

CHAPTER III

METHOD OF THE STUDY

This chapter consists of a type of the study, the design of the study, variables of the study, population and sample, instrumentation, data collecting procedure and data analysis procedure.

A. Type of the Study

This study will use the quantitative approach in this study. It is because the study investigated the problems on students' writing ability. The type of this study is quasi-experimental design. Quasi-experimental designs are similar to randomized experimental designs in that they involve manipulation of an independent variable but differ in that subjects are not randomly assigned to treatment groups. Because this study does not provide full control. It is extremely important that study is aware of the threats to both internal and external validity and considers these factors in their interpretation.¹

B. Design of the Study

The will use quasi-experimental design. Experimental design is a plan for an experiment that specifies what independent variables will be applied, the number of levels of each, how subject are assigned to groups, and the dependent variable. This study will be used quasi- experimental design since it is possible to randomly assign subjects to treatment group.

¹ Donald Ary, et al., *Introduction to Research...*, p.316.

There are two groups in this study. The first group is control group (CP) using conventional method. The second is experiment group (EG) group which is use Guided Writing Strategy. The groups will have pre-test and post-test to measure the result of the students' writing.

The description of the experiment is in the following table:

Table 3. The Description of the Experiment

Group	Type of Treatment	Pre - Test	Independent Variable	Post – Test
Experiment Group	EG with Guided Writing Strategy using facebook to write recount text	Y ₁	X ₁	Y ₂
Control Group	CG using Freewriting to write recount text	Y ₁	-	Y ₂

C. Variables of the Study

Variable is the objects of the study which indicate variations.² The study included the following variables:

1. The first variable of the study is teaching recount text by Guided Writing Strategy using Facebook. It is independent variable (X).
2. The second variable of the study is the result of students' writing scores. It is dependent variable (Y).

² Sutrisno Hadi, *Metodologi Research*, Yogyakarta: Graha Ilmu, 2004. P. 250.

D. Population and Sample

The population is all cases, situation, or individuals who share one or more characteristics. The population is the group to which a researcher would like the results of a study to be able to generalize. In this study, the populations of the study are two classes at tenth grade of Senior High School NU of Palangka Raya. The number of populations is 50 students. There are two classes, class A (25) Students and class B (25) Students. Therefore it is called by quasi-experimental design.³

Table 3.1. The description of the population and sample

CLASS	TYPE OF TREATMENT	NUMBER OF STUDENTS
Class A	Using Freewriting to write recount text	25
Class B	Using Guided Writing Strategy using Facebook to write recount text	25
Number of Sample		50

³ David Nunan, *Research Methods in Language Learning*, Cambridge: University Press, 2003, p.231.

This study takes the classes as the sample for some reasons. First, the students are difficult to write. Second, the researcher wants to know the effect of guided writing using facebook on students' writing ability.

E. Research Instrumentation

1. Test

A test is a set of stimuli presented to an individual in order to elicit responses on the basis of which a numerical score can be assigned. This score, based on a representative sample of the individual's behavior, is an indicator of the extent to which the subject has the characteristic being measured.⁴ In the study, the method is used to get data about a score of the pre-test and post-test given to the two groups. The test in this study is writing test. In the test of writing, the students get a free chance to write as much as possible. They can freely write and organize their ideas in writing form.

a. Pre- test

This study will give pre-test to the experiment class and the control class before giving the treatment.

b. Post- test

This study will give Post-test to the experiment class and the control class after receiving treatment. It purposes is to know the improvement of students' writing score.

⁴ Donald Ary, et al., *Introduction to Research...*, p.201.

2. Documentation

In the study, documentation will be used in order to find the information need in this research. This technique of collecting data is by seeing the documentation get the real information of the experiment like,

- a. The students' name
- b. Photos of teaching learning process in the class
- c. The syllabus of English subject
- d. The screen capture of students' writing using facebook
- e. The result of the test or Students' writing scores

3. Test Validity and Reliability

a. Test Validity

Validity is defined as the degree to which evidence and theory support the interpretations of test scores entailed proposed uses tests.⁵ Validity is also defined as the extent to which an instrument measured what it claimed to measure⁶. Content Validity

Content validity is essentially and of necessity based on the judgment and judgment must be made separately for each situation.⁷ It refers to whether or not the content of the manifest variables is right to measure the latent concept that is trying to measure. In this study, the instrument tests are suitable with the condition at the class.

⁵ Donald Ary, *Introduction to Research in Education*, Eight Edition, P. 225.

⁶ *Ibid.*,

⁷ *Ibid.*, P. 215

1. Construct Validity

Construct validity is concerned with the extent to which a test measures a specific trait or construct.⁸ It is related to the theoretical knowledge of the concept that wants to measure. The meaning of the test score is derived from the nature of the tasks examines are asked to perform.⁹ In this study, the researcher measured the students writing ability. Therefore the test instrument is made in the form of a writing test and the test is done by two testers to get the higher reliability. The score takes in five criteria, which are the score of Content, Organization, Vocabulary, Language Use dan Mechanics. Then to get the mean, the score from all criteria should be the sum.

2. Criterion-Related Validity

It refers to the extent which test scores are systematically related to one or more outcome criteria.¹⁰ It emphasizes on the criterion because the researcher will use the test scores to infer performance on the criterion. The type of criterion-related validity is used in this study is concurrent validity. It refers to the relationship between scores on a measure and criterion scores obtained at to the same time. In this study, the researcher uses two testers to do the test. So the validity of the test instrument is considered from the scores given by both testers.

b. Test Reliability

⁸ *Ibid*,.. P. 218.

⁹ Muhammad Adnan Latief, *Tanya Jawab Metode Penelitian Pembelajaran Bahasa*, Malang : Universitas Malang Press, 2010, P. 134.

¹⁰ *Ibid*,, P. 228

The reliability refers to the degree of consistency measurement that a test yields in measuring what is intended to measure.¹¹ To score the students' writing test as fairly and consistently as possible, the researcher uses inter-rater reliability (test of reliability). Inter-rater reliability refers to the degree of consistency and agreement between scores assigned by two or more raters or observers who judge or grade the same performance or behavior. For example, the process of scoring essay test for subjective decisions on the part of those who have to grade the tests. To score the just like essay tests, writing test also requires subjective decisions. That is why the researcher chose this type of reliability. In this case, two raters are employed to score the students' writing ability. The first rater is the researcher himself and the second rater is the other rater.¹²

In the present study, the researcher used the analytic scoring method. The scoring method can seem in the table below:

Table 2.1 Scoring Guide of Writing Test¹³

Component	Score	Level	CRITERIA
Content	30-27	Excellent to very good	Knowledge. Substantive. Thorough development of the thesis. Relevant to assigned topic
	26-22	Good to average	Some knowledge of the subject. Adequate range. Limited development of the thesis. Most relevant to the topic, but lacks detail.

¹¹ Donald Ary, Lucy Chese Jacobs and Chris Sorensen, *Introduction to Research in Education*, Eight Edition, USA : Wadsworth Publishing, 2010, p. 236.

¹² Ruth David, *Practical Statistics for Educators, Fourth Edition*, Unitid Kingdom : Rowman and Little Field Published, Inc., 2011, P.196.

¹³ Sara Cusing Weigle, *Assessing Writing*, US:Cambridge University Press, 2001, p. 116

	21-17	Fair to poor	Limited knowledge of the subject. Little substance. Inadequate development of the topic.
	16-13	Very poor	Does not show knowledge of the subject. Non-substantive. Not pertinent. Or not enough to evaluate
Organization	20-18	Excellent to very good	Fluent expression. Ideas clearly stated/supported. Succinct. Well-organization. Logical sequencing. Cohesive.
	17-14	Good to average	Somewhat choppy. Loosely organized but main ideas stand out. Limited support. Logical but incomplete sequencing
	13-10	Fair to poor	Non-fluent. Ideas confused or disconnected. Lacks logical sequencing and development.
	9-7	Very poor	Does not communicate. No organization. Or not enough evaluation.
Vocabulary	20-18	Excellent to very good	Does not communicate. No organization. Or not enough evaluation.
	17-14	Good to average	Adequate range. Occasional of word/idiom form, choice, usage but meaning not obscured.
	13-10	Fair to poor	Limited range. Frequent errors of word/idiom form, choice, usage. Meaning confused or obscured.
	9-7	Very poor	Essentially translation. A Little knowledge of English vocabulary, idioms, word form. Or not enough evaluate.
Language Use	20-18	Excellent to very good	Effective complex constructions. Few errors of agreement, tense, number, word order/function, article, pronouns, prepositions.
	17-14	Good to average	Effective but simple constructions. Minor problems in complex construction. Several errors of agreement, tense, number, word order/function, articles, pronouns, prepositions, but meaning seldom obscured.
	13-10	Fair to poor	Major problems in simple/complex constructions. Frequent errors negotiation, agreement, tense, number, word order/function, articles, pronouns, prepositions and/or fragments, run-ons,

			deletions. Meaning confused or obscured.
	9-7	Very poor	Virtually no mastery of sentence construction rules. Dominated by errors. Does not communicate. Or not enough to evaluate.
Mechanics	5	Excellent to very good	Demonstrates mastery of conventions. Few errors of spelling, punctuation, capitalization, paragraphing.
	4	Good to average	Occasional errors of spelling, punctuation, capitalization, paragraphing but meaning not obscured.
	3	Fair to poor	Frequent errors spelling, punctuation, canalization, paragraphing. Poor handwriting. Meaning-focused or obscured.
	2	Very poor	No mastery of conventions. Dominated by errors of spelling, punctuation, capitalization, paragraphing. Handwriting illegible. Or not enough to evaluate.

The Categories Of Writing Score

No	Score	Categories
1	0-59	Very Poor
2	60-69	Fair to Poor
3	70-89	Good to Average
4	90-100	Excellent to Very Good

a. Normality

Normality is used for estimating parametric or nonparametric test will be used to analyze the data obtained. Normality is a test normal to whether or not the distribution of research data. Therefore, the researcher uses SPSS 17.0 program to measure the normality of the data.

b. Homogeneity

Homogeneity test aims to test the quality (homogeneity) score samples. The researcher used SPSS 17.0 Program to measure the homogeneity of the data.

c. Kolmogorov-Smirnov test

In statistics, the Kolmogorov–Smirnov test (K–S test or KS test) is a nonparametric test of the equality of continuous, one-dimensional probability distributions that can be used to compare a sample with a reference probability distribution (one-sample K–S test), or to compare two samples (two-sample K–S test).¹⁴ The Kolmogorov–Smirnov statistic quantifies a distance between the empirical distribution function of the sample and the cumulative distribution function of the reference distribution, or between the empirical distribution functions of two samples. The null distribution of this statistic is calculated under the null hypothesis that the samples are drawn from the same distribution (in the two-sample case) or that the sample is drawn from the reference distribution (in the one-sample case). In each case, the distributions considered under the null hypothesis are continuous distributions but are otherwise unrestricted.¹⁵

The two-sample K–S test is one of the most useful and general nonparametric methods for comparing two samples, as it is sensitive to

¹⁴ https://en.wikipedia.org/wiki/KolmogorovSmirnov_test/. (accessed on Friday, February 26th, 09.00 a.m.)

¹⁵ *Ibid.*

differences in both location and shape of the empirical cumulative distribution functions of the two samples.¹⁶

The Kolmogorov–Smirnov test can be modified to serve as a goodness of fit test. In the special case of testing for normality of the distribution, samples are standardized and compared with a standard normal distribution. This is equivalent to setting the mean and variance of the reference distribution equal to the sample estimates, and it is known that using these to define the specific reference distribution changes the null distribution of the test statistic: see below. Various studies have found that, even in this corrected form, the test is less powerful for testing normality than the Shapiro–Wilk test or Anderson–Darling test. However, other tests have their own disadvantages. For instance the Shapiro–Wilk test is known not to work well with many ties (many identical values).¹⁷

The empirical distribution function F_n for n iid observations X_i is defined as

$$F_n(x) = \frac{1}{n} \sum_{i=1}^n I_{[-\infty, x]}(X_i)$$

where $I_{[-\infty, x]}(X_i)$ is the indicator function, equal to 1 if $X_i \leq x$ and equal to 0 otherwise.

The Kolmogorov–Smirnov statistic for a given cumulative distribution function $F(x)$ is

$$D_n = \sup_x |F_n(x) - F(x)|$$

¹⁶ *Ibid.*

¹⁷ https://en.wikipedia.org/wiki/KolmogorovSmirnov_test/. (accessed on Friday, February 26th, 09.00 a.m.)

where \sup_x is the supremum of the set of distances. By the Glivenko–Cantelli theorem, if the sample comes from distribution $F(x)$, then D_n converges to 0 almost surely in the limit when n goes to infinity. Kolmogorov strengthened this result, by effectively providing the rate of this convergence (see below). Donsker's theorem provides yet a stronger result.¹⁸

In practice, the statistic requires a relatively large number of data points to properly reject the null hypothesis.

1) The Kolmogorov distribution

The Kolmogorov distribution is the distribution of the random variable

$$K = \sup_{t \in [0,1]} |B(t)|$$

where $B(t)$ is the Brownian bridge. The cumulative distribution function of K is given by

$$\Pr(K \leq x) = 1 - 2 \sum_{k=1}^{\infty} (-1)^{k-1} e^{-2k^2 x^2} = \frac{\sqrt{2\pi}}{x} \sum_{k=1}^{\infty} e^{-(2k-1)^2 \pi^2 / (8x^2)}.$$

Both the form of the Kolmogorov–Smirnov test statistic and its asymptotic distribution under the null hypothesis were published by Andrey Kolmogorov, while a table of the distribution was published by

¹⁸ *Ibid*

Nikolai Vasilyevich Smirnov. Recurrence relations for the distribution of the test statistic in finite samples are available.¹⁹

Under null hypothesis that the sample comes from the hypothesized distribution $F(x)$,

$$\sqrt{n}D_n \xrightarrow{n \rightarrow \infty} \sup_t |B(F(t))|$$

in distribution, where $B(t)$ is the Brownian bridge.

If F is continuous then under the null hypothesis $\sqrt{n}D_n$ converges to the Kolmogorov distribution, which does not depend on F . This result may also be known as the Kolmogorov theorem; see Kolmogorov's theorem for disambiguation.²⁰

The *goodness-of-fit* test or the Kolmogorov–Smirnov test is constructed by using the critical values of the Kolmogorov distribution. The null hypothesis is rejected at level α if

$$\sqrt{n}D_n > K_\alpha,$$

where K_α is found from

$$\Pr(K \leq K_\alpha) = 1 - \alpha.$$

The asymptotic power of this test is 1.

2) Test with estimated parameters

¹⁹ https://en.wikipedia.org/wiki/KolmogorovSmirnov_test/. (accessed on Friday, February 26th, 09.00 a.m.)

²⁰ https://en.wikipedia.org/wiki/KolmogorovSmirnov_test/. (accessed on Friday, February 26th, 09.00 a.m.)

If either the form or the parameters of $F(x)$ are determined from the data X_i the critical values determined in this way are invalid. In such cases, Monte Carlo or other methods may be required, but tables have been prepared for some cases. Details for the required modifications to the test statistic and for the critical values for the normal distribution and the exponential distribution have been published,^[5] and later publications also include the Gumbel distribution.^[6] The Lilliefors test represents a special case of this for the normal distribution. The logarithm transformation may help to overcome cases where the Kolmogorov test data does not seem to fit the assumption that it came from the normal distribution.²¹

3) Discrete null distribution

The Kolmogorov–Smirnov test must be adapted for discrete variables. The form of the test statistic remains the same as in the continuous case, but the calculation of its value is more subtle. We can see this if we consider computing the test statistic between a continuous distribution $f(x)$ and a step function $g(x)$ that has a discontinuity at x_i .

In other words, the limit $\lim_{x \rightarrow x_i} g(x)$, if it exists, is different from $g(x_i)$.

Thus, when computing the statistic

$$\sup_x |g(x) - f(x)| = \max_i \left[\max \left(|g(x_i) - f(x_i)|, \lim_{x \rightarrow x_i} |g(x) - f(x_{i-1})| \right) \right],$$

²¹ https://en.wikipedia.org/wiki/KolmogorovSmirnov_test/. (accessed on Friday, February 26th, 09.00 a.m.)

it is unclear how to replace the limit unless we know the limiting value of the underlying distribution.²²

In SAS, the Kolmogorov–Smirnov test is implemented in `PROC NPAR1WAY`. The discretized KS test is implemented in the `ks.test()` function in the `dgof` package of the R project for statistical computing. In Stata, the command `k smirnov` performs a Kolmogorov–Smirnov test.²³

Illustration of the two-sample Kolmogorov–Smirnov statistic. Red and blue lines each correspond to an empirical distribution function, and the black arrow is the two-sample KS statistic.²⁴

The Kolmogorov–Smirnov test may also be used to test whether two underlying one-dimensional probability distributions differ. In this case, the Kolmogorov–Smirnov statistic is

$$D_{n,n'} = \sup_x |F_{1,n}(x) - F_{2,n'}(x)|,$$

where $F_{1,n}$ and $F_{2,n'}$ are the empirical distribution functions of the first and the second sample respectively, and \sup is the supremum function.

The null hypothesis is rejected at level α if

²² *Ibid.*,..

²³ https://en.wikipedia.org/wiki/KolmogorovSmirnov_test/. (accessed on Friday, February 26th, 09.00 a.m.)

²⁴ *Ibid.*

$$D_{n,n'} > c(\alpha) \sqrt{\frac{n+n'}{nn'}}.$$

The value of $c(\alpha)$ is given in the table below for each level of α

α	0.10	0.05	0.025	0.01	0.005	0.001
$c(\alpha)$	1.22	1.36	1.48	1.63	1.73	1.95

Note that the two-sample test checks whether the two data samples come from the same distribution. This does not specify what that common distribution is (e.g. whether it's normal or not normal). Again, tables of critical values have been published. These critical values have one thing in common with the Anderson–Darling and Chi-squares, namely the fact that higher values tend to be rarer.²⁵

4. Data Collecting Procedures

To answer the study questions of the effect of using guided writing strategy to write recount text on writing score, this study conducts the following steps:

1. Grouping the students into experimental group and control group.
2. Giving pre-test to the experimental group and control group.

²⁵ https://en.wikipedia.org/wiki/KolmogorovSmirnov_test/. (accessed on Friday, February 26th, 09.00 a.m.)

3. Teaching about recount text to students in the experimental group by using guided writing strategy using facebook and teach recount text to students in the control group by Freewriting.
4. Giving pos-test to the experimental group and control group.
5. Taking the result of the test.

5. Data Analysis Procedures

The data analysis procedures of this study, they are as follows:

1. Collecting the students' writing scores of Pre-test and post- test.
2. Arranging the obtained score into the distribution of frequency of score table.
3. Calculating mean, median, modes, standard deviation and standard error of students' score.
4. Measuring the normality, homogeneity, and linearity.
5. Analyzing the data by using T-Test to answer the problem of the study. In addition, the SPSS program is applied.
6. Interpreting the result of analyzing data.
7. Making discussion to clarify the research finding.
8. Giving conclusion

Figure 1. Steps of Collecting, Data Analysis Procedure, and Testing Hypothesis

