

CHAPTER III

METHODOLOGY

In this chapter, the researcher presents the research methodology of paper. They are consists of research design, research method, population and sample, instrument, data analysis and Research Procedure.

A. RESEARCH METHODOLOGY

The method of this research is quantitative method. According to Kaswan and Suprijadi (2016), the quantitative research method is a deductive theory based research process that focuses primarily on testing theories and specific research hypotheses that consider finding differences and relationship using numeric data and statistical methods to make precise conclusion about the phenomena.

Based on Creswell (2012) three research approaches are advanced: a) qualitative, b) quantitative, and c) mixed methods. The research method in this research is quantitative research method. According to Creswell (2012) in quantitative research the major characteristics are:

1. Describing a research problem through a description of trends or a need for an explanation of the relationship among variables.
2. Providing a major role for the literature through suggesting the research questions to be asked and justifying the research problem and creating a need for the direction (purpose statement and research questions or hypotheses) of the study.
3. Creating purpose statements, research questions, and hypotheses that are specific, narrow, measurable, and observable.

4. Collecting numeric data from a large number of people using instruments with preset questions and responses.
5. Analyzing trends, comparing groups, or relating variables using statistical analysis, and interpreting results by comparing them with prior predictions and past research.
6. Writing the research report using standard, fixed structures and evaluation criteria, and taking an objective, unbiased approach.

From all the statements above it can be concluded that quantitative method is appropriate for this research, thus the researcher will use quantitative method for this research.

B. RESEARCH DESIGN

The design of this research is a Quasi-experiment study. To investigate whether Two Stay – Two Stray improve the students' writing skill mastery or not, we need two groups. Fraenkel, Wallen, Hyun (2012) stated that these two groups are : an experimental group where the treatment was whether the class runs on regular course curriculum or not. Pre-test and Post-test are carried out in both group. The experiment took overall four meetings (each session 135 minutes).

According to Cohen, Manion and Morrison (2007) one of the most commonly used quasi-experimental design in educational research can be represented as below:

Table 3.1

Quasi Experimental Design

Experimental	O1	X	O2
Control	O1		O2

Notes :

O1 = Pretest for experimental group

O2 = Posttest for experimental group

X = The treatment (in this research, the treatment is using two stay two stray technique)

O1 = Pretest for control group

O2 = Posttest for control group

The researcher applied quasi experimental design in this research, which the objective is to know the significance difference between cooperative learning and discovery learning in teaching writing.

C. POPULATION AND SAMPLE

1. Population

A population is a group of individuals who have the same characteristic (Creswell, 2012). The population of this research is SMK TI Pembangunan Cimahi, especially the second grade students. The whole classes are thirteen class. The number of students are 390 students. It was selected based on the curriculum tenth graders which starting

learning in a very formal way, learning the foundation of english for the first time and involved with the recount text.

2. Sample

The samples of this research covered two classes, they are experimental group and control group. According Sugiyono (2017) sample is part of the number and characteristics possessed by the population. When the population is large, and researchers are unlikely to study everyone in the population, for example due to limited funds and time, the researchers can use samples taken from that population. Sampling is shown to facilitate the researchers in conducting the research, the sample is representative of the research population for that sample taken from the population must be really representative or represent. Hence, these two classes are purposive sampling and have the same proficiency level of the English. Purposive Sampling is a source sampling technique with certain consideration (Sugiyono, 2017). Further, they had been chosen based on the teacher recommendations. These two classes are 10 TEI (*Teknik Industri*) C and 10 TPD (*Teknik pendingin dan tata udara*) B that both of them are consisting of 30 students. 10 TEI C is the experimental class, and 10 TPD B is the control class.

Table 3.2

Sample of the Research

No	Class	Female	Male	Total
1	Experiment	4	26	30
2	Control	2	28	30

D. RESEARCH INSTRUMENT

The researcher used kinds of research instrument to collect the data, namely test, observation, and interview.

1. Test

A test is defined as a set of questions, experience, or other means to measure skills, knowledge, intelligence, achievement, and aptitude of an individual or group (Arikunto, 2010). Test consisted of pretest and posttest was given to the students to measure the students' ability. It was conducted before treatment given while posttest was the test given to the students by writer to measure the students' ability after getting the treatment. The test was used to measure the students' skill in writing.

a. Validity

Validity refers to the appropriateness, meaningful, and usefulness of the specific inferences made from the test score (McMillan and Schumacher, 2001). The researcher administered the validity test in experimental and control class when given pretest to find out weathers the instrument which used in the study is valid or not.

The researcher use scoring rubric of writing from brown (2007) which has five items, they are content, organization, grammar, vocab and mechanics. The validity of each item can be seen in the value of the corrected item-total correlation. Interpretation: if the values in corrected item - the total correlation are equal to or greater than the index validity (0.3) then the items are valid (Sadikin, Suprijadi, Kaswan 2019). The result of validity of the data is presented in the following table using SPSS output.

Table 3.3 Validity of Experimental Class

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
CONTENT	13.130	7.333	.334	.746
ORGANIZATION	16.463	8.045	.479	.633
GRAMMAR	16.747	7.641	.698	.546
VOCABULARY	17.950	9.458	.380	.674
MECHANICS	18.230	9.448	.566	.632

(Source: Output IBM SPSS Statistic 22)

Table 3.3 shows that corrected item-total correlation in every aspect more than 0.3. It means the data is valid.

Table 3.4 Validity of Control Class

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
CONTENT	12.648	10.325	.441	.770
ORGANIZATION	16.165	10.697	.573	.698
GRAMMAR	16.398	9.344	.794	.606
VOCABULARY	17.408	13.933	.348	.768
MECHANICS	17.773	12.766	.601	.709

(Source: Output IBM SPSS Statistic 22)

Table 3.4 shows that corrected item-total correlation in every aspect more than 0.3. It means the data is valid.

b. Reliability

The next process after validity the items was reliability test. According to McMillan and Schumacher (2001) reliability refers to the consistency of measurement – the extent to which the results are similar over different forms of the same instrument or occasions of data collection. The writing tends to subjective assessment so the researcher should conduct the reliability test to get an objective assessment using two raters. Sadikin, suprijadi, Kaswan (2019) state that “inter-rater reliability significant if Sig from average measures lowest than 0.05, meanwhile if the instrument has high inter-rater reliability, the interclass correlation from average measures more than 0.8”. The result of reliability of the data is presented in the following table using SPSS output.

Table 3.5 Reliability of Experimental Class

Intraclass Correlation Coefficient							
	Intraclass Correlation ^b	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Average Measures	.852 ^c	.688	.929	6.745	29	29	.000

(Source: Output IBM SPSS Statistic 22)

Table 3.5 shows that Sig 0.00 from average measures smaller than 0.05. This instrument has reliability high between evaluators, because inter class correlation and average measure 0.852 more than 0.8.

Table 3.6 Reliability of Control Class

Intraclass Correlation Coefficient							
	Intraclass Correlation ^b	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.837 ^a	.685	.919	11.235	29	29	.000
Average Measures	.911 ^c	.813	.958	11.235	29	29	.000

(Source: Output IBM SPSS Statistic 22)

Table 3.6 shows that Sig 0.00 from average measures smaller than 0.05. This instrument has reliability high between evaluators, because inter class correlation and average measure 0.911 more than 0.8.

After conduct the validity and reliability the next is pretest and posttest. The scoring of pretest and posttest is carried out by two raters. The students' test will be scored by using the rating scores of writing by Brown (2007). The scoring rubric was presented in the following table:

Table 3.7
Scoring Rubric of Writing

Aspect	Score	Performance Descriptive	Weighting
Content (C) 30% -Topic -Detail	4	The topic is complete and clear and the details are relating to the topic.	3x
	3	The topic is complete and clearbut the details are almost relating to the topic.	
	2	The topic is complete and clear but the detail are not relating to the topic.	
	1	The topic is not clear and the detail are not relating to the topic.	
Organization (O) 20% - Orientation - Event - Re-Orientation	4	Identification is complete and descriptions are arranged with proper connections.	2x
	3	Identification is not complete and descriptions are arranged with almost proper connectives.	
	2	Identification is not complete and descriptions are arranged with few misuse of connectives	
	1	Identifiacation is not complete and descriptions are arranged with misuse of connectives	
Grammar (G) 20%	4	Very few grammatical or agreement	2x

- Use Past tense		inaccuracies.	
	3	Few grammatical or agreement inaccuracies but not affect on meeting.	
	2	Numerous grammatical or agreement inaccuracies.	
	1	Frequent grammatical or agreement inaccuracies.	
Vocabulary (V) 15%	4	Effective choice of words and word forms.	1.5x
	3	Few misuse of vocabularies, word form, but not change the meaning.	
	2	Limited range confusing words and word form.	
	1	Very poor knowledge of word, word forms, and not understandable.	
Mechanics (M) 15% -Spelling -Punctuation -Capitalization	4	It uses correct spelling, punctuation and capitalization.	1.5x
	3	It has occasional errors of spelling, punctuation and capitalization.	
	2	It has frequent error of spelling, punctuation, and capitalization.	
	1	It is dominated by error of spelling, punctuation and capitalization.	

The formula to get the writing score:

$$\text{Score} = \frac{3C+2O+2G+1.5V+1.5M}{40} \times 10$$

Adapted From Brown (2007)

2. Observation Checklist

Observation was the process of gathering open-ended, firsthand information by observing people and places at a research site

(Creswell, 2012). Observation is intended to see and to know about the condition of experimental, control class and students during the teaching learning process.

Table 3.8 Observation Checklist

No	Indicators	Score				
		1	2	3	4	5
1	Students' participate toward teacher explanation					
2	Students ask question to teacher to clarify their understanding					
3	Students solve the problem					
4	Students present their writing					

Notes:

5 = Most of the students (71%-100%) 33-37 students

4 = Half of the class (50%-70%) 28-32 students

3 = Many students (20%-49%) 23-27 students

2 = Few Sstudents (<20%) 22 students

1 = None (0%)

$$\text{Score} = \frac{\text{Total Score}}{\text{Maximum Score}} \times 100\%$$

Adapted in Kartika (2015)

3. Interview

Interview is an important method to verify the accuracy of impressions that the researcher has gained through observation Fraenkel, Wallen, Hyun (2012). The interview question of this study purposed to ask students about the students difficulties in writing recount text. The interview guide lines as follow:

Table 3.9 Interview Guide line

No	Question
1	Do you like English <i>Apakah kalian menyukai bahasa inggris?</i>
2	Do you like writing in learning English <i>Apakah kalian menyukai menulis dalam belajar bahasa inggris?</i>
3	Do you think writing in english is easy? <i>Menurut kamu apakah menulis dalam bahasa inggris itu mudah</i>
4	What are your difficulties in writing <i>Apasaja kesulitan kalian dalam menulis</i>
5	When you get hard in writing, what do you do? <i>Ketika kalian dapat kesulitan dalam menulis, apakah yang kalian lakukan?</i>
6	What are technique that giving by the teacher help you in writing? <i>Apakah teknik yang diberikan guru membantu kamu dalam menulis?</i>

E. DATA COLLECTION TECHNIQUE

1. Test

The pre-test was the first step to be applied to both classes in the study. The purposes of pre-test was to assess students ability in writing recount text and achieve data in both classes before employing the treatment, to show that student of both groups have the same ability in the writing. The pre-test that will give to the students is Recount text. They should write the recount text related to the theme that given by the researcher. Before the researcher gave the pre-test to experimental and control class, the researcher conducted a validity and reliability of pre-test.

Post-test was similar to pre-test. It happened after the treatment at the end of learning session in both groups to see and measure students' ability in writing recount text. The post-test intention was to find out the differences between each groups score.

2. Observation

In this research, the researcher did the observation for four meetings. The observations were conduct on 6 February until 28 February 2019. The researcher conducted the observation in the experimental class and control class. The research used cooperative learning using two stay two stray techniques to teach experimental class, meanwhile in the control class were taught used discovery learning.

3. Interview

In the interview session, the researcher act as the interviewere to know the students' difficulties. Interview was administred to the students after the analysis of students' text. Interview was addressed to nine students as the representative of the higher, middle and lower achiever. It was related to the students' responses toward the implementation and the dificulties of two way- two stray technique.

F. DATA ANALYSIS

Based on Creswell (2012) in quantitative data analysis we analyze the data using mathematical procedures, called statistics. After getting the data, the writer analyzed and processed the data using SPSS statistics application to get the result. SPSS (Statistical Package for the Social Sciences) is one of the most popular statistical packages which can perform highly complex data manipulation and analysis with simple instruction.

To analyze the data using SPSS the writer calculated:

1. Normality Distribution

According to Sugiyono (2017), Normality distribution is useful for determining the data that has been collected is taken from the normal distribution or normal population. Statistical test or normality that could be used are: chi-square, Kolmogorov smirnov, lilliefors, Shapiro wilk.

Normality curve is a theoretical distribution which shows the frequency or probability of all the possible value that a continuous variable can take. Normal distribution was conducted in order to know the data

normal distribution or not, if the values of the normal distribution more than 0.05 the data called normal distribution (Kaswan and Supriadi, 2016).

2. Homogeneity of variance

Homogeneity test is performed to determine whether two samples taken has a homogeneous variance or not. One statistical technique that is used to explain the homogeneity of the group is the variance (Sugiyono, 2017). While according to Kaswan and Supriadi (2016) homogeneity of variance is the point when samples would accept to have been drawn from population for rise to variances, they are said show homogeneity of variance. Homogeneity of variance was conducted in order to know the data homogeneity or not, if the values of the normal distribution more than 0.05 the data called homogeneity of variance.

3. Independent T-test

T-test or students' T-test is a parametric test which is used to discover whether are statistically significant differences between the means of two group Kaswan and Supriadi (2013)

4. Mean

Mean is simply the arithmetic average of all the scores. It is calculated by summing all the scores and then dividing the sum by the number of scores (McMillan and Schumacher 2001).

5. Normalize Gain

The data is analyzed to see the score of the results. Then the test results are calculated on average. And calculated the N-Gain between the pretest and posttest. According to Hake (1998 in Jumiati, Sari and Akmalia (2011) state that to calculate N-Gain, you can use the Hake formula as follow:

$$N-Gain = \frac{skor\ postes - skor\ pretes}{skor\ maksimal\ ideal - skor\ pretes}$$

Category:	High	: 0.71- 1.00
	Medium	: 0.31- 0.70
	Low	: 0.00- 0.30