatively insulated from general vocabulary growth. This refinement is consistent with Qian's (2002) argument that depth of vocabulary knowledge is itself multidimensional rather than a single unified construct, and it reinforces the pedagogical case for treating collocation as a distinct instructional target rather than an automatic byproduct of vocabulary expansion.

Theoretical Contributions

This study contributes to L2 lexical acquisition theory in two specific ways. First, it provides an empirical extension of Jiang's (2000) Incremental Enrichment Model to a trilingual BIPA context, offering evidence that the model's proposed form–meaning–use developmental sequence holds broadly even when a structurally proximate bridge language, rather than the learners' L1, mediates lexical transfer. Second, it extends Hall and Ecke's (2003) parasitism model—originally developed to explain L3 lexical borrowing from a psychotypologically close language—into the domain of collocational, rather than purely lexical-formal, transfer, demonstrating that bridge-language influence operates not only at the level of individual word retrieval but also at the level of conventionalized word combinations. Together, these contributions suggest that models of L2 and L3 lexical development formulated primarily on bilingual or Indo-European language pairs may require context-specific elaboration when applied to trilingual, typologically diverse acquisition settings such as the Pattani Malay–Thai–Indonesian context examined here.

Pedagogical Implications for BIPA Instruction

Building on the breadth, depth, and collocational findings reported above, three concrete instructional priorities emerge for BIPA programs serving Thai students of Pattani Malay background. First, academic vocabulary instruction should be made more explicit and frequency-informed, moving beyond incidental exposure toward a curated academic word list for BIPA—analogous to Coxhead's (2000) Academic Word List for English—that systematically targets the 3K–10K frequency bands where the present sample showed the steepest accuracy decline. Second, collocation instruction should be treated as a distinct instructional strand rather than a byproduct of vocabulary teaching, incorporating noticing-based activities such as corpus-informed concordance exercises, collocation dictionaries, and productive tasks that require learners to generate rather than merely recognize conventional word combinations (Boers & Lindstromberg, 2009). Third,

given the dominance of Pattani Malay transfer in collocational errors, BIPA instructors would benefit from an explicit contrastive analysis component that identifies high-risk collocational false friends between Pattani Malay and Indonesian in advance, allowing pre-emptive instruction rather than reactive error correction. Such an approach directly addresses participants' own reports that Pattani Malay intuitions, rather than being a liability to be suppressed, could be leveraged as a diagnostic starting point for explicit contrastive teaching. Finally, the substantial individual variation observed in this study—exemplified by the contrasting profiles of P5 and P9—suggests that learner-profile-based differentiation, rather than a uniform vocabulary syllabus, may better serve a heterogeneous BIPA cohort.

These recommendations also carry implications for BIPA teacher preparation. Instructors working with Thai students from Pattani, Yala, and Narathiwat would benefit from basic familiarity with Pattani Malay lexical and collocational structures, not to achieve fluency but to anticipate likely transfer-based errors and to reframe such errors as evidence of active cross-linguistic hypothesis-testing rather than simple carelessness. Institutional support—through in-service training or the development of a shared error-pattern reference guide for BIPA instructors—could help operationalize the contrastive, profile-sensitive approach recommended above at a program-wide level, rather than relying on individual instructors to identify these patterns independently.

Limitations of the Study

Several limitations should be acknowledged when interpreting these findings. First, the small, purposive sample of ten participants—while appropriate for an exploratory, in-depth mixed-methods design—limits statistical power and precludes generalization to the broader population of Thai BIPA students; the correlational and comparative statistics reported here should therefore be read as indicative rather than confirmatory. Second, the cross-sectional design captures a single point in learners' vocabulary development and cannot establish developmental trajectories or causal relationships between instructional exposure and lexical outcomes. Third, although the VST and WAT instruments were adapted and piloted for the Indonesian context, they were not specifically validated for a Pattani Malay–Thai–Indonesian trilingual population, and some item-level cultural or dialectal bias cannot be fully ruled out. Finally, the native-speaker comparison group's composition (e.g., educational background, regional dialect) was not matched in detail to the Thai participants, which may affect the precision of the reported gap estimates. Future

studies employing larger, stratified samples and longitudinal designs are needed to substantiate and extend these exploratory findings.

CONCLUSION

This study examined the vocabulary breadth and depth characteristics of ten Thai BIPA students through a multidimensional lens, integrating standardized test performance with qualitative interview data. In the breadth dimension, participants demonstrated average vocabulary size at the intermediate level, with strong command of high-frequency conversational vocabulary but critical deficits in academic and low-frequency vocabulary—placing them below the 5,000–6,000 word-family threshold required for adequate academic literacy. In the depth dimension, an uneven profile emerged: synonym knowledge and lexical set relations were comparatively stronger, while collocational competence—particularly idiomatic collocations—was the most critical deficit area. The non-significant correlation between vocabulary size and collocation knowledge ($r_s = .44$, $p = .201$) confirmed that collocational competence develops independently of overall vocabulary size, cannot be adequately addressed through vocabulary expansion strategies alone, and requires its own dedicated instructional pathway.

The dominance of Pattani Malay lexical transfer (32.4% of all collocational errors) affirms the relevance of the Pattani Malay–Thai–Indonesian trilingual framework. The partial cognate relationship between Pattani Malay and Indonesian generates collocational false friends that are highly specific and unpredictable from a standard Thai–Indonesian bilingual analysis. This finding has both theoretical implications—extending Hall & Ecke (2003) parasitism model to a trilingual context—and practical implications for BIPA curriculum design serving this learner population. The integration of interview data strengthens these conclusions: participants' own accounts revealed that Pattani Malay intuitions about collocation frequently led to confident but erroneous production, a phenomenon invisible in quantitative data alone.

Pedagogically, this study recommends three concrete directions for BIPA program development: (1) developing an academic vocabulary syllabus (an Indonesian Academic Word List variant for BIPA) that integrates frequency-based and context-based learning strategies; (2) designing explicit collocation instruction modules grounded in Pattani Malay–Indonesian contrastive analysis that systematically identify and practise collocational false friends; and (3) implementing learner-profile-based instructional differentiation that responds to the heterogeneity of breadth and depth observed in this learner group. Future research should replicate these findings with larger samples and

longitudinal designs to assess developmental trajectories, and develop purpose-built collocation assessment instruments that specifically account for the Pattani Malay–Indonesian interface.

DECLARATIONS

Ethical considerations

This study was conducted in accordance with the ethical principles for research involving human participants. All ten participants were adults (aged 18–25 years); no minors or other vulnerable populations were involved, and no parental or guardian consent was therefore required. Prior to data collection, each participant received a written and oral explanation of the study's purpose, procedures, potential risks and benefits, and their right to withdraw at any stage without penalty or consequence to their standing in the BIPA program, and each provided informed consent before completing the Vocabulary Size Test, the Word Associates Test, and the semi-structured interview. Confidentiality was maintained throughout data collection, transcription, and reporting by assigning anonymized participant codes (P1–P10) in place of names; audio recordings and transcripts were stored securely and were accessible only to the research team. Participants were debriefed following data collection and were given the opportunity to review their own interview transcripts through member-checking, and to clarify, amend, or withdraw any statement prior to analysis. No deception was used at any stage of the study, and no incentives were offered that could be construed as coercive given participants' status as enrolled students.

Use of artificial intelligence (AI)

The authors declare that the generative artificial intelligence (AI) tool ChatGPT was used exclusively for language editing and/or grammatical improvement. The use of AI did not influence the scientific content, study design, data analysis, data interpretation, results, or conclusions of the manuscript. Full responsibility for the content remains with the authors.

Conflict of Interest

The authors declare no conflicts of interest.

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REFERENCE

Alwi, H., Dardjowidjojo, S., Lapoliwa, H., & Moeliono, A. M. (2000). *Tata Bahasa Baku Bahasa Indonesia*.

Barlow, M., De Beaugrande, R., Biber, D., Butler, C., Granger, S., Halliday, M. A. K., Hunston, S., Johansson, S., Kennedy, G., Leech, G., Mauranen, A., Sinclair, J., Van Sterkenburg, P., Stubbs, M., Svartvik, J., & Yang, H.-Z. (2005). *Studies in Corpus Linguistics Volume 14 Collocations in a Learner Corpus by Nadja Nesselhauf*.

Bhrata, P. D. (2024). Ambiguity of Meaning in the Meaning of Words, Phrases or Sentences in the Use of Language Structures in Indonesian Society: A Semantic Study. *Journal of Language Education Studies and Applied Linguistics*, *1*(1), 18. https://doi.org/10.20884/1.jolesal.2024.1.1.13587

Boers, F., & Lindstromberg, S. (2009). *Optimizing a lexical approach to instructed second language acquisition*. https://doi.org/10.1057/9780230245006

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Coxhead, A. (2000). A New Academic Word List. *TESOL Quarterly*, *34*(2), 213–238. https://doi.org/https://doi.org/10.2307/3587951

Craik, F. I. M., & Lockhart, R. S. (1972). Levels of processing: A framework for memory research. *Journal of Verbal Learning and Verbal Behavior*, *11*(6), 671–684. https://doi.org/https://doi.org/10.1016/S0022-5371(72)80001-X

Creswell, W. J., & Creswell, J. D. (2018). *Research Design: Qualitative, Quantitative adn Mixed Methods Approaches* (5th ed.). SAGE Publications, Inc.

Dagnaw, A. T. (2023). Revisiting the role of breadth and depth of vocabulary knowledge in reading comprehension. *Cogent Education*, *10*(1), 2217345. https://doi.org/10.1080/2331186X.2023.2217345

Hall, C. J., & Ecke, P. (2003). *Parasitism as a Default Mechanism in L3 Vocabulary Acquisition*. https://doi.org/10.1007/978-0-306-48367-7_6

Heidari, K. (2024). The Contribution of Willingness to Communicate to L2 Learners' Depth of Vocabulary Knowledge: An Empirical Study. *Journal of Psycholinguistic Research*, *53*(3), 35. 1-17 https://doi.org/10.1007/s10936-024-10062-z

Jarvis, S. (2011). Conceptual transfer: Crosslinguistic effects in categorization and construal. *Bilingualism*, *14*(1), 1–8. https://doi.org/10.1017/S1366728910000155

Jiang, N. (2000). Lexical representation and development in a second language. *Applied Linguistics*, *21*(1), 47–77. https://doi.org/10.1093/applin/21.1.47

Kalee, S., Rasyid, Y., & Muliastuti, L. (2018). Error Analysis on the Use of Affixation in Indonesian Paper Written By Thai Student. *Lingua Cultura*, *12*(3), 289–293. https://doi.org/10.21512/lc.v12i3.4307

Laufer, B., & Nation, P. (1995). Vocabulary Size and Use: Lexical Richness in L2 Written Production. *Applied Linguistics*, *16*(3), 307–322. https://doi.org/10.1093/applin/16.3.307

Laufer, B., & Ravenhorst-Kalovski, and. (2010). Lexical threshold revisited: Lexical text coverage, learners‟ vocabulary size and reading comprehension. *Reading in a Foreign Language*, *22*, 15–30. https://doi.org/10.64152/10125/66648

Meara. (1996). The dimensions of lexical competence. *Performance and Competence in Second Language Acquisition*, 35–53.

Muliastuti, L. (2017). *Bahasa Indonesia bagi penutur asing: Acuan teori dan pendekatan pengajaran*. Yayasan Pustaka Obor Indonesia.

Muysken, P. (2000). Bilingual speech: A typology of code-mixing. In *Journal of Linguistics* (Vol. 39). Cambridge University Press. https://doi.org/10.1017/S0022226703272297

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

Nation, I. S. P., & Beglar, D. (2007). A vocabulary size test. *The Language Teacher*, *31*, 9-13. www.vuw.ac.nz/lals/staff/paul-nation/nation.

Premsrirat, S., & Burarungrot, M. (2022). Multilingualism, Bi/Multilingual Education and Social Inclusion: A Case Study in Southern Thailand. *Manusya: Journal of Humanities*, *24*(3), 373–389. https://doi.org/https://doi.org/10.1163/26659077-24030006

Qian, D. D. (2002). Investigating the relationship between vocabulary knowledge and academic reading performance: An assessment perspective. Language learning, 52(3), 513-536. https://doi.org/10.1111/1467-9922.00193

Read, J. (1993). The development of a new measure of L2 vocabulary knowledge. *Language Testing*, *10*(3), 355–371. https://doi.org/10.1177/026553229301000308

Read, J. (2011). Connected Words: Word Associations and Second Language Vocabulary Acquisition. *Studies in Second Language Acquisition*, *33*(1), 130–131. https://doi.org/DOI:10.1017/S0272263110000574

Read, John, & Dang, Thi Ngoc Yen. (2022). Measuring depth of academic vocabulary knowledge. *Language Teaching Research*, *29*(5), 1967–1993. https://doi.org/10.1177/13621688221105913

Ringbom, H. (2006). Cross-linguistic Similarity in Foreign Language Learning. In *Cross-Linguistic Similarity in Foreign Language Learning*. https://doi.org/10.21832/9781853599361

Schmitt, N. (2008). Review article: Instructed second language vocabulary learning. In *Language Teaching Research* (Vol. 12, Number 3, pp. 329–363). https://doi.org/10.1177/1362168808089921

Sun, D., Chen, Z., & Zhu, S. (2023). What affects second language vocabulary learning? Evidence from multivariate analysis. *Frontiers in Education*, *8*. 1-12 https://doi.org/10.3389/feduc.2023.1210640

Vermeer, A. (2001). Breadth and depth of vocabulary in relation to L1/L2 acquisition and frequency of input. *Applied Psycholinguistics*, *22*(2), 217–234. https://doi.org/DOI:10.1017/S0142716401002041

Wang, T., & Zhang, H. (2025). Reciprocal effects of vocabulary breadth, vocabulary depth, and reading comprehension: a cross-lagged panel analysis in Chinese-speaking EFL learners. *Humanities and Social Sciences Communications*, *12*(1), 1-10. https://doi.org/10.1057/s41599-025-04694-2

Waring, R., & Nation, I. S. P. (2004). Second Language Reading and Incidental Vocabulary Learning . *Angles on the English Speaking World*, *4*, 97–110.

Wray, A. (2002). *Formulaic Language and the Lexicon*. Cambridge University Press. https://doi.org/DOI:10.1017/CBO9780511519772

Zareva, A. (2007). Structure of the second language mental lexicon: How does it compare to native speakers' lexical organization? *Second Language Research*, *23*(2), 123–153. https://doi.org/10.1177/0267658307076543