CHAPTER III
RESEARCH METHOD

A. Research Design

For this study, reseacher uses the quantitative approach. That means the method and instrument involve numerical measurement and then the statistical data will be conducted. In this term, quantitative data refers to the use of T-test formula. Furthermore, this study conducted the experiment study. Experiment is carry out in order to explore the streght of relationship between variables.[1] This study is hoped to know the relation possibility that happen with one after treatment. And find out the effectiveness of 'using song to improve students' understanding on learning vocabulary of adjective.

B. Research Setting

In the research, the participants are the students of eight grade of SMP Negeri 2 Gubug in the academic year 2012/2013. The research will be conducted in first semester. The researcher took two classes. The first class will be a control class and the second class will be an experimental class. The researcher will give pre- test to both classes to know how understand the students in the lesson. In treatment, the researcher will teach the control class by using conventional method and experimental class using song. After doing the treatment, the researcher will give to both classes post-test with the same instruments.

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[1] David Nunan, *Research Method in Language Learning,* (New York: Cambridge University Press, 1992), p. 25.

C. Subject of the Research.

In this research, the researcher took the subject from students of grade VIII in the SMP Negeri 2 Gubug in the academic year 2012/2013. The eight grade classes of SMP Negeri 2 Gubug have three classes, Class VIII A, Class VIII B, and Class VIII C. But, the researcher took two classes from them; Class VIII B and Class VIII C. The researcher took Class VIII B and Class VIII C because it is based on teacher's instruction. The teacher thought that two classes is chosen, they are appropriate to be sample subject of the research than Class A. Class A is the favorite eight grade class in the SMP Negeri 2 Gubug.

We took two classes; Class VIII C as Control Class and Class VIII B as Experimental Class of Eight Grade of SMP Negeri 2 Gubug. The Control Class was a class which was not given treatment, but the experimental class was given treatment using Song. At the beginning of the research, both of two groups or two classes were given pre test to know the students' capacity and ability before getting treatment. Both of two classes were given a post-test at the end of the research.

D. Technique of Data Collection

The technique in collecting data in this analysis involves several activities:

1. Test
    a. Pre-test

    Before teaching new material (adjective) using song, the researcher gives a test to the students by taking a previous material. This test is given before the research is run. The researcher will conduct the test to measure students' achievement. The test which will be conducted before the treatment called pre- test. It will be used to find out the initial condition of students before the treatment.

b. Post-test

     The researcher give a post-test to experiment class and control test in order to know ability of the students after they were taught by using song and without song.

2. 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, legger, agenda, etc.[2] In tis research, this technique was used to get the data that was related to the object research, such as students' name list, included in the population. In this case, the data was gained by the help of the teacher of English subject.

3. Interview

     Interview is a dialogue between interviewer and interviewee.[3] It was done by the writer to get more information that the writer did not get from observation. The writer used structured interview and the result or the interview is unrecorded.

E. **Technique of Data Analysis**

     After collect the data, the writer will analyze it. The two groups will be given the different treatment. The experimental group will be taught vocabulary of adjective using song as the learning media. Otherwise, the controlled group will be taught by using conventional method, that's the teacher just explains to the students about adjective.

     Before the treatment is conducted, the writer will give the students pre-test in both of experimental and controlled group. After doing treatment,

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[2] Suharsimi Arikunto, *Dasar-Dasar Pendidikan.* (Jakarta: Bumi Aksara,2007), p.158

[3] Burhan Nurgiyantoro, *Penilaian dalam Pengajaran Bahasa dan Sastra* by Modification,(yogyakarta: BPFE Yogyakarta,2001),p.155

the writer will give the post-test.

Then, the writer will formulate to get the mean of each element of writing researched by the formula, as follow:

$$Mxc = \frac{\sum xc}{Smax} \times 100\%$$

Where:

Mxc = Level mastery of content

$\sum xc$ = Students' score of content

Smax = Maximum score of content

After getting the mean of each component in writing vocabulary of adjective, the writer will formulate the result to get the total mean score as follow:

$$Mxt = \frac{\sum xt}{Smax} \times 100\%$$

Where:

Mxt = Mean of total score

$\sum xt$ = Number of total

Smax = Maximum score for writing elements

To find out the effectiveness of using song to improve students' understanding on vocabulary of adjective, the researcher provided any tests; one of them is pre test. Pre test is conducted before the treatment. The quality of the data, whether it is good or bad, is based on the instrument used. A good instrument fulfills two important qualifications, such as normality, homogeneity, and the average of the test. So, before the test was conducted, the researcher used an instrument to collect the data, it had been tried out first to the students in tries out class. In this case, the test has many categories as follow:

1. Normality test

It is used to know the normality of the data that is going to be

analyzing whether both groups have normal distribution or not. To find out the distribution data is done normality test with the Chi-square. Step by step Chi-square test is as follows:

a. Determine the range (R), the largest data reduced the smallest

b. Determine the many class interval (K) with formula

   K = 1+ (3, 3) log n

c. Determine the length of the class, using the formula:

   P =   range R

            number of class

d. Make a frequency distribution table.

e. Determines the class boundaries (bc) of each class interval.

f. Calculating the average X1 (X) with the formula:

$$X = \frac{\Sigma f i X i}{\Sigma f i}$$

g. Calculate variants, with the formula:

$$S = \frac{\sqrt{\Sigma f i (x i - x)}}{n - 1}$$

h. Calculate the value of Z, with the formula:

$$z = \frac{x_1 - x_2}{s}$$

i. Devide the wide area of each interval.

j. Calculate the frequency expository (Ei), with formula:

   Ei = n x wide area with the n number of sample

k. Make a list of the frequency of observation (Oi), with the frequency expository as follows:

Class	Bc	Z	P	L	Ei	$\frac{Oi - Ei}{Ei}$

l. Calculate the Chi-square (X²) with the formula:

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$$X = \sum_{i=1}^{k} \frac{(Oi - Ei)}{Ei}$$

m. Determine the degree of validity (df). In the calculation of this data is arranged in list of frequency distribution consisting of k pieces so that the interval to determine the criteria test used formula df = k-3, where K is the number of class interval and $\alpha = 5\%$

n. Determining the value of x^2 table.

o. Determining the distribution normality with test criteria:

If $X^2{}_{count} > X^2{}_{tabel}$ so the data is not normal distribution and the other way. If the $X^2{}_{count} < X^2{}_{tabel}$ e so the data is normal distribution.[4]

2. Homogeneity test

Homogeneity test is used to compare variant in group of three categories data or more and its categories can be compared fairly if each category is homogeneity. Furthermore, homogeneity of the test is used to know whether experiment class and control class, that are taken from population have same variant or not. According to David Nunan, a test should be given to both classes of students before the experiment just to make sure that the both classes really are the same.[5]

The formula as follow:[6]

F max =   Var. highest
          Var. lowest

$$\text{Varian} \left(SD^2\right) = \frac{\Sigma x^2 - (\Sigma x)^2 / N}{N-1}$$

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[4] Sujana, *Metode Statistika,*(Bandung: Tarsito, 1996), p.273

[5] David Nunan, *Research Method in Language Learning* (Cambridge: Univeersity Press, 1992) p.27

[6] Sugiyono, *Metode Penelitian Kuantitatif Kualitatif dan R&D,* (Bandung: Alphabeta, 2008), p. 27.

The steps as follows:

a. Calculate variants both classes (experimental and control classes) with the formula:

$$s_1 = \frac{\Sigma(x_1 - x_2)}{n_1 - 1} \quad \text{and} \quad S_2 = \frac{\Sigma(s-x)}{n_2-1}$$

b. Determine $F = \frac{Vb}{Vk}$

where: Vb = bigger varian and   Vk = smaller variant

Determine $dk = (n^1 - 1):(n^2 - 1)$

c. Determine F table with α =5 %

d. Determining the distribution homogeneity with test criteria:

e. If F X^2_{count} > F $_{table}$, the data is not homogeneous and the other way if the F X^2_{count} < F $_{table}$, the data is homogenous.[7]

3. The average of test.

To find out the differences between experimental and control class' result, the researcher analyzes the result of the test by using T-test formula. It is used to examine average whether experiment group and control group have been decided having different average.[8] T-test is used to analyze the data of this research. A t- test is used to measure and comparer the mean scores of the two groups.[9]

The hypotheses are:

Ho = μ1 = μ2   Ha = μ1≠μ2

μ1 = average data of experimental group

μ2 = average data of control group

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[7] Sujana, *Metode Statistika,* p. 239

[8] Anas Sudijono, *Pengantar Statistik Pendidikan* (Jakarta: PT. raja Grafindo Persada, 1995)6th Ed, p.264.

[9] Sugiono, *Metode Penelitian Kuantitatif Kualitatif dan R&D,* p. 121

The formula is: $t = \dfrac{x^1 - x_2}{s\sqrt{\dfrac{1}{n_1} + \dfrac{1}{n_2}}}$ with

$$s = \frac{\sqrt{n_1 - 1 + (n_2 - 1)s_2}}{n_1 + n_2 - 2}$$

Where:

X_1 = mean score of the experimental group

X_2 = mean score of the control group

$S_1{}^2$ = standard deviation of experimental group

$S_2{}^2$ = standard deviation of both group

Criteria test is: Ho is accepted if t $(1-\frac{1}{2}\alpha)<$ t$<$t $(1-\frac{1}{2}\alpha)$, where t $(1-\frac{1}{2}\alpha)$ obtained from the distribution list t with dk+ (n1+n2-2)and opportunities $(1-\frac{1}{2}\alpha)$. Values for other t Ho rejected.[10]

Analysis phase end:

a. Normality test, the step is similar to the normality test on the initial data.

b. Homogeneity test, this step is similar to the homogeneity test on the initial data.

c. Test of average, proposed hypotheses test in average similarity with the right test is as follows:

Ho = $\mu 1 = \mu 2$ Ha = $\mu 1 \neq \mu 2$

The formula used is as follows:

$$t = \frac{x^1 - x_2}{s\sqrt{\dfrac{1}{n_1} + \dfrac{1}{n_2}}}$$ with

$$s = \frac{\sqrt{n_1 - 1 + (n_2 - 1)s_2}}{n_1 + n_2 - 2}$$

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[10] Sudjana, *Metode Statistika,* p. 239

Where:

X_1 = mean score of the experimental group

X_2 = mean score of the control group

n_1 = number of experiment group

n_2 = number of control group

S_1^2= variant of experiment group

S_2^2= variant of control group

If $X^2_{count} > X^2_{table}$, so Ho is rejected and there is no difference of average value from both of groups. Moreover, the other way if $X^2_{count} < X^2_{table}$, so Ho is accepted and there is significant difference of average value from both of groups.[11]

Then, to measure the differences between pre-test and post-test of controlled group and experimental group, the writer will use T-test formula:

$$t = \frac{mx - my}{\sqrt{\left(\frac{\sum x^2 + \sum y^2}{Nx + Ny - 2}\right)\left(\frac{1}{Nx} + \frac{1}{Ny}\right)}}$$

Where:

t= T-test

Mx = Mean of experimental group

My = Mean of controlled group

$\sum x^2$ = Standard deviation of the experimental group

$\sum y^2$ = Standard deviation of the controlled group

Nx = Number of the students' of the experimental group

Ny = Number of the students' of the controlled group

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[11] Sudjana, *Metode Statistika,* p. 239

To calculate the t-test, the mean has to be calculated first:

$$Mx = \frac{\sum X}{N} \qquad My = \frac{\sum Y}{N}$$

Where:

Mx / My = Mean of the pre test or post test of experimental or controlled group

$\sum X$ / $\sum Y$ = Quantity of scores

N = Number of students

Then, to find the $\sum x^2$ and $\sum y^2$, we use the following formula:

$$\sum x^2 = \sum x^2 - \frac{(\sum x)^2}{N}$$

$$\sum y^2 = \sum y^2 - \frac{(\sum y)^2}{N}$$

After using T-test formula, the writer will look for the degree of the freedom (df) and the level of significance to consult the result to the t-table (5%). If the t-obtained value is higher than t-table (t obtained> t-table), Ho is refused. It means that there is a significant difference between the students who are taught by using outdoor study method than taught conventionally. If the t-obtained value is lower than t-table (t-obtained<t-table), H1 is refused. It means that there is no significant difference between students who are taught by outdoor study method than taught without it.