CHAPTER III
RESEARCH METHODOLOGY

A. Method of the Research

The method of this research will use experimental research. It is to examine the effectiveness of song as the teaching media for teaching vocabulary. As Arikunto (2010: 207) says that the purpose of experimental research is to know whether there is effect of ‘something’ which is implemented to the subject of the research. To know whether there is effect is by comparing experimental group which is given a treatment with control group which is not given a treatment.

Arikunto (2010: 207) mentions that there are two kinds of experimental research. They are true experimental and quasi experimental. In this research, the writer will use quasi experimental. It is used to find out the effectiveness of teaching vocabulary using song for fourth grade students of elementary school.

A quasi experimental is designed using two groups, one experiment class with treatment and with one control class without treatment. Suwartono (2007: 58-59) mentions that quasi experimental can be divided into three groups; time series design, counter balance design, and non-equivalent design

Based on the description above, the writer will use non-equivalent design because it will be done based on the requirements, they are:

1. There are two groups and each group is given pre-test and post-test.
2. There is control class without treatment, which is used to compare with experiment class with the treatment.

3. Before the experiment is done, the first conditions of two classes are ignored because it is impossible to prepare equivalent group in the field condition.

E : O1 ...............X.................O2
C : O3.................................O4

Where:
O1 : Pre-test of experimental class
O2 : Post-test of experimental class
X : Treatment
O3 : Pre-test of control class
O4 : Post-test of control class

B. The Place and Time of the Research

1. Place of the Research

This research will be held in fourth grade of SD Negeri 1 Pasir Kulon in academic year 2015/2016.

2. Time of the Research

Time of the research will be conducted for seven months. First, research will be conducted on August 2015 by preparing permission letter and pre-observation. Then, for making proposal will be started from
September until October 2015. Further, for doing pre-test, giving treatment and doing post-test will be done on November 2015. Finally, analyzing the data and making the report will be done in December 2015.

C. Population

Arikunto (2010: 173) defines that population is all of the subjects of the research. The population of this research is the fourth grade students of SDN 1 Pasir Kulon in academic year 2015/2016. The numbers are 47 students.

D. Sampling Technique

Sampling technique that will be used in this research is purposive sampling technique. This technique is done by taking the subject/sample which is not based on strata, random or area but it is based on the consideration of a certain purpose. The consideration that the researcher tries to complete in preliminary research is the sample that will be chosen has to be homogeneity, so that the research will be a good and valid research. Because that something that can be compared is something that has the similar characteristic. The researcher chooses fourth grade students, because based on the consideration from the English teacher of the school. The classes are 4A and 4B which has similar competence in English than other level of the school.
E. Sample

Arikunto (2010: 174) says that sample is part of the population which is researched. The sample of this research is 4A as experimental class and 4B as control class. Class 4A consisted of 23 students and class 4B consisted of 24 students.

F. Technique of Collecting Data

The instrument which is used for collecting the data is test. Arikunto (2010: 193) mentions that test is items or exercises that is used to measure skills, intelligence, and ability of individual or group. The kind of tests that is used is multiple choices question. Both experimental class and control class are given pre-test and post-test. It is purposed to measure the difference before and after the treatment given.

1. Pre-test

Pre-test are given to two classes for collecting the first data to know the first condition of them. It is held before the treatment is given. The numbers of the items are 20 items.

2. Post-test

Post-test is used to measure the effect of the treatment. Both of experimental class and control class are given post-test. The number of the items is the same as pre-test. The numbers of the items are 25 items.
G. Technique of Analyzing Data

1. Validity

Validity is a measurement which showed the level of validation of the instrument. The instrument should be valid in order that the data which is got is more valid as well. The instrument can be said valid, if it can measure what is being wanted or reached. In measuring the validity, the formula which is used is product moment correlation. The formula is as follow:

\[ r_{xy} = \frac{N(\sum XY) - (\sum X \cdot \sum Y)}{\sqrt{(N\sum X^2 - (\sum X)^2)(N\sum Y^2 - (\sum Y)^2)}} \]

(Arikunto, 2010: 213)

Where:

- \( r_{xy} \) = the correlation coefficient between variable X and Y
- \( N \) = the number of respondents
- \( \sum X \) = the total score X
- \( \sum X^2 \) = the total of quadrate X
- \( \sum Y \) = the total score Y
- \( \sum Y^2 \) = the total of quadrate Y

2. Reliability

Reliability shows that the instrument can be used as a tool for collecting the data because the instrument is good. Good instrument will
not be tendentious to guide the respondent to certain answers (Arikunto, 2010: 221).

The formula of reliability is as follow:

\[ r_{11} = \left( \frac{k}{k-1} \right) \left( 1 - \frac{\Sigma pq}{V_t} \right) \]

Where:

- \( r_{11} \) = the instrument reliability
- \( k \) = the number of the test items
- \( V_t \) = the total variants
- \( p \) = the proportion of subjects that get score 1
- \( q \) = the proportion of subjects that get score 0

(Arikunto, 2010: 231)

The criteria of reliability values are as follows:

- 0.00 – 0.20 = there is no reliability
- 0.21 – 0.40 = very low reliability
- 0.41 – 0.60 = enough reliability
- 0.61 – 0.80 = high reliability
- 0.81 – 1.00 = very high reliability

a. Determining the Total Variants (Vt)

To determine the total variants of the students’ score, the formula is as follow:

\[ V_t = \frac{\Sigma y^2 - (\Sigma y)^2}{N} \]
Where:

$V_t$ = the total variants

$\Sigma Y$ = the total score $Y$

$\Sigma Y^2$ = the total of quadrate $Y$

$N$ = the number of respondents

(Arikunto, 2010: 231)

b. Finding out $\Sigma pq$

1) Determining $p$

$$p = \frac{\text{correct answer}}{\text{the number of respondents}}$$

2) Determining $q$

$$q = 1 - p$$

3) Multiplying between $p$ and $q$, then calculate the result of $\Sigma pq$

c. Item Difficulty

Item difficulty was purposed to know whether the items were difficult or not for the respondents. The formula of item difficulty was as follow:

$$F.V = \frac{R}{N}$$

Where:

$F.V$ = the index of difficulty

$R$ = the number of correct answer
\[ N = \text{the number of tester taking the test} \]

**Tabel 3.1**

The criteria of the item difficulty

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00 ≤ 0.30</td>
<td>Difficult</td>
</tr>
<tr>
<td>0.31 ≤ 0.70</td>
<td>Medium</td>
</tr>
<tr>
<td>0.71 ≤ 1</td>
<td>Easy</td>
</tr>
</tbody>
</table>

(Arikunto, 2009: 210)

1. **Percentage**

It is used to know the vocabulary competence of experimental class and control class.

a. **Individual Student’s Competence**

\[ P = \frac{F}{N} \times 100\% \]

Where:

- \( P \) = the percentage of correct answer
- \( F \) = the frequency of correct answer
- \( N \) = the number of items

The categories of students’ competence are as follows:

- 81-100% = very good
- 61-80% = good
- 41-60% = fair
b. Classical Vocabulary Competence

\[ M = \frac{\sum X}{N} \]

Where:
- \( M \) = mean of class
- \( \sum X \) = sum of the whole post-test in score class
- \( N \) = the number of students

2. Hypothesis Testing

To know the effectiveness of song in teaching vocabulary at the fourth grade students of SDN 1 Pasir Kulon, t-test formula is used. The steps in using formula are:

a. Making table

<table>
<thead>
<tr>
<th>Number of Students</th>
<th>Experimental Class</th>
<th>Control Class</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( X_1 )</td>
<td>( X_2 )</td>
</tr>
<tr>
<td>Sum (( \sum ))</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Where:

- $X_1$ = Pre-test result of Experiment class
- $Y_1$ = Pre-test result of control class
- $X_2$ = Post-test result of Experiment class
- $Y_2$ = Post-test result of control class
- $X$ and $Y$ = Residual

b. Calculating deviation of experiment class ($M_x$) and control class ($M_y$)

1) Mean of Deviation of Experimental Class

- The post-test of each student was calculated by the pre-test score
- Counting the total of deviation residual ($\sum X$)
- Counting the total of deviation of students in experiment class and dividing the number of students in the class

$$M_x = \frac{\sum X}{N}$$

Where:

- $M_x$ = Mean of deviation of experimental class
- $\sum X$ = Total of deviation
- $N$ = Number of students
2) Mean of deviation of control class

- The post-test of each student is decreased by the pre-test score
- Counting the total of deviation residual ($\sum Y$)
- Counting the total of deviation of the students in control class and dividing the number of students in the class

$$M_y = \frac{\sum Y}{N}$$

Where:

- $M_y$ = Mean of deviation of control class
- $\sum X$ = Total of deviation
- $N$ = Number of students

c. The sum of square deviation of each class is calculated

$$\sum X^2 = \sum X^2 - \frac{\sum X^2}{N}$$

$$\sum Y^2 = \sum Y^2 - \frac{\sum X^2}{N}$$

Where:

- $\sum X^2$ = Square deviation of experiment class
- $\sum Y^2$ = Square deviation of control class
- $N$ = Number of students
d. Applying all of them into test formula

\[ t_{test} = \frac{M_X - M_Y}{\sqrt{\frac{\sum X^2 + \sum Y^2}{NY + NX - 2} \left( \frac{1}{NX} + \frac{1}{NY} \right)}} \]

Where:

- \( M_X \) = mean of students gain in control class
- \( M_Y \) = mean of students gain in experiment class
- \( \sum X^2 \) = the total square of control class
- \( \sum Y^2 \) = the total square of experiment class
- \( N_X \) = the number of students control class
- \( N_Y \) = the number of students experiment class