CHAPTER III
RESEARCH METHODOLOGY

In this part, the writer described research methodology used in conducting the research. It was purposed to answer the problem of the study. This chapter consist of research type, research design, population and sample, instruments of the study, instruments of try out, data collection procedures and data analysis procedures.

A. Research Type

Considering the purposes of the research and the nature of the problems, the type of research was quantitative research using cluster sampling. The researcher took two classes as experiment and control class. Each class divided into two groups; low and bright students. Low students group were those who did not fulfill the minimum mastering score. Meanwhile, high students group were students who fulfilled the minimum mastering score. The minimum score was 60. Experiment class was sample class that gave treatment which the teaching learning process used picture in teaching writing descriptive text. In the other hand control class was class that the teaching learning process did not use picture in teaching writing descriptive text.

B. Research Design

The research design of this study is factorial - experimental design using two-ways ANOVA to analyze the data. Factorial Experimental design is one in which the writer manipulates two or more variables simultaneously in order to study the independent effect of each variable on the dependent variable, as well

as the effects caused by interactions among the several variables.[63] Two-ways ANOVA is two independent variables are investigated.[64]

Experimental research involves a study of the effect of the systematic manipulation of one variable on another variable. The manipulated variable is called the experimental treatment or the independent variable (picture as instructional media in teaching descriptive writing). The observed and measured variable is called the dependent variable (low and bright students' score in writing descriptive text).[65]

Table 3.1
The schema of factorial design

Level	Treatment	
	Experimental (B1)	Control (B2)
Bright (A1)	A1B1	A1B2
Low (A2)	A2B1	A2B2
Low+ Bright (A1+A2)	B1	B2

Note:

A1: Bright Students	A1B1: Bright Students of Experiment class.
A2: Low Students	A2B1: low Students of Experiment Class.
B1: Experiment Class	A1B2: Bright Students of Control Class.
B2: Control Class	A2B2: Low Students of Control Class.

[63]Donald Ary, Lucy Cheser Jacobs, Chir Sorense, Asghar Razavieh, *Introduction to Research in Education*, 8th Ed., USA: Wadsworth Cengage Learning, 2010, p. 311.
[64]*Ibid*, p. 184.
[65]*Ibid*, p. 266.

C. Variable of The Study

Variable is a property or characteristic which may differ from individual to individual or from group to group. A great deal of research is carried out in order to identify or test the strength of relationships between variables. When one variable influences or affects a second variable, the first variable is called an independent variable, and the second is called a dependent variable. The study included the following variables:

1. Independent variable: using picture media in teaching writing descriptive text (X).
2. Dependent variable :
   a. Writing score of bright students (Y_1)
   b. Writing score of low students (Y_2).

The research had three variables that an independent variable (X) and two dependent variables (Y1 and Y2). Independent Variable is using picture media. Dependent Variable is (a).writing score of bright students (Y1) and (b).writing score of low students (Y2)

D. Population And Sample

1. Population

A population is defined as all members of any well defined class of people, events, or objects. If someone wants to research all of the elements in research area, his/her research is called population research on census study.[66]

[66]*Ibid*, p. 148.

The Population of the study were all the students of first year students of SMA Muhammadiyah-1 Palangka Raya, amount 110 Students in five classes X1-X5 which each class consists of 22 students.

Table 3.2
Number of Population in SMA Muhammadiyah-1 Palangka Raya

NO.	CLASS	NUMBER
1	X-1	22
2	X-2	22
3	X-3	22
4	X-4	22
5	X-5	22
	Total	110

2. Sample

Sample is a subset of individuals or case from within a population.[67] Based on the population which is grouped into classes, the sample of this study was class or cluster. In this case, class was considered as a unit or group. In this study, there was two samples based on purposive technique. The sample was class X-4 and X-1. Class X-4 was as experimental class, X-1 was as control class. Whereas X-2 will be as try out class. The writer chose class X-4 and X-1 as sample because these two classes were considering having similar number of students and similar writing ability who representative whole students' writing ability.

[67] David Nunan, *Research Methods in Language Learning*, Cambridge: Cambridge University Press, 1992 , p. 232.

E. Research Instrument

1. Test Type

The type of the test used to collect the data was in the form of writing test, especially descriptive writing test using and without picture as teaching media. The test consists of the instructions and statement the subjects addressed in their writing and the alternative topics to be chosen. In this sense, the students were assigned to choose one of topics that interest. They asked to develop the topic into a text containing about 100-150 words. The allocated time to do each writing test was 90 minutes.

2. Test Construction

The construction was based on the objective of the study. The study was aimed at finding the effectiveness of using picture media toward bright and low level students' achievement in writing descriptive text at first year students at SMA Muhammadiyah-1 Palangka Raya. To investigate the effectiveness of using picture media toward bright and low level students' achievement in writing descriptive text at first year students at SMA Muhammadiyah-1 Palangka Raya, the subjects were assigned to write descriptive text. The result of two tests were investigated using statistical analysis and the outcomes were compared to see the effects of using picture media toward bright and low level of students' achievement.

To gain the appropriate writing test for the aim of this study, the writer did some steps: (a). planning the writing test, (b). preparing the writing test, (c).

trying out (pre-test) the test and analyzing the result, and (d).carrying out the test.

a. Planning the writing test

To produce a good writing test, the writer made plan on the test construction. In this sense, the objective of the test was determined. Then, the writer decided the appropriate type of test. The test type and test objectives were very close. The test objective cannot be achieved without having appropriate test type. Then, the writer care for the adequacy of the content. The test content should match with test types and objectives. Lastly, the time allocation for the test administration plans as well as the instrument try out.

b. Preparing The Writing Test

The writing test was used to elicit the data covering direction and instructions of what the subjects have to do. To make the instruction clear and understood by the students, the instructions must be simple. The instruction was accompanied with several alternative topics. The topics were the ones the students familiar and could develop into composition.

In Sabarun thesis, to construct the directions, the writer took into account the guidelines applied by Clouse as follow: (1).The question should be clear, (2). The question should be brief, (3).The question should be definite, (4). Avoid question requiring yes or no answers, (5).Average students should be able to write answer to the questions, (6). The vocabulary used and the concepts expressed in the topic should not be too difficult for ordinary students

to understand immediately, (7). The instructions should provide an organizing principle for composition.[68]

The writing instructions were designed to measure the students' writing ability. The students' ability was scored on the basis of the marking scheme that contains some features or component of writing such as content, organization, sentences structure, and grammar, usage and mechanics of the students' writing.

c. Test Try Out

In order to prove the test was suitable to the students who were the sample of this study, the writer conducted a try out test. Then the writer chose student in the some school but different class to try out the test. The try out test conducted at SMA Muhammadiyah Palangka Raya. XI -2 was the try out class with 22 students. The result was valid, it meant that the test item as the instrumentation of this study was suitable to be given.

3. Research Instrument Reliability

Reliability is a necessary characteristic of any good test for it to be valid at all. A test must first be reliable as a measuring instrument. It is the degree of consistency with which it measures whatever it is measuring.[69] Similarly, Sekaran stated that reliability is the extent of consistency and stability of the measuring instrument. In this case, to score composition as fairly and consistently as possible. Reliability refers to the consistency with which a test

[68] Sabarun, *The Effectiveness of Using Clustering Technique in Writing Expository Essays of the Fourth Semester English Department Students of Palangka Raya*, Unpublished Individual Research Proposal, Palangka Raya: STAIN Palangka Raya, 2013, p. 37.

[69] Donald Ary, Lucy Cheser Jacobs, Chir Sorense, Asghar Razavieh, *Introduction to Research in Education*, 8th Ed., USA: Wadsworth Cengage Learning, 2010, p. 236.

measured whatever it measured.[70] In this study, reliability of the writing test mainly focuses on the rater reliability since the score are obtained from the judgment of two different raters. Here, the consistency in rating score is very important in measuring the students' writing skill. The consistency can be achieved through rater training.

In rather reliability, there are inter-rater reliability and intra-rater reliability. Inter-rater reliability is the consistency of the judgment of several raters on how they see a phenomenon or interpreted the responses of the subject. It indicates accuracy in scoring composition of two different raters. Meanwhile, intra-rater reliability referred to the consistency of the rater in scoring the same paper at two different points of time. It points out an individual accuracy in scoring a particular composition.[71]

In this study, the writer applied inter-rater reliability; two raters would employed to score the students' writing. The two raters were the writer self and one of English teacher of SMA Muhammadiyah-1 Palangka Raya.

One important thing in using the inter rater method in rating process was focused with the training of the raters. It can maximize the accuracy of the writing assessment. This made the raters be consistent in scoring and avoid subjectivity of the raters in scoring. For this purpose, the training was done to get inter rater agreement in order to give reliable scores to students' writing product.

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[70]Hopkins, C.D & Richard, L.A, *Classroom Measurement and Evaluation*. Illinois: F.E. Peacock Publisher, Inc, 1990, p. 295.

[71]Sabarun, *The Effectiveness of Using Clustering Technique in Writing Expository Essays of the Fourth Semester English Department Students of Palangka Raya*, Unpublished Individual Research Proposal, Palangka Raya: STAIN Palangka Raya, 2013, p. 43.

Relevant to this, Nunan stated that the acceptance reliability on composition score is possible to get through careful training of raters.[72] Furthermore, Latief argue that reliability on composition is affected by both raters and writers of the text. Raters' reliability refers to the accuracy of the raters judgment. Meanwhile, writers' reliability refers to the accuracy of the writers' performance.[73]

To obtain inter- rater reliability, the score of two raters were correlated using SPSS program. Then the writer got the interpretation of coefficient correlation, whether they belong to high, moderate, or positive weak negative inter rater reliability category. The obtained coefficient should indicate that the students' writing products both using picture media and without using picture media have achieved the acceptable level of reliability. Calculation result of ***r*** was compared with $\mathbf{r}_{table}$ by 5% degree of significance with df= N-2. If **r** was higher than $\mathbf{r}_{table}$ so it meant reliable and if **r** was lower than $\mathbf{r}_{table}$ so it meant unreliable. In this case, the writer applied the coefficient correlation and the interpretation of inter-rater reliability proposed by Winkle et al as shown in table 3.3. [74]

[72] David Nunan, *Research Methods in Language Learning*,Cambridge: Cambridge University Press,1992 , p. 56.

[73] M . Latief Adnan, *Reliability of Language Skill Assessment Result*, Jurnal Imu Pendidikan VIII No. 3, 214-224, 2010.

[74] Antony C. Winkle, and Jo Roy Mc Cuen, *Writing the research Paper*, Orlando: Harcount Brace Jovanovic Publisher, 1989, p. 35.

Table 3.3

Inter-Rater Coefficient Correlation and Interpretation

Correlation Coefficient	Interpretation
.90 to 1.00 or -.90 to -1.00	Very high positive or negative correlation
.70 to .89 or -.70- to -.89	High positive or negative correlation
.50 to .69 or -.50 to -.69	Moderate positive or negative correlation
.30 to .49 or -.30 to -.49	Low positive or negative correlation
.00 to .29 or -.00 to -.29	Little if any correlation

Table 3.4 Testing of Correlations

		VAR00001	VAR00002
VAR00001	Pearson Correlation	1	.715**
	Sig. (2-tailed)		.000
	N	22	22
VAR00002	Pearson Correlation	.715**	1
	Sig. (2-tailed)	.000	
	N	22	22

**. Correlation is significant at the 0.01 level (2-tailed).

Based on the calculation above used SPSS program, the **r** was 0.715. Then it was consulted with $\mathbf{r}_{table}$ of Product Moment with df= 22-2= 20, the level of significance 5% so $\mathbf{r}_{table} = 0.4227$. Because $\mathbf{r} = 0.715 > \mathbf{r}_{table} = 0.4227$. It could be concluded that the try out was reliable.

Based on the Result of Instrument Reliability above, it was known that the coefficient of reliability was 0.715 with the Criteria High positive Reliability. It meant that the instrument could be used as the Instrumentation of the study.

4. Research Instrument Validity

Validity is a measurement which shows the grades of number of an Instrument. A valid Instrument must have high validity, it means that an Instrument which lacks validity is said to be Invalid instrument.

An instrument is called a valid one when it can measure something which is wanted by covering the variable studied exactly. The method used in measuring the validation of the instrument is called content validity. A test or a measurement can be called a content test when it measures the special purpose which is equal with the material or content given.

a. Face Validity

The types of face validity, if the test items look right to other testers, teacher, indicators and test. The types of test items, which would use in this research, can be suitable to the others at the same level was Senior High school. [75]

For face validity of the test items as follow:

1) The test used written test in writing test instruction.
2) The evaluation by written test based on scoring system.
3) Kind of the written test was writing descriptive text.
4) The Language of items used English
5) The written test was suitable with syllabus of English writing for first year students at SMA Muhammadiyah-1 Palangka Raya.

[75]J. B. Heaton, *Writing English Language Test*, 1975, p. 152.

b. **Content Validity**

This kind of validity depends on a careful analysis of the language being tested being testes and of the particular course objective. The test should be so constructed as to contain a representative sample of the course, the relationship between the test items and the course objective always being apparent.[76] The instrument which used test, the tasting of content validity is done by asking the opinion of the judgment experts about the instrument is able to try out or not.

F. Data Collection

To answer the research problems: (1).Does teaching picture media give effect on bright students in writing descriptive text at first year Students at SMA Muhammadiyah-1 Palangkaraya ? (2). Does teaching picture media give effect on low students in writing descriptive text at first year Students at SMA Muhammadiyah-1 Palangkaraya ? (3). Does teaching picture media give effect on low and bright students in writing descriptive text at first year Students at SMA Muhammadiyah-1 Palangkaraya ?

To collect the accurate data in this study, the writer selects the instruments that appropriated for the problem statement:

1. Documentation

Documentation method is used to look for the data concerning matters or the variable that are taken in the form of the note, transcript, book, newspaper, magazine, inscription, notulen, lengger, agenda, etc. it refers to the archival data that help the writer to collect the needed data. In this study, this method is

[76]J. B. Heaton, *Writing English Language Tests*, New York: Longman, 1974, p. 154.

used to get the data that related to the object of research such as students' name list which are included in the population. In this case, the data was gained by the help of the English teacher.

2. Test

Test is a set of questions or exercises and other tools which are used to measure skill, intelligence, knowledge, and ability those are had by individual or group.[77] This method is used to get data about score of the pre-test and post-test that was given for both of groups. The test in this study was writing test. The students were given a free chance to think as much as possible. They could freely express and organize their ideas in written form.

a) Pre- test

Before the writer taught new material by using picture, the writer gave a test to the students. Pre-test was given to the experiment class and the control class. This test was given before the experiment applied.

b) Post- test

Post-test was given to the experiment class and the control class. The test was given in order to know the improvement of students' ability in writing descriptive text. The post-test gave to the experiment class and control class after receiving treatment. The experimental groups taught descriptive writing through picture the control groups taught descriptive writing without picture (by using lecturing only).

[77]*Ibid*, p. 6.

For collecting the data, the writer used some steps in the procedure as follows:

1. The writer observed the class
2. The writer determined the class into experimental group and control group.
3. The writer gave Pre-Test to experimental group and control group.
4. The writer classified the group into bright and low students.
5. The writer gave treatment to experimental group that was taught by picture media.
6. The writer gave Post-Test to experimental group and control group.

G. Data Analysis

The data of this study were low and bright students' writing score. Therefore, the data were in quantitative data. The data were analyzed by means of inferential statistics. This statistical analysis was suitable to answer the research problem. In this case, the writer applied two-ways ANOVA to examine the significant difference score between the low and bright students who taught by picture media in writing descriptive text and the low who taught without picture in writing descriptive text.

1. Technique of Analyzing Data

Before analyzing data using Anova Test, the writer fulfills the requirements of Anova Test. They are Normality test, and homogeneity test.

a. Normality Test

It is used to know the normality of the data that is going to be analyzed whether both groups have normal distribution or not. In this study to test normality the writer applied SPSS 17 program using Kolmogorov Smirnov with level of significance α=5%. Calculation result of asymptotic significance is higher than α (5%) so the distribution data was normal. In the contrary, if the result of asymptotic significance is lower than α (5%), it meant the data was not normal distribution. [78]

b. Homogeneity Test

Homogeneity is used to know whether experimental group and control group, that are decided, come from population that has relatively same variant or not. To calculate homogeneity testing, the writer applied SPSS 17 program using Levene's testing with level of significance α (5%).

If calculation result was higher than 5% degree of significance so H_a was accepted, it means both groups had same variant and homogeneous.[79]

c. Testing Hypothesis

The writer applies the two- ways ANOVA statistical calculation to test hypothesis with level of significance α (5%) two-ways ANOVA could be applied to test a difference mean or more. The steps are as follows:[80]

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[78]Jean D. Gibson and Subhabrata C., *Nonparametric Statistical Inference*, 4th Ed., New York: Marcel Dekker, Inc., 2003, p. 111

[79]Analisis Data dengan SPSS, http://pasca.undiksha.ac.id/elearning/staff/dsnmateri/4/1-45.pdf (online 24 June 2014).

[80]Donald Ary, Lucy Cheser Jacobs, Chir Sorense, Asghar Razavieh, *Introduction to Research in Education*, 8th Ed., USA: Wadsworth Cengage Learning, 2010, p. 184-187.

a. The total sum of squares

$$SS_t = \sum X^2_t - \frac{(\sum X_t)^2)}{N}$$

Where

SS_t = sum of square total

$\sum X^2$ = each score squared, then summed

$(\sum X_t)^2$ = all the scores summed first, then this sum squared

N = number of scores

b. The sum of squares between groups

$$SS_b = \frac{(\sum X_1)^2)}{n_1} + \frac{(\sum X_2)^2)}{n_2} - \frac{(\sum X_2)^2)}{N}$$

c. The sum of squares within groups

$$SS_w = SS_t - SS_b$$

d. The between-columns sum of squares

$$SS_{bc} = \frac{(\sum X_{c1})^2)}{n_{c1}} + \frac{(\sum X_{c2})^2)}{n_{c2}} - \frac{(\sum X)^2)}{N}$$

e. The between-rows sum of squares

$$SS_{br} = \frac{(\sum X_{r1})^2)}{n_{r1}} + \frac{(\sum X_{r2})^2)}{n_{r2}} - \frac{(\sum X)^2)}{N}$$

f. The sum of squares interaction

$$SS_{int} = SS_b - (SS_{bc} + SS_{br})$$

g. Determine the number of degrees of freedom associated with each source of variation. They are found as follows:

df for between-columns sum of squares = $C - 1$

df for between-rows sum of squares = $R - 1$

df for interaction = $(C - 1)(R - 1)$

df for between-groups sum of squares = $G - 1$

df for within-groups sum of squares = $N - G$

df for total sum of squares = $N - 1$

where:

C = number of columns

R = number of rows

G = number of groups

N = number of subjects in all groups

h. The mean square values by dividing each sum of squares by its associated number of degrees of freedom.

i. Compute the *F* ratios for the main and the interaction effects by dividing the between-groups mean squares by the within-groups mean square for each of the three components.

2. Data Analysis Procedure

The writer do some ways in the data analysis procedures, they are as follows:

1. Collecting the students' written scores of Pre- test and Post- test.
2. Arranging the obtained score into the distribution of frequency of score table.

3. Calculating mean, median, modus, standard deviation and standard error of students' score.
4. Measuring the normality, homogeneity.
5. Analyzing the data by using two-ways analysis of variance to answer the problem of the study. In addition, the SPPS program was applied.
6. Interpreting the result of analyzing data.
7. Making discussion to clarify the research finding.
8. Giving conclusion.
9. Summary

To sum up, the steps in collecting, analyzing, and hypothesis testing can describe below. In the first step, the students gave Pre- Test that they selected the topic for descriptive text. The subjects were divided into two groups; experimental group and control group. Experiment group was assigned to write a descriptive text using picture media and control group write without picture. Second step, the students' writing both using picture or without picture was scored by two raters. To analyze the data of writing scores, two ways ANOVA test was employed. ANOVA test is a statistical computation used to test significant difference between within group and between group. Before testing the hypothesis, normality and homogeneity measured to fulfill the assumsions. Third step, the research hypothesis would be test to answer the research problem. Lastly, discussion on the results was made to clarify the finding, as described in Figure below:

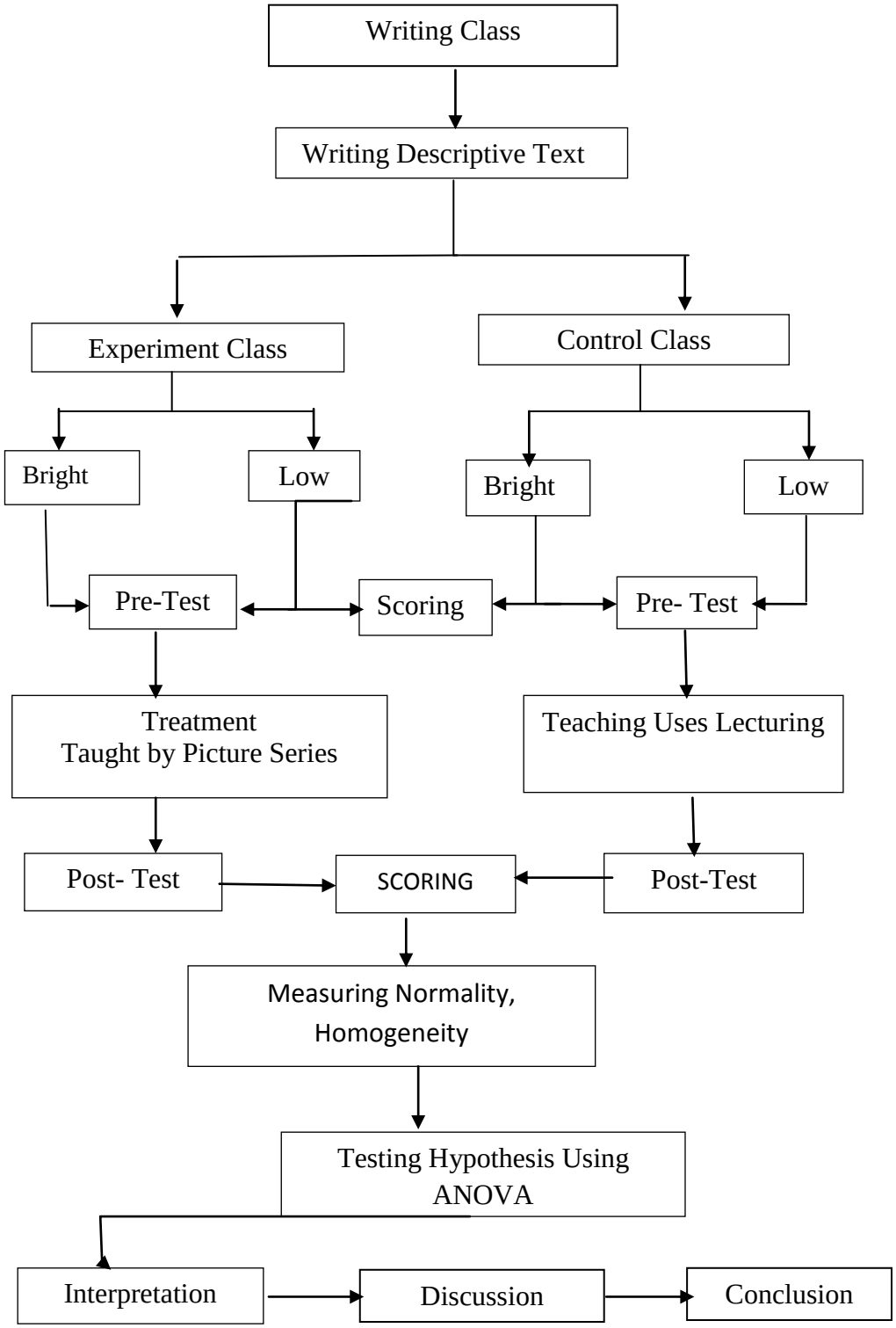

Figure 3.1 Steps of collecting, data analysis procedure and testing hypothesis