

English Vocabulary Size of Second-Semester Students at Universitas Indonesia Timur: A Diagnostic Study Based on Paul Nation's Vocabulary Size Framework

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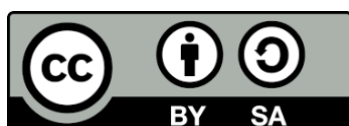
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Abstract

This study investigated the English vocabulary size of 34 second-semester students at Universitas Indonesia Timur as an indicator of their academic lexical readiness. A descriptive quantitative design was employed, and data were collected through an online vocabulary size test administered via VocabularySize.com. The scores were analyzed using descriptive statistics and grouped into 1,000-word bands. The findings showed that students' vocabulary-size scores ranged from 300 to 6,000, with a mean of 3,600.00 and a standard deviation of 1,663.330. The largest proportion of students was in the 3,000–3,999 band, while 61.8% scored below 4,000, 38.2% reached 4,000 or above, and only 29.4% reached 5,000 or above. Interpreted through Paul Nation's lexical-threshold framework, the average score indicates that the students have basic to lower-intermediate receptive vocabulary knowledge but remain below the estimated threshold for independent academic reading and adequate spoken-text comprehension. These results suggest the need for diagnostic, level-based vocabulary instruction that strengthens high-frequency, mid-frequency, academic, and discipline-specific vocabulary. The study contributes local empirical evidence from an Eastern Indonesian higher-education context and offers a practical basis for English for Academic Purposes instruction.

Keywords: vocabulary size; second-semester students; Paul Nation; receptive vocabulary; diagnostic study



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INTRODUCTION

Vocabulary knowledge is one of the fundamental components of English as a Foreign Language (EFL) learning because it strongly influences learners' ability to understand, process, and produce language. At the university level, vocabulary is not only needed to understand isolated words but also to access academic content, read scholarly texts, follow lectures, write assignments, and participate in discipline-related communication. Students may have learned English grammar for several years; however, without sufficient vocabulary, their comprehension and academic language production remain limited. Therefore, diagnosing students' vocabulary size at the early stage of university study is important to identify their academic language readiness and learning needs (Hartono & Prima, 2021; Nation, 2006).

The urgency of vocabulary mastery becomes more evident in higher education, where students are increasingly exposed to English through textbooks, journal articles, digital learning platforms, and discipline-specific references. Even non-English-major students are often required to read English abstracts, understand academic terminology, consult international sources, and use English references in academic writing. In this context, vocabulary size refers to the estimated number of words or word families known by learners. The concept of *word family* is important because academic reading often requires students to recognize a base word and its derived or inflected forms, such as *educate*, *education*, *educational*, and *educator* (Nation, 2006; Nation & Beglar, 2007).

This study is theoretically grounded in Paul Nation's vocabulary-size framework, which emphasizes the relationship between lexical coverage and comprehension. Nation (2006) argues that learners generally need approximately 8,000–9,000 word families to comprehend written texts independently and around 6,000–7,000 word families to understand spoken texts adequately. These thresholds indicate that vocabulary size is not merely a numerical score, but an indicator of whether learners have sufficient lexical resources to engage with academic texts. The Vocabulary Size Test developed by Nation and Beglar (2007) has been widely used to estimate learners' written receptive vocabulary knowledge, although its scores should be interpreted cautiously because receptive tests measure recognition-based knowledge rather than productive vocabulary ability (Beglar, 2010; Stoeckel et al., 2021).

Previous studies have shown that vocabulary knowledge remains a significant issue in Indonesian and international EFL contexts. Hartono and Prima (2021) found that receptive vocabulary knowledge was associated with reading comprehension among Indonesian university students. Wero et al. (2021) reported that students' receptive vocabulary was higher than their productive vocabulary, indicating that recognizing words does not automatically mean being able to use them actively. Siregar and Henni (2023) also found vocabulary growth among undergraduate EFL students, but emphasized that mastery of high-frequency words was still incomplete. In other contexts, Wiranty et al. (2024) found variation in vocational students' word knowledge levels, while Alnan and Abd Halim (2024) reported that many Syrian EFL learners remained at low vocabulary-size levels. These findings confirm that vocabulary-size profiles vary across institutions and must be diagnosed locally before teachers design learning materials and intervention strategies.

Despite the growing number of vocabulary studies in Indonesia, diagnostic research on vocabulary size in Eastern Indonesian higher-education contexts remains relatively limited. Universitas Indonesia Timur provides an important research context because students' English exposure, academic background, and learning needs may differ from those in more frequently researched universities in Java or other urban academic settings. Therefore, this study aims to analyze the English vocabulary size of second-semester students at Universitas Indonesia Timur and interpret the findings through Nation's lexical-threshold framework. The study is guided by two research questions: (1) What is the descriptive profile and band distribution of the English vocabulary size of second-semester students at Universitas Indonesia Timur? and

(2) What pedagogical implications can be drawn from the students' vocabulary-size profile for English for Academic Purposes instruction?

RESEARCH METHODS

2.1. Research Design

This study used a descriptive quantitative design. The design was selected because the purpose of the study was to describe the vocabulary-size profile of a group of students based on numerical test scores. No experimental treatment was applied, and the analysis focused on descriptive statistics, score distribution, and theoretical interpretation.

2.2. Participants

The participants were 34 second-semester students at Universitas Indonesia Timur. They were selected randomly from the available student population and were asked to complete an online vocabulary size test. The dataset contained no missing vocabulary-size scores. The SPSS output also included a respondent variable ranging from 1 to 34; this variable was treated only as a participant code and was not analyzed as a substantive research variable.

2.3. Instrument

The instrument was an online vocabulary size test administered through VocabularySize.com. The website provides a tool for measuring students' vocabulary size using Paul Nation's Vocabulary Size Test and allows teachers to create group test sessions and download the results (VocabularySize.com, n.d.). The scores in this study were interpreted as estimates of written receptive vocabulary size. Since the instrument measures receptive recognition, the results should not be interpreted as evidence of students' productive vocabulary ability in speaking or writing.

2.4. Data Analysis

The raw scores were analyzed using descriptive statistics: number of respondents, minimum score, maximum score, range, mean, standard deviation. The analysis was cross-checked with the SPSS output provided by the researcher. The scores were then grouped into 1,000-word bands to identify the proportion of students at each vocabulary-size level. Finally, the findings were interpreted using Nation's lexical-threshold framework, especially the 6,000-7,000 word-family threshold for spoken comprehension and the 8,000-9,000 word-family threshold for written comprehension (Nation, 2006).

2.5. Ethical Considerations

The data were analyzed anonymously. Students were identified only by numerical respondent codes, and no names or personal identifiers were included in the article. The study used existing test scores for diagnostic and pedagogical purposes.

RESULT AND DISCUSSION

3.1 Raw Vocabulary-Size Scores

The raw vocabulary-size scores from the 34 students are presented in Table 1. The table shows considerable variation across individual students, with scores ranging from very low to relatively high within the same semester group.

Table 1. Raw vocabulary-size scores of 34 students

Respondent	Score	Respondent	Score
1	3,600	18	2,600
2	6,000	19	4,500
3	2,200	20	3,200

4	5,800	21	2,000
5	5,400	22	5,000
6	2,600	23	6,000
7	4,300	24	1,600
8	3,800	25	3,400
9	5,000	26	2,400
10	3,500	27	5,900
11	3,400	28	1,600
12	5,700	29	3,200
13	3,200	30	800
14	4,800	31	2,200
15	300	32	2,000
16	1,200	33	6,000
17	3,600	34	5,600

The scores indicate considerable variation in students' receptive vocabulary knowledge, ranging from the lowest score of 300 to the highest score of 6,000. Three students reached the highest score of 6,000, while several others obtained relatively high scores, such as 5,900, 5,800, 5,700, 5,600, and 5,400. These scores suggest that a small number of students had relatively stronger receptive vocabulary knowledge compared with their peers.

However, the table also shows that some students had very limited vocabulary-size scores. For example, one student obtained a score of 300, another student scored 800, and several students were positioned between 1,200 and 2,600. This indicates that the students in the same semester group did not share the same level of lexical readiness. Some students appeared to have sufficient basic vocabulary knowledge, while others still required substantial vocabulary support. Overall, the raw data demonstrate a heterogeneous vocabulary-size profile, suggesting that English instruction for these students should be based on diagnostic results rather than assuming that all students have similar vocabulary competence.

3.2 Descriptive Statistics

The descriptive statistics of the students' vocabulary-size scores is presented in Table 2.

Table 2. Descriptive statistics of vocabulary-size scores

Statistic	Value
N	34
Minimum	300
Maximum	6,000
Range	5,700
Mean	3,600.00
Standard deviation	1,663.330

The data show that the 34 students obtained scores ranging from 300 to 6,000, with a total range of 5,700. The mean score was 3,600, indicating that, on average, the students' receptive vocabulary knowledge was positioned around the 3,000–4,000 word-family level. The standard deviation of 1,663.330 shows that the students' scores were widely dispersed, suggesting considerable variation in vocabulary knowledge among the participants. In other words, although the average score reflects a basic to lower-intermediate vocabulary level, individual students demonstrated different degrees of lexical readiness, ranging from very limited vocabulary knowledge to relatively higher receptive vocabulary size.

3.3 Distribution Across Vocabulary-Size Bands

The distribution of students across vocabulary-size bands is presented Table 3.

Table 3. Distribution of students across vocabulary-size bands

Vocabulary-size band	Frequency	Percentage
0-999	2	5.9%
1,000-1,999	3	8.8%
2,000-2,999	7	20.6%
3,000-3,999	9	26.5%
4,000-4,999	3	8.8%
5,000-5,999	7	20.6%
6,000-6,999	3	8.8%

The distribution reveals that 21 students (61.8%) scored below 4,000, while 13 students (38.2%) reached 4,000 or above. Only 10 students (29.4%) reached 5,000 or above, and only 3 students (8.8%) reached 6,000. This means that most students had not yet reached the lower end of Nation's spoken-text threshold, and none reached the written-text threshold of 8,000-9,000 word families. The largest group was found in the 3,000-3,999 band, with 9 students (26.5%). The 2,000-2,999 and 5,000-5,999 bands each contained 7 students (20.6%)

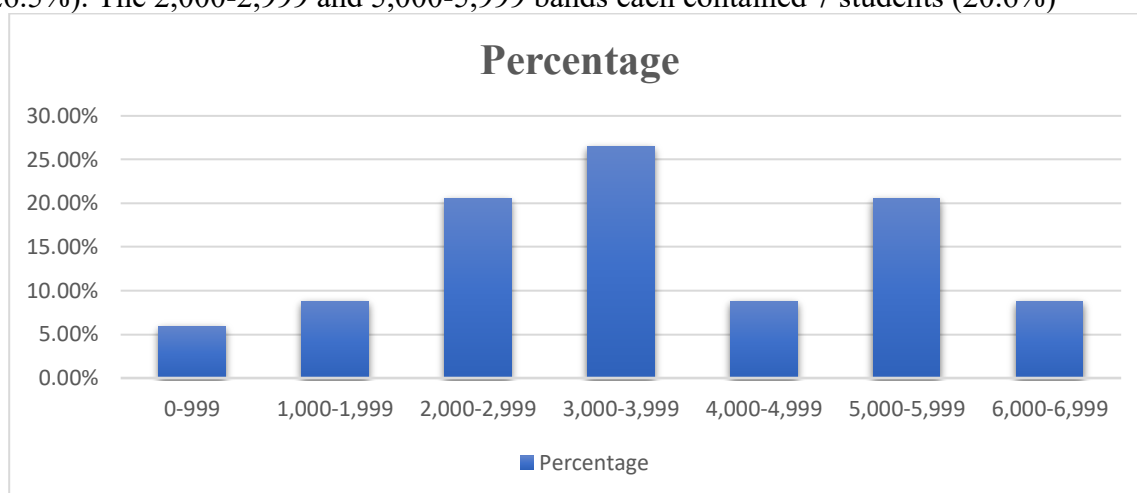


Figure 1. Distribution of students by vocabulary-size band

Figure 1 provides a visual overview of how students' vocabulary-size scores are distributed across different bands. The chart shows that most students are concentrated in the lower-to-middle vocabulary bands, while fewer students appear in the higher bands. This pattern suggests that the class has diverse lexical ability, but the overall profile still indicates a need for systematic vocabulary development before students engage with more demanding academic English texts.

DISCUSSION

4.1 Vocabulary Size and Nation's Lexical Threshold

The mean vocabulary-size score of 3,600 shows that the second-semester students at Universitas Indonesia Timur had basic to lower-intermediate receptive lexical knowledge. From Nation's (2006) perspective, this level is not yet sufficient for independent academic reading. If 8,000-9,000 word families are required for comprehension of written texts, the students' mean score represents only about 40.0% to 45.0% of the recommended written-text threshold. If 6,000-7,000 word families are required for spoken texts, the mean represents about 51.4% to 60.0% of the recommended spoken-text threshold.

This finding suggests that the students may understand simple English texts, classroom instructions, and basic digital content, but they are likely to struggle with unsimplified academic texts such as journal articles, reference books, or English-medium course materials. Academic

reading requires not only general vocabulary but also mid-frequency words, academic vocabulary, collocations, and discipline-related terminology. With an average score of 3,600, many students would still need scaffolding through glossaries, guided reading, bilingual support, and graded materials before engaging with full academic texts.

The result also shows that reaching university level does not automatically mean reaching academic lexical readiness. The students were already in their second semester, yet most of them had not crossed the 4,000-word level. This supports Nation's argument that vocabulary learning needs to be planned systematically rather than assumed to develop incidentally through general English exposure alone.

4.2 Heterogeneity of Students' Lexical Readiness

A major finding of this study is the high heterogeneity of vocabulary size among the participants. The standard deviation of 1,663.33 and the range of 5,700 indicate that the class contains students with very different levels of lexical competence. Some students are at the very beginning level, as shown by scores of 300 and 800, while others reached 5,600, 5,800, 5,900, or 6,000. Although the IQR method did not identify statistical outliers, the lowest scores are pedagogically critical because they indicate students who may not be able to follow even basic English input without substantial support.

This heterogeneity has direct implications for classroom practice. A one-size-fits-all English course is unlikely to be effective. Students below 2,000 need urgent reinforcement of high-frequency vocabulary and basic sentence-level comprehension. Students in the 2,000-3,999 range need systematic expansion of high-frequency and mid-frequency vocabulary. Students at 4,000-5,999 can be introduced to academic vocabulary and simplified academic texts. The three students at 6,000 may be ready for more challenging listening and reading tasks, but they still need vocabulary development to approach the academic reading threshold.

4.3 Comparison with Previous Studies

Compared with Wero et al. (2021), the present mean score of 3,600 is slightly higher than their reported receptive vocabulary size of 3,110 words but lower than their general estimate of around 4,905 words when receptive and productive results were discussed together. The comparison is noteworthy because Wero et al.'s participants were eighth-semester English Department students, whereas the present participants were second-semester students. This indicates that the vocabulary size of the present participants is not extremely low in relation to some Indonesian university contexts, but it is still insufficient for academic independence.

The present findings contrast more strongly with Siregar and Henni (2023). Their study of undergraduate EFL students at a private tertiary institution in West Java reported much higher vocabulary-size means among English-major cohorts after one year of study. However, they also found that mastery of high-frequency vocabulary remained problematic. This means that the present study supports their pedagogical warning: vocabulary instruction should not only aim to increase total vocabulary size but also ensure mastery of the most useful high-frequency and mid-frequency words.

The findings also contrast with Wiranty et al. (2024), who found that more than 70% of vocational school participants reached the 4,000 to 5,000-word level. In the present study, only 13 students (38.2%) reached 4,000 or above. This contrast may be caused by differences in participants, instruments, exposure to English, institutional context, and previous learning experiences. It also demonstrates that vocabulary-size profiles cannot be generalized across Indonesian EFL settings without local diagnostic data.

Internationally, the present result is more favorable than the profile reported by Alnan and Abd Halim (2024), where 74% of Syrian secondary EFL learners were in the 2,000-3,000 vocabulary range. In the present study, 20.6% were in the 2,000-2,999 range and 26.5% were

in the 3,000-3,999 range. Nevertheless, both studies converge on the same point: vocabulary size must be treated as a strategic target in EFL instruction because many learners remain below academic thresholds.

The present findings also align with Hartono and Prima (2021) and Hartini and Suri Ardini (2024), who showed that vocabulary knowledge is connected to broader English performance, including reading comprehension and general English competence. Although the present study did not test reading or writing performance, the low average vocabulary size suggests potential difficulty in academic reading and writing tasks. Future research should therefore examine the correlation between vocabulary-size scores and academic reading, writing, or course achievement at Universitas Indonesia Timur.

4.4 Pedagogical Implications

The results provide a basis for designing level-based vocabulary intervention. Table 4 proposes a practical instructional framework derived from the students' score distribution and Nation's lexical-threshold theory.

Table 4. Proposed level-based vocabulary intervention

Score band	Students	Instructional status	Suggested intervention
Below 2,000	5 students (14.7%)	Critical lexical support	High-frequency words, basic phrases, bilingual glossaries, simple graded readers, vocabulary notebooks. Consolidation of high-frequency words, sentence-level reading, word-family awareness, controlled vocabulary practice.
2,000-2,999	7 students (20.6%)	Basic communicative foundation	Mid-frequency words, guided reading, collocation practice, contextual guessing strategies.
3,000-3,999	9 students (26.5%)	Lower-intermediate transition	Academic word list, paragraph-level academic reading, summary writing, vocabulary in context.
4,000-4,999	3 students (8.8%)	Emerging academic preparation	Simplified journal texts, discipline-specific vocabulary, extensive reading, independent vocabulary expansion.
5,000 and above	10 students (29.4%)	Higher intermediate readiness	

For early-semester English courses, the first priority should be mastery of high-frequency vocabulary because it provides the foundation for all skills. Students should not be immediately assigned difficult academic texts without lexical preparation. Instead, lecturers can use graded reading, vocabulary notebooks, repeated exposure, short quizzes, and contextualized vocabulary tasks. Extensive reading should also be introduced gradually, beginning from texts that match students' current vocabulary size.

Technology can support this process. Endarto and Subekti (2020) developed a web-based vocabulary size test for Indonesian EFL learners, and the present study used an online testing platform. This shows that digital tools can be used not only for assessment but also for monitoring vocabulary growth over time. Lecturers can conduct vocabulary-size testing at the beginning, middle, and end of the semester to evaluate whether the intervention produces measurable improvement.

4.5 Novelty of the Study

The novelty of this study lies in its diagnostic mapping of vocabulary size among second-semester students at Universitas Indonesia Timur, a context that has rarely been represented in published vocabulary-size research. Rather than only reporting a mean score, the study presents individual data, descriptive statistics, distribution across vocabulary bands, and a pedagogical intervention matrix. This makes the findings useful not only as a research report but also as a practical basis for curriculum planning.

The study also contributes to EFL vocabulary research by showing that the main issue in the investigated class is not only low average vocabulary size but also wide heterogeneity. This finding requires differentiated instruction. In other words, the article's contribution is a local evidence-based model for transforming vocabulary-size test results into level-based English instruction for early-semester university students.

CONCLUSIONS

This study analyzed the English vocabulary size of 34 second-semester students at Universitas Indonesia Timur. The results showed that the students' vocabulary-size scores ranged from 300 to 6,000, with a mean of 3,600.00, a median of 3,450.00, and a standard deviation of 1,663.33. The largest proportion of students was located in the 3,000-3,999 band, while 61.8% scored below 4,000. Only 38.2% reached 4,000 or above, and only 29.4% reached 5,000 or above.

Based on Nation's lexical-threshold framework, the students' average vocabulary size is not yet sufficient for independent academic reading. They remain below the 6,000-7,000 word-family threshold for spoken comprehension and far below the 8,000-9,000 word-family threshold for written comprehension. Therefore, the students require systematic vocabulary development, particularly in high-frequency, mid-frequency, academic, and discipline-specific vocabulary.

The study recommends that English instruction at Universitas Indonesia Timur begin with diagnostic vocabulary-size testing and continue with level-based intervention. Students with very low scores need remedial support, while higher-scoring students should be challenged with academic reading and discipline-related vocabulary. Regular vocabulary-size assessment should be used to monitor lexical growth and improve English for Academic Purposes instruction.

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