

CHAPTER III

RESEARCH METHOD

A. Research Design.

This study uses a comparative quantitative design to examine the differences in English grammar mastery between male and female students and to describe the Grammar Learning Strategies (GLS) used by both groups. Comparative research is designed to identify differences between groups based on specific variables in order to obtain meaningful conclusions (Lai & Fong, 2024). In this study, the comparison focuses on the students' level of grammar mastery and their use of learning strategies.

A quantitative approach is used because this study involves numerical data obtained from grammar tests and questionnaires administered to eighth-grade students at SMP Negeri 03 Seluma. Quantitative research emphasizes measurement, hypothesis testing, and statistical analysis to examine differences between groups objectively (Barroga et al., 2023). Therefore, this approach is considered appropriate for comparing grammar mastery between male and female students and describing the Grammar Learning Strategies used by each group.

B. Research Location and Time

This study was conducted at Seluma 03 Public Junior High School, Seluma Regency, Bengkulu Province. The study was carried out during the 2025/2026 school year. Data collection took place from May 18 to 25, 2026. During that period, the researcher administered a grammar test and distributed the Grammar Learning Strategies (GLS) questionnaire to the selected participants.

C. Population and Sample

1. Population

The population in this study consisted of all eighth-grade students at Seluma State Junior High School 3 in the current academic year. According to Sugiyono (2019), population is the entire group of individuals who have certain characteristics relevant to the research.

Table 3.1
Population

No	Classes	Male	Female	Total
1.	VIII A	14	16	30
2.	VIII B	13	18	31
3.	VIII C	13	17	30
4.	VIII D	13	16	29
Total		53	67	120

Based on the table, the total population consisted of 120 students, comprising 53 male students and 67 female students.

2. Sample

Tabel Krejcie – Morgan

TABLE FOR DETERMINING NEEDED SIZE S OF A RANDOMLY CHOSEN SAMPLE FROM A GIVEN FINITE POPULATION OF N CASES SUCH THAT SAMPLE PROPORTION WILL BE WITHIN $\pm 0,5$ OF THE POPULATION PROPORTION P WITH 95 PERCENT LEVEL OF CONFIDENCE

N	S	N	S	N	S
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	480	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375

Source: Krejcie and Morgan (1970)

The sample size was determined using the sample size table by Krejcie and Morgan (1970). According to that table, a population of 120 students requires a sample size of 92 respondents. Therefore, 92 students were selected as the research sample.

Since the population consisted of two gender groups, namely male and female students, the sample was distributed proportionally to ensure that each group was adequately represented in the study. Therefore, a proportional stratified random

sampling technique was used. The sample size for each stratum was calculated using the following formula:

$$n_i = \frac{N_i}{N} \times S$$

Where:

n_i = sample size from each stratum

N_i = population of each stratum

N = total population (120)

S = total sample size (92)

Calculation:

Male students: $\frac{53}{120} \times 92 = 40.63 \approx 41$

Female students: $\frac{67}{120} \times 92 = 51.37 \approx 51$

Source: Sugiyono (2019)

Table 3.2

Sample

No	Gender	Number of Students
1.	Male Students	41
2.	Female Students	51
Total		92

As presented in Table 3.2, the selected research sample consisted of 92 students, comprising 41 male students and 51 female students. The participants were selected using proportional stratified random sampling to ensure proportional representation of both gender groups. The sample was randomly selected based on the student list.

During the data collection process, however, only 81 students were present and able to participate in the study. Eleven selected students were absent on the day of data collection, including seven male students and four female students. Therefore, only the students who completed all research procedures were included in the data analysis. The attendance list recorded during the data collection process is provided in the appendix as supporting evidence.

Table 3.3
Final Sample Used for Data Analysis

No	Gender	Numbers of Gender
1	Male Students	34
2	Female Students	47
Total		81

As shown in Table 3.3, the final sample used for data analysis consisted of 81 students, including 34 male students and 47 female students. The data analysis in this study was based solely on the responses of these 81 students because they completed all research procedures and research instruments. (See Appendix 27)

D. Research Instruments

1. Grammar Test Instrument

Research instruments were used to collect data in this study. A grammar test was used to assess students' grammar mastery. The test consisted of 35 multiple-choice questions covering simple past tense, past continuous tense, and modal verbs. (See Appendix 1 for Blueprint of Grammar Test)

2. Grammar Learning Strategies Questionnaire

A Grammar Learning Strategies (GLS) Questionnaire was used to identify the Grammar Learning Strategies employed by students when learning English grammar. The questionnaire consists of 35 statements covering cognitive, meta-cognitive, social, affective, and compensatory strategies. Responses were measured using a five-point Likert scale, ranging from "Strongly Disagree" to "Strongly Agree." (See Appendix 2 for Blueprint of Grammar Learning Strategies Questionnaire)

E. Instruments Testing

Before the instruments were administered to the study participants, a pilot test (try-out) was conducted to evaluate their quality. The pilot test was carried out at SMP Negeri 25 Bengkulu City, involving 30 eighth-grade students. This school was selected because it has similar characteristics to the target population in terms of educational level and curriculum. Furthermore, the students who participated in the pilot test were not included in the actual research sample. Therefore, the pilot test could be conducted without affecting the validity of

the main study. The purpose of the pilot test was to determine the validity, reliability, difficulty index, and discrimination index of the grammar test, as well as the validity and reliability of the Grammar Learning Strategies (GLS) questionnaire.

1. Validity Test

Validity testing was conducted to determine whether each item on the grammar test and the Grammar Learning Strategies (GLS) questionnaire accurately measured the intended construct. The validity of each item was analyzed using Pearson's product-moment correlation with the aid of SPSS version 25. The correlation coefficient (r value) obtained for each item was then compared with the critical value in the r table. Since the study involved 30 students, the degrees of freedom (df) were 28 ($N - 2$), resulting in an r table value of 0.361 at a significance level of 0.05. An item was considered valid if its r -value exceeded the r -table value (0.361); otherwise, the item was considered invalid.

a. Validity Of Grammar Test

The results of the grammar test validity analysis are presented in Table 3.4.

Table 3.4
Validity of Grammar Test Result

Validity Test Result	Grammar Test Number	Total
Valid	1, 2, 3, 5, 6, 7, 8, 10, 11, 12, 13, 15, 16, 17, 19, 20, 22, 24, 25, 26, 27, 30, 31, 32, 33, 37, 40, 43, 44, 47, 48, 53, 56, 58, 60	35
Invalid	4, 9, 14, 18, 21, 23, 28, 29, 34, 35, 36, 38, 39, 41, 42, 45, 46, 49, 50, 51, 52, 54, 55, 57, 59	25
Total		60

Based on the table, 35 of the 60 items were classified as valid because their r-count values exceeded the r-table value of 0.361. Meanwhile, 25 items were classified as invalid because their r-count values were lower than the r-table value. Therefore, only the valid items were selected for use in this study. (See Appendix 6)

b. Validity Of Questionnaire Test

The results of the validity test for the Grammar Learning Strategy (GLS) questionnaire are presented in Table 3.5.

Table 3.5
Validity of Grammar Learning Strategies Result

Validity Test Result	Questionnaire Test Number	Total
Valid	1, 2, 3, 4, 7, 8, 10, 11, 12, 13, 16, 17, 18, 20, 21, 23, 25, 27, 28, 30, 31, 34, 35, 38, 41, 43, 44, 46, 49, 50, 51, 54, 55, 56, 60	35
Invalid	5, 6, 9, 14, 15, 19, 22, 24, 26, 29, 32, 33, 36, 37, 39, 40, 42, 45, 47, 48, 52, 53, 57, 58, 59	25
Total		60

Based on the table, 35 of the 60 items were classified as valid because their r-count values exceeded the r-table value of 0.361. Meanwhile, 25 items were classified as invalid because their r-count values were lower than the r-table value. Therefore, only the valid items were selected for use in this study. (See Appendix 19)

2. Reliability Test

A reliability test was conducted to determine the consistency of the research instrument. According to Creswell (2012), reliability refers to the consistency of scores obtained from an instrument. Therefore, the reliability of the grammar test and the Grammar Learning Strategies (GLS) questionnaire

was analyzed using Cronbach's Alpha with the aid of SPSS version 25.

Table 3.6
Reliability Criteria Based on Cronbach's Alpha

Cronbach's Alpha Value	Criteria
0.90 – 1.00	Very Highly Reliable
0.80 – 0.90	Highly Reliable
0.70 – 0.79	Reliable
0.60 – 0.69	Low Reliable
0.0 - 0.60	Unacceptable

Source Cohen, et.al (2011)

Table 3.7
The Reliability Test Results

Instruments	Number Of Items	Cronbach's Alpha	Criteria
Grammar Test	35	0.884	Highly Reli- able
GLS Ques- tionnaire	35	0.886	Highly Reli- able

The reliability testing was conducted using Cronbach's Alpha with the assistance of SPSS version 25. The analysis included 35 grammar test items and 35 items from the Grammar Learning Strategies (GLS) questionnaire. The results

showed that the grammar test obtained a Cronbach's Alpha value of 0.884, while the GLS questionnaire obtained a value of 0.886. Therefore, both instruments were considered reliable and suitable for use as research instruments in this study. (See Appendix 8)

3. Difficulty Index

The difficulty index was used to determine the level of difficulty of each test item. According to Arikunto (2018), test items can be classified into three categories: difficult, moderate, and easy based on their difficulty index values.

Table 3.8
Difficulty Index Criteria

Difficulty Index (p)	Category
0.00-0.30	Difficult
0.31-0.70	Moderate
0.71-1.00	Easy

Source : Addapted From Arikunto (2018)

Table 3.8
Difficulty Index Analysis

Category	Items Numbers	Total Items
Easy	21, 38, 41, 48, 54	5

Moderate	1-20, 22-37, 39-40, 42-47, 49-53, 55-60	55
Difficult	None	None
Total Numbers		60 Items

Based on the table, most of the grammar test items were categorized as moderate, while a small number of items were categorized as easy. No difficult items were identified. These results indicate that the test items had an appropriate level of difficulty for measuring students' grammar mastery. (See Appendix 9)

4. Discrimination Index

The discrimination index is used to determine the ability of each test item to distinguish between high-achieving and low-achieving students. In this study, the discriminatory power of the test items was analyzed using the Corrected Item-Total Correlation values obtained from SPSS version 25. Higher correlation values indicate better discriminatory power of the test items.

Table 3.9

Discrimination Index Criteria

Corrected Item-Total Correlation	Category
0.40-1.00	Very Good

0.30-0.39	Reasonably Good
0.20-0.29	Marginal
0.00-0.19	Poor

Source: Addapted from Ebel and Frisbie (1991)

Table 3.10

Discrimination Index Result of Grammar Test

Category	Items Number	Total
Very Good	1, 2, 5, 6, 8, 11, 12, 15, 20, 22, 24, 26, 33, 44, 47	15
Reasonably Good	3, 7, 10, 13, 16, 17, 19, 25, 27, 30, 31, 32, 37, 40, 43, 48, 53, 56, 58, 60	20
Marginal	9, 41, 45	3
Poor	4, 14, 18, 21, 23, 28, 29, 34, 35, 36, 38, 39, 42, 46, 49, 50, 51, 52, 54, 55, 57, 59	22
Total	60 Items	60

Based on the discrimination index analysis, 15 items were categorized as “Very Good,” 20 items as “Reasonably Good,” 3 items as “Marginal,” and 22 items as “Poor.” The results of the discrimination index analysis were used in conjunction with validity analysis and the difficulty index to determine the quality of the test items. Consequently,

only 35 valid test items were selected as the final instrument for this study. (See Appendix 10)

5. Assumption Test

a. Normality Test

The normality test was conducted to determine whether the data are normally distributed. According to Ghozali (2018), the purpose of a normality test is to assess whether the data distribution is normal. In this study, the Shapiro-Wilk test was used because the sample size was less than 50. The criteria for interpreting the results are as follows:

- 1) Sig. Value (P Value) > 0.05 , the data are normally distributed.
- 2) Sig. Value (P Value) < 0.05 , the data is not normally distributed.

b. Homogeneity Test

The homogeneity test was conducted to determine whether the variances of the data were homogeneous. According to Ghozali (2018), a homogeneity test is used to examine whether different groups have equal variances. In this study, Levene's Test was used to assess the homogeneity of variances. The criteria for interpreting the results are as follows:

- 1) Significance test (α) = 0.05
- 2) If $\text{sig} > \alpha$, then the variance of each sample is the same (homogeneity).
- 3) If $\text{Sig.} < \alpha$, the variances are not homogeneous.

c. Hypothesis Testing

The hypothesis testing was conducted to determine whether there was a significant difference in grammar mastery between male and female students. Since this study compared the mean scores of two independent groups, the Independent Samples t-test was used. According to Ghozali (2018), the Independent Samples t-test is used to compare the means of two unrelated groups. The decision criteria are as follows:

- 1) $\text{Sig. (2-tailed)} < 0.05$ indicates a significant difference between male and female students; therefore, H_0 is rejected and H_a is accepted.
- 2) $\text{Sig. (2-tailed)} > 0.05$ indicates no significant difference between male and female students; therefore, H_0 is accepted and H_a is rejected.

E. Data Collecting Technique

Data was collected using three methods: grammar tests, questionnaires, and documentation. First, grammar tests were administered to measure students' mastery of the simple past

tense, the past continuous tense, and modal verbs. Second, the Grammar Learning Strategies (GLS) questionnaire was distributed to describe the grammar learning strategies used by male and female students.

F. Data Analysis

The data obtained from the grammar test and the Grammar Learning Strategies (GLS) questionnaire were analyzed using SPSS version 25. This study employed a comparative quantitative approach to identify differences in grammar mastery between male and female eighth-grade students at SMP Negeri 03 Seluma and to describe the Grammar Learning Strategies (GLS) used by both groups.

The analysis consisted of descriptive and inferential statistics. Descriptive statistics, including mean, minimum, maximum and standard deviation, were used to describe students' grammar mastery and Grammar Learning Strategies. In particular, The GLS questionnaire data were analyzed descriptively to describe the Grammar Learning Strategies used by male and female students. The results were then classified into predetermined categories to facilitate interpretation.

To determine students' english grammar mastery, grammar test scores were interpreted using Arikunto's (2013) grading scale. This classification is used to group students' grammar mastery into five levels: Very Good (80–100), Good

(66–79), Fair (56–65), Poor (40–55), and Very Poor (≤ 39). This classification is used to answer the second research question regarding the level of English grammar mastery among male and female students.

Inferential statistics were used to test the research hypothesis regarding grammatical mastery. Grammar test scores were analyzed using an independent samples t-test to determine whether there was a significant difference in grammatical proficiency between male and female students. Before conducting the t-test, the data were tested for normality and homogeneity to ensure that the assumptions of parametric analysis were met. The hypothesis was tested at a significance level of 0.05. If the Sig. (2-tailed) value was less than 0.05, the alternative hypothesis (H_1) was accepted; otherwise, the null hypothesis (H_0) was accepted.

The data analysis steps in this study refer to the quantitative analysis procedures proposed by Sugiyono (2019).

a. Mean

The mean score is used to describe students' grammar mastery and the Grammar Learning Strategies (GLS) used by male and female students.

b. Minimum Score

The minimum score is used to describe the lowest score obtained from the grammar test and the Grammar Learning Strategies (GLS) questionnaire.

c. Maximum Score

The maximum score is used to describe the highest score obtained by students on the grammar test and the Grammar Learning Strategies questionnaire.

d. Standard Deviation (SD)

Standard deviation is used to measure the dispersion or variability of students' grammar mastery and Grammar Learning Strategy scores relative to the mean.

e. Independent Sample T-test

The independent samples t-test was used to determine whether there was a significant difference in grammar mastery between male and female students.

