

CHAPTER III

RESEARCH METHODOLOGY

A. Research Design

This research used a quantitative correlational research design. In educational research, quantitative research involves analyzing variables by using numerical data and statistical procedures. Correlational research determines the degree of association between two or more variables without manipulating them (Ary et al., 2018:349; Cohen et al., 2021:219).

Therefore, the design was appropriate for this research because the research aimed to determine the correlation between vocabulary mastery and listening comprehension. The research did not attempt to establish a cause-and-effect relationship; instead, it examined whether a significant relationship existed between the students' vocabulary mastery and listening comprehension.

B. Location and Time

This research was conducted at SMA Negeri 1 Tembilahan Hulu, located at Jl. Sapta Marga No. 70, Tembilahan Hulu, Indragiri Hilir Regency, Riau, Indonesia. The school was selected because it was relevant to the objectives of the research and provided access to participants who met the sampling criteria. The data collection was carried out from March to July 2026.



C. Population and Sample

1. Population

As stated by Creswell and Creswell (2021:146), a population is a group of individuals who share common characteristics related to the objectives of a study. Taherdoost (2022:24) similarly defines a population as a group of people who share certain characteristics and constitute the focus of an investigation.

Based on these definitions, the population of this research consisted of the eleventh-grade students of SMA Negeri 1 Tembilahan Hulu. The eleventh-grade students were selected as the population because they had studied English as a foreign language and had received learning materials related to vocabulary and listening comprehension. Since the amount of exposure to advanced English learning differed among the classes, the sample was selected according to specific criteria.

2. Sample

A sample is a selected part of a population that represents the characteristics required in a study. According to Creswell and Creswell (2021:158), a sample is a group of participants selected from a population based on criteria relevant to the research. In this research, the sample was selected by using purposive sampling because the researcher selected the participants according to predetermined criteria.

The sample consisted of 36 students from class XI.10 of SMA Negeri 1 Tembilahan Hulu. The class was selected because it met the criteria established for the research. First, the participants were eleventh-





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grade students of SMA Negeri 1 Tembilahan Hulu. Second, they had experience in learning advanced English, including vocabulary and listening comprehension activities. Third, they had studied English materials that were relevant to the vocabulary mastery and listening comprehension indicators used in this research.

Based on these criteria, class XI.10 was selected as the sample. The selection of this class did not imply that the other classes did not study English. Class XI.10 was considered the most suitable class because its students met the criteria required for examining the relationship between vocabulary mastery and listening comprehension.

D. Research Instrument

Tests were used as the research instruments to collect the required data. The instruments consisted of a vocabulary mastery test and a listening comprehension test. The use of tests was appropriate because the research aimed to examine the relationship between the students' vocabulary mastery and their listening comprehension. The tests provided objective and quantitative data concerning the students' language abilities, which were required in correlational research (Ary et al., 2018:149).

1. Vocabulary Mastery Test

The vocabulary mastery test was used to measure the students' receptive vocabulary mastery. The test covered three indicators: identifying the meanings of English words, recognizing English word forms, and understanding the use of English words in context. Vocabulary mastery involves knowledge of word meaning, word form,



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and word use, which enables learners to recognize and interpret words appropriately in different language contexts. Vocabulary knowledge was considered important for understanding spoken texts (Nation, 2020:37).

The vocabulary mastery test consisted of 15 multiple-choice items. Items 1–5 measured the students' ability to identify the meanings of English words. Items 6–10 measured the students' ability to recognize appropriate English word forms, including spelling and grammatical word formation. Items 11–15 measured the students' ability to understand and select appropriate English words based on sentence context.

Each item provided four answer alternatives, namely A, B, C, and D, with only one correct answer. Each correct answer received a score of 1, whereas each incorrect answer received a score of 0. Therefore, the maximum raw score was 15. The raw scores were subsequently converted into percentage scores.

The test items were developed based on the vocabulary mastery indicators used in this research and were adapted from English materials appropriate for eleventh-grade students. A test blueprint was prepared to ensure that every item was appropriately aligned with the intended indicator. Multiple-choice items were used because they enabled objective scoring and were commonly applied to assess receptive vocabulary knowledge in EFL contexts (Webb and Nation, 2020:112).

Table III.1. Blue Print of Vocabulary Mastery Test

No	Indicators	Item Numbers	Total Items
1.	Identify the meanings of English words.	1, 2, 3, 4, 5	5
2.	Recognize English word forms.	6, 7, 8, 9, 10	5
3.	Understand the use of English words in context.	11, 12, 13, 14, 15	5
Total			15

Table III.1 presented the blueprint of the vocabulary mastery test. The test consisted of three indicators, with five items assigned to each indicator. Items 1–5 measured the students' ability to identify the meanings of English words, items 6–10 measured their ability to recognize English word forms, and items 11–15 measured their ability to understand the use of English words in context. Thus, the instrument contained 15 items in total and provided a balanced measurement of the three vocabulary mastery indicators.

2. Listening Comprehension

The listening comprehension test was used to measure the students' ability to understand spoken English. The students listened to two English audio recordings and answered questions based on the information they heard. The test measured the students' ability to identify main ideas, understand specific information, understand vocabulary used in spoken texts (Graham, 2022:5).

The listening comprehension test consisted of 15 multiple-choice items based on the two audio recordings. Items 1–5 measured the students' ability to identify the main ideas and general context of spoken



texts. Items 6–10 measured their ability to understand specific information. Items 11–15 measured their ability to understand vocabulary used in spoken texts.

Each correct answer received a score of 1, whereas each incorrect answer received a score of 0. The audio recordings were played once to provide the students with sufficient opportunity to understand the listening materials. Multiple-choice items were used because they allowed objective and consistent scoring (Buck, 2021:89). A listening comprehension test was considered appropriate for assessing the students' receptive listening ability (Vandergrift and Goh, 2021:67).

Table III.2. Blue print of Listening Comprehension Test

No	Indicators	Item Numbers	Total Items
1.	Identify the main ideas of spoken texts.	1, 2, 3, 4, 5	5
2.	Understand specific information stated in spoken texts.	6, 7, 8, 9, 10	5
3.	Understand vocabulary used in spoken texts.	11, 12, 13, 14, 15	5
Total			15

Table III.2 presented the blueprint of the listening comprehension test. The instrument contained three indicators, with five items assigned to each indicator. Items 1–5 measured the students' ability to identify the main ideas and general context of spoken texts. Items 6–10 measured their ability to understand specific information. Items 11–15 measured



their ability to understand vocabulary used in spoken texts. Therefore, the test consisted of 15 items in total.

E. Validity of the Instrument

1. Content Validity

According to Yusoff (2019:49), content validity refers to the degree to which the elements of an assessment instrument are relevant to and representative of the construct being measured. In this research, content validity was used to ensure that the vocabulary mastery test and the listening comprehension test adequately represented the indicators of the two variables.

The vocabulary mastery test was developed based on three indicators: identifying the meanings of English words, recognizing English word forms, and understanding the use of English words in context. The listening comprehension test was developed based on three indicators: identifying the main ideas of spoken texts, understanding specific information, and understanding vocabulary used in spoken texts.

The content validity of the instruments was assessed through expert judgment. Roebianto et al. (2023:7) state that expert judgment is important because experts provide constructive feedback concerning the relevance and quality of test items. The experts evaluated the alignment of each item with the research indicators, the clarity of the instructions, the appropriateness of the language level, the quality of the answer



alternatives, and the suitability of the listening items with the audio materials.

The validation process included preparing validation forms, requesting expert reviews, examining the indicators and items, and revising the instruments based on the validators' suggestions. In this research, the expert review focused on item relevance, representativeness, clarity, simplicity, and possible ambiguity, as recommended by Yusoff (2019:50–51) and Roebianto et al. (2023:8–9). The vocabulary mastery test and the listening comprehension test were revised before they were administered to the students.

F. Data Collection Technique

The methods the researcher uses to obtain the required data for the study are called data collection techniques. Tests were the major data collection method since the main purpose of this study is to investigate the relationship between the vocabulary skill of the students and their listening comprehension. The following is the explanation of the data collection methods:

1. Vocabulary Mastery (Variable X)

- a. A vocabulary mastery test consisting of fifteen multiple-choice questions was designed by the researcher.
- b. The researcher designed this test to measure the students' receptive vocabulary mastery, which included identifying the meanings of English words, recognizing English word forms, and understanding the use of English words in context.





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- c. The researcher gave the vocabulary mastery test to the students of class *XI.10* SMA Negeri 1 Tembilahan Hulu.
- d. There was enough time for each student to take the test independently.
- e. One point was given for every correct answer, while zero points were given for every wrong answer. The level of the students' vocabulary mastery could be seen from the results of the test.

2. Listening Comprehension Test (Variable Y)

- a. The researcher developed a listening test using an English audio recording for listening comprehension.
- b. The students were given 15 written multiple-choice questions to answer after listening attentively to the tape.
- c. The audio recording of the tape was played once to ensure students were given enough time to understand the listening material.
- d. One point was given for every correct answer, and zero points were given for every incorrect answer.
- e. The results of the listening comprehension test were obtained and analyzed to determine their relationship with the vocabulary mastery test scores.

G. Data Analysis Technique

In this study, there were two types of data analyzed, namely data from the vocabulary mastery test and the listening comprehension test. The data analysis procedures are explained as follows:

1. Scoring of Vocabulary Mastery and Listening Comprehension Test



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The same objective scoring technique was utilized in the listening comprehension test as well as the vocabulary mastery test. The test contained fifteen multiple-choice questions. An answer that was right was given a score of 1, and an answer that was wrong was given a score of 0. In language testing, such a scoring technique is often employed to ensure objectivity.

To standardize the students' score, the following formula was used:

$$\text{Score} = \frac{\text{Students' Correct Answers}}{\text{Total Number of Items}} \times 100$$

This formula was applied to both tests in order to convert raw scores into percentage scores (Ary et al., 2018:201).

2. Descriptive Statistical Analysis

Descriptive statistical analysis was done in order to summarize the students' performance after both tests were scored. Using the following formula, the mean score was determined in order to represent the students' average achievement:

$$\bar{x} = \frac{\sum x}{N}$$

$\bar{x}$ = Mean Score

$\sum x$ = Total Students' Score

N = Number of Students

(Source: Sugiyono, 2019:147)

3. Correlational Analysis

Pearson Product Moment Correlation analysis was conducted to examine the relationship between the students' vocabulary skills and their listening comprehension. The strength of the relationship between two quantitative variables can be determined (Hatch & Farhady, 1982:198).

$$r = \frac{N \sum xy - (\sum x) \sum y}{\sqrt{[n \sum x^2 - (\sum x)^2][n \sum y^2 - (\sum y)^2]}}$$

Table III.3. Interpretation of Correlation Coefficient

Correlation Coefficient (r)	Level of Correlation
0.00 - 0.19	Very Low
0.20 - 0.39	Low
0.40 - 0.59	Moderate
0.60 - 0.79	Strong
0.80 - 1.00	Very Strong

(Source: Sugiyono, 2019:184)

Although the correlation analysis has a formula, it will calculate using SPSS version 27 to obtain more accurate results.

4. Statistic Correlation Testing

The hypothesis testing was conducted at a significance level of $\alpha = 0.05$. The statistical hypotheses were formulated as follows:

- H1: Sig. (2-tailed) < 0.05 (There is a significant correlation between students' vocabulary mastery and listening comprehension).



- H0: Sig. (2-tailed) ≥ 0.05 (There is no significant correlation between students' vocabulary mastery and listening comprehension).



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