

CHAPTER III

RESEARCH METHOD

This part talks about the research design, the research population and sample, the research procedure, research instrument, the data collection technique, and the data analysis technique. Those methods and steps are used by the expert during the study.

A. Research Design

The study is experiment research. According to Creswell (2012), experimental research is a quantitative study in which the researcher determines the significance of the independent variable on the dependent variable. This study consists of one independent variable, one intervening/moderating variable and one dependent variable.

The independent variable is mind mapping and an intervening or moderator variable called learning style, classified as visual, auditory, or kinesthetic. The dependent variable in this study is writing skill of descriptive text. Thus, this design is carried out to assess the significant effect of mind mapping on the writing skill of descriptive text by students with different learning styles.

In addition, the researcher employs a quasi-experimental design. Creswell (2012) states that group assignments, rather than random ones, are an element of quasi-experiments. This study's methodology makes use of two complete sets of classes. There are two groups in which the researcher administers varying treatments: one employs mind mapping as an experimental strategy, while another uses graphic organizer. However, the researcher utilizes a pre-and post-test design. According to Creswell (2008), before experimental subjects get a treatment, researchers conduct a pre-test to gauge their level of agreement with a set of stated traits or features. At the same time, following a treatment, participants in an experiment will take a post-test to evaluate their progress on certain features or characteristics. Here is an example of a table that illustrates quasi-experimental designs:

Table 3.1
Research design

Class	Pre-test	Treatment	Post-test
Experimental	✓	Mind mapping	✓
Control	✓	Graphic organizer	✓

B. Research Population and Sample

The population is defined as group of things or students with specified attributes and characteristics that researchers have chosen to study. The population for this research comprises 108 students who are in the second grade of SMP N 16 Tulang Bawang Barat. There are four second-grade courses. The population is displayed in the table below.

Table 3.2
Populuation of the Research

Class	Students
VIII A	28
VIII B	27
VIII C	25
VIII D	28
Total	108

In addition, the sample is a subset of the population and represents its many attributes and features. Selecting a sample is a crucial stage in performing a research study. A sample refers to a subset of a population with a particular trait found in the overall population. When selecting the research sample, the researcher requested the presence of the English teacher to discuss the proficiency and challenges students encounter in learning English. Subsequently, the English teacher suggested using VIII A and VIII D as the sample of the study. One class is chosen as the experimental group and another as the control group from the two classes.

C. Reseach Procedures

The researcher applies several stages to conduct the quasi-experimental research. The procedures start from how the researcher determines the experiment

group and control group until the researcher conducts the post-test. The procedures are as follow:

1. The first meeting

The researcher greets, introduces, explains the descriptive text, and give instruction for students to do pre-test . Then, the researcher administers the pre-test to both VIII A and VIII D class. Next, the researcher checks and assesses the students' writing assignment to know their writing proficiency. Finally, the reseracher detemines the experiment group and control group. Based on the result of the pre-test, the researcher knows whether each class meets homogeneity and it is distributed equally so that there is no superior class and no under achievement class.

2. The second, third, and fourth meeting

In the second meeting, the researcher explains the social function, generic structure (identification and description), and language features of the descriptive text in depth and give an example of the descriptive text for both experiment and control group. Then, the researcher introduces and directs experiment group to use mind mapping technique to write description of people. Meanwhile, the researcher guides the control group to utilize graphic organizer to make descriptive text about person. Finally, the researcher gives feedback for learners' writing of descriptive text.

In the third and the fourth meeting, the researcher reviews the descriptive text for a while and guides the experiment group to use mind mapping technique and control group uses graphic organizer to write descriptive text. However, the researcher still puts the difference of those two meetings. The students write descriptive text about historical place/building in third meeting, while in the fourth meeting they write descriptive text about animal. At the end of meetings, the researcher gives feedback for both classes.

3. The fifth meeting

In the fifth meeting, the researcher administers the post-test to find out whether there is an improvement of the students writing proficiency and administers the questionnaire to know students' learning and what learning style can get higher

writing score after getting treatments by using mind mapping technique. Besides, the research finds out the different score between students in experiment class who use mind mapping technique and learners in control class who utilize graphic organizers.

D. Research Instrument

In collecting data, the researcher uses two kinds of instruments namely test and questionnaire. The test was a writing test to gauge learners' writing of descriptive text. Meanwhile, questionnaire is used to know students' learning style.

1. The Test

The first instrument employed in this research is a test. The students must compose a descriptive essay centred around the provided subjects during the examination. The essay should adhere to the standard structure of descriptive literature, which includes sections for identification and description. Additionally, it should have specific language qualities, such as using simple present tense, noun clauses, adverbs of location, and adjectives. The students complete the test within a time frame of 60 minutes. The exam score is derived from Brown's (2007) rubric for evaluating writing.

Table 3.3
Writing Assessment Rubric by Brown (2007)

Aspect	Score	Performance Description
Content	27-30	The topic is complete and clear and the details are relating to the topic
	22-26	The topic is complete and clear but the details are almost relating to the topic
	17-21	The topic is complete and clear but the details are not relating to the topic
	13-16	The topic is not clear and the details are not relating to the topic
Organization	18-20	Identification is complete and descriptions are arranged with proper connectives
	14-17	Identification is almost complete and descriptions are arranged with almost proper connectives

	10-13	Identification is not complete and descriptions are arranged with few misuse of connective
	7-9	Identification is not complete and descriptions are arranged with misuse of connectives
Grammar	18-20	Very few grammatical or agreement inaccuracies
	14-17	Few grammatical or agreement inaccuracies but not effect on meaning
	10-13	Numerous grammatical or agreement Inaccuracies
	7-9	Frequent grammatical or agreement inaccuracies
Vocabulary	22-25	Effective choice of words and word forms
	18-21	Few misuse of vocabularies, word forms, but not change the meaning.
	11-17	Limited range confusing words and word forms.
	5-10	Very poor knowledge or words, word forms, and not understandable
Mechanics	5	It uses correct spelling, punctuation and Capitalization
	4	It has occasional errors of spelling, punctuation and capitalization
	3	It has frequent errors of spelling, punctuation and capitalization
	2	It is dominated by errors spelling, punctuation and capitalization

In this research, the researcher applies pre-test and post-test. They are administrated in both experimental class and control class.

1) Pre test

A pre-test is administered as a first investigation to determine the student's proficiency and difficulties in composing descriptive language. A preliminary assessment is conducted prior to the commencement of the therapy procedure. The researcher obtains the score in order to gather the first data. The pre-test is administered. The researcher provides a concise elucidation of a descriptive essay. Subsequently, the researcher disseminates the subjects. Subsequently, the students

complete the test within a time frame of 60 minutes. The pre-test score is determined by the criteria outlined in the grading rubric for writing, which includes the relevance of the material, organization, grammar, vocabulary, and mechanics.

2) Post test

The post-test is administered to assess the student's writing proficiency enhancement. The post-test was carried out after the therapy administration or the instruction of writing skills utilizing the mind mapping approach. The researcher follows a set of actions, such as conducting a pre-test and using the same grading rubric for writing. The subject matter of the descriptive essay in the post-test differs from that of the pre-test. The post-test is conducted to determine the student's final score and to assess the change in their scores before and after receiving the therapy.

2. The Questionnaire

The second instrument utilized is a questionnaire. This study used a close-ended questionnaire to ascertain the various sorts of English learning styles among students. The questionnaire consists of 30 multiple choice questions. The researcher instructs the students to select one of the three options provided in the questionnaire. If the majority of students select option A, it indicates that they possess a visual learning style. If the majority of students select answer B, it indicates that they possess an auditory learning style. If the majority of students select option C, they possess a kinaesthetic learning style. The researcher used a modified version of the VAK Learning Styles Self-Assessment questionnaire, originally developed by Swinburne University of Technology. The researcher translates it into Bahasa Indonesia to enhance students' comprehension and by using printed paper and share it to streamline data collection. The questionnaire is delivered to both the experimental class and the control class.

Table 3.4
The characteristic of Learning Style adopted from VAK Learning
Styles Self-Assessment (Swinburne University of
Technology) (2005)

Learning Style	Characteristic
Visual	• Has preference for seen or observed things, including pictures, diagrams, demonstration, display, handouts, films, flip-chart, etc. • Often use phrases such as show me, let's have a look at that, etc. • Will be best to be able to perform a new task after reading the instruction or watching someone else do it first. • Will work from lists and written directions and instructions.
Auditory	• Has a preference for the transfer of information through listening to the spoken word. • Often use phrases such as tell me, let's talk, etc. • Will be best to be able to perform a new task after listening to instruction from someone else. • Happy being given spoken instruction.
Kinaesthetic	• Has a preference for physical experience, touching, feeling, holding, doing, practical hands-on experience. • Often use phrases such as let me try, let's do it, etc. • Will be best to be able to perform a new task by going ahead and trying it out, learning as they go. • Like to experiment.

E. The Validity and Reliability of the Research Instruments

Before administering the research instrument, the researcher tested the validity and reliability of the instruments. They are able to be utilized to collect the data when they were valid and reliable. The validity of the instrument represents the extent to which a test measures what it purposed to measure. In other words, it is done to know whether the test really measures the characteristic that is being used to measure. Besides, the reliability is the degree to which a test consistently measurement.

1. Validity Test

To get the validity of the questionnaire as learning style and test instrument, the researcher consulted to expert validation then conducted try-out. After getting the raw data of students' learning style and test instruments, then the data was analyzed statistically applying *r-Pearson Product Moment*. It was done by comparing between r_{value} . the formula of the product moment correlation was as follows:

With the significant value of 5% the researcher could get the amount of r_{tabel} . The data analysis was carried out with the help of SPSS. When the value of r_{value} is higher than r_{table} ($r_{\text{value}} > r_{\text{table}}$), the item of the instrument was valid. on the contrary, if the value of r_{value} is lower than r_{table} ($r_{\text{value}} < r_{\text{table}}$), the item of the instrument was not valid.

After trying out the instrument of learning style and test, the researcher got the raw data of the learners' learning style. Then, the data was analyzed statistically to get validity of instrument. Based on raw scores, the researcher did a validity test which was in table below.

The try-out of learning style questionnaire was done to get a valid research instrument. The try-out of the instrument was examined in 8th grade of SMP N 16 Tulang Bawang Barat which was consisting of 28 respondents. There were 30 questions and three alternative choices to each question. The respondents must choose one of three choices matched with their style in learning or doing something. The result of the try-out asserted that 29 of 30 questions were valid and 1 question was invalid.

Table 3.5
The Validity Test of Learning Style Instruments

No.	R hitung	R Tabel	Keterangan
1	.658**	0,374	VALID
2	.628**	0,374	VALID
3	.840**	0,374	VALID
4	.658**	0,374	VALID
5	.840**	0,374	VALID
6	0.359	0,374	INVALID
7	.558**	0,374	VALID
8	.628**	0,374	VALID
9	.628**	0,374	VALID
10	.631**	0,374	VALID
11	.631**	0,374	VALID
12	.840**	0,374	VALID
13	.578**	0,374	VALID
14	.738**	0,374	VALID
15	.578**	0,374	VALID
16	.535**	0,374	VALID
17	.418*	0,374	VALID
18	.631**	0,374	VALID
19	.658**	0,374	VALID
20	.631**	0,374	VALID
21	.578**	0,374	VALID
22	.631**	0,374	VALID
23	.631**	0,374	VALID
24	.631**	0,374	VALID
25	.578**	0,374	VALID
26	.738**	0,374	VALID
27	.631**	0,374	VALID
28	.578**	0,374	VALID
29	.375*	0,374	VALID
30	.628**	0,374	VALID

Besides, the researcher conducted try-out of writing test instrument. There were four topics such as describing people, animal, building, and tourism place being offered to students to write descriptive text. Then, they must choose one of four topic offered. The students had 60 minutes to do writing test. The score of writing test was based on writing scoring rubric which adopted from Brown (2007). The result of writing test instrument asserted that the writing test and scoring rubric were valid. The validity was in table below.

Table 3.6
The Validity Test of Writing Test Instruments

No.	R hitung	R Tabel	Keterangan
Content	.607**	0,374	VALID
Organization	.851**	0,374	VALID
Grammar	.920**	0,374	VALID
Vocabulary	.911**	0,374	VALID
Mechanics	.840**	0,374	VALID

Based on the result of validity test for questionnaire and test instruments, it could be concluded that all reseach instruments could be used to collect the data of students' learning style and writing skill.

2. Reliability Test

To get the reliability of the learning style instrument, the researcher conducted a reliability test. The researcher applies an *Alpha Cronbach* formula by comparing between r_{α} and r_{table} . If the value of r_{α} was higher than r_{table} ($r_{\alpha} > r_{table}$). It means that the instrument was reliable. Besides, If the value of r_{α} was lower than r_{table} ($r_{\alpha} < r_{table}$). It means that the instrument was not reliable. The data analysis was carried out by utilizing SPSS. The result of reliability was described in the following table:

Table 3.7
The Reliability Test of Learning Style Instrument

Reliability Statistics	
Cronbach's Alpha	N of Items
0,943	30

Table 3.8
The Reliability Test of Writing Test

Reliability Statistics	
Cronbach's Alpha	N of Items
0,856	5

After Applying an *Alpha Cronbach* formula, the result of reliability test shown that from the 29 valid items of the learning style instrument, the r_{alpha} was 0.943. Besides, 5 valid item of writing test, the r_{alpha} was 0.856. It could be concludes that both of research instruments to collect the data was reliable.

F. Data Collection Technique

This research includes one independent variable, one intervening/moderating variable, and one dependent variable. The students' writing competence was dependent variable, while the mind-mapping approach and learning style are the independent factors. The data collection strategy employs both test and non-test methods. The exam is employed to assess the effect of mind mapping on learners' writing, and a non-test method, namely a questionnaire, is utilized to get data on student's learning styles.

The administration of a pre-test gathers the first data. Each class's students are administered a pre-test before their first meeting. Subsequently, the researcher evaluates the outcome of the preliminary examination and compares it with each class to ascertain which class should get the intervention. The experimental class will consist of students with minimal proficiency in writing. The researcher conducted a post-test after many therapy sessions to obtain further data. The post-

test aims to assess students' improvement in their writing skills, specifically in descriptive language. The final data set is obtained by administering a questionnaire to determine the student's learning style. The survey is disseminated by printing the questionnaire on paper then being divided to the students.

G. Data Analysis Technique

The researcher use quantitative data analysis techniques to effectively manage and analyze the obtained data. This implies that the researcher will employ statistical techniques to analyze the data. This statistical approach is appropriate for addressing the research challenge. The researcher employed analysis of covariance (ANCOVA) to examine the data in this research. The analysis of covariance is a statistical method utilized to mitigate influence of the independent variables that are associated with the dependent variable (Ary, 2010). The researcher used ANCOVA due to the non-random nature of the samples. Non-randomized designs necessitate the use of ANCOVA to effectively account for variations in pre-test scores among groups, as these variations are expected to arise in intact groups. The data analysis process consists of three steps: normality test, homogeneity test, and hypothesis test.

1. Normality Test

The normality test was applied to determine the normality of the data that will be investigated, whether all groups had normal distributions. The normality test to analyze pre-test and post-test datas have a normal distribution. In this reserach, to measure the normality, the researcher employed SPSS program using *Kolmogorov Smirnov (Shapiro-Wilk Test)* with SPSS and level of significance = 5%. The distribution data is normal if the asymptotic significance calculation result exceeds α (5%). Conversely, if the asymptotic significance result is less than α (5%), it indicates that the data did not distribute normally.

2. Homogeneity Test

The homogeneity test was utilized to determine whether the samples were drawn from populations that are statistically significant to one another. The homogeneity test was employed to examine the similarity of variance between

the two groups compared, which are the experimental class and the control class. The researcher employs *Levene* testing on SPSS with a level of significance of α (5%) to calculate homogeneity testing. If the calculation result exceeds the 5% degree of significance, H_a is accepted, indicating that both groups are homogeneous and share the same variant.

3. Hypothesis Test

After the data are in the normal distribution and the variances are homogenous, then the test of hypothesis is used analysis of covariance (ANOVA). This analysis used SPSS program. To test this hypothesis the researcher applies the following decision-making criteria: H_0 = The independent variables had no a significant impact on the dependent variable. H_a = The independent variables have a substantial impact on the dependent variable. The assessment criteria are implemented by:

- If the sig value > 0.05 then **H_0** is accepted and **H_a** is rejected.
- If the sig value < 0.05 then **H_0** is rejected and **H_a** is accepted.