CHAPTER III

RESEARCH METHOD

A. Research Design

In this study, the method used was experimental research. An experimental is the way to find the casual relationship between two factors which are raised by the researcher in purpose by reducing or eliminating any distracting factors.[1]

There are two groups in this model of experimental research. First is experimental group and the second is control group. In this research, the researcher used cluster random sampling is a technique to choose sample by random each class (population) and it is based on lottery. The writer decided to choose V A as the experimental class and V B as the control class. The experimental class recieved a new treatment. It was taught by using music performance as media. While, the control class taught by using conventional learning method. It was not recieve a new treatment.

B. Research Setting

This research was conducted on the first semester in the academic year of 2011/ 2012 for about 14 days, began from 14th up to 30th 2011. It was conducted in SDN 01 Manggungsari, Weleri, Kendal Kode Pos 51355.

Table 3. List of time of the study

Number	Activity	Month/ Date				
		November				
		14th	15th	21th	24th	29th
1.	Try out	✓				
2.	Pre test		✓			

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[1]Suharsimi Arikunto, *Prosedur Penelitian : Suatu Pendekatan Praktek,* p. 3

3.	Treatment 1			✓		
4.	Treatment 2				✓	
5.	Post test					✓

C. Population and Sample

1. Population

    According to Encyclopedia of Educational Evaluation as cited by Arikunto, population is a set (or collection) of all elements possessing one or more attributes of interest.[2] The population of the research was the first semester of fifth grade students of SDN 01 Manggungsari Weleri Kendal in the academic year of 2011/ 2012. The number of the population is 60 students. Thre are divided into V A and B.

2. Sample

    Arikunto states that "sample represents a part of research population".[3] Sample is taking of a part population using certain procedure. So that can be expected to represent the population. Two classes were taken as the sample of this research. The classes that got learning by using music performance was as experimental class. Then, the class that got learning conventional method was as control class. In addition, the sample in this research in class V A was as experimental classs consist of 30 students and V B was as control class consist of 30 students.

D. Variables and Indicators

1. Variables

    According to Sugiyono, research variables are all things that shape what is defined by the researches to be studied in order to obtain information about it, and the conclusion drawn on next.[4] There are two types of variables: independent variable and dependent variable. The dependent variable is the variable that focuses on the central variable, and

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[2]Suharsimi Arikunto, *Prosedur Penelitian Suatu Pendekatan Praktik,* p.130.
[3]Suharsimi Arikunto, *Prosedur Penelitian : Suatu Pendekatan Praktek,* p.131.
[4]Sugiyono, *Statistika untuk Penelitian*, (Bandung: CV.Alfabeta, 2007), p.4.

other variables will act if there is any relationship. The independent variable is selected by researcher to determine the relationship with the dependent variable.

So the variables in this study are:

a. Independent Variable

It is a variable that influences or causes of change or emergence of the dependent variable.[5] The independent variable in this research is the use of music performance in teaching cardinal and ordinal number or the media used in teaching and learning process.

b. Dependent Variable

It is variable that is affected resulting, because of the existence of the independent variable.[6] The dependent variable in this research is the fifth grade students' achievement of SDN 01 Manggungsari Weleri Kendal which shows their understanding on cardinal and ordinal number.

2. Indicators

Based on the variables above, we can make indicators that support the variables. The indicators of teaching and learning technique using music performance are as follows:

Table 4. The List of Indicators and Variables

Variable	Indicators
a. Independent Variable The Use of music performance	1) Using cardinal number song. 2) Using ordinal number song.
b. Dependent Variable Students' achievement of vocabulary test score in cardinal and ordinal number.	

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[5]Sugiyono, *Statistika Untuk Penelitian,* (Bandung : CV Alfabeta, 2005), p.3
[6]Sugiyono, *Statistika Untuk Penelitian,* (Bandung : CV Alfabeta, 2005), p.4

Sub-Variable	Indicators
• Sub-Variable; Students' ability in understanding cardinal and ordinal number.	1) Memorizing cardinal and ordinal number. 2) Writing cardinal and ordinal number. 3) Singing cardinal and ordinal number.

E. Data Collection Technique

The writer collects the data to achieve the research. The techniques of collection consist of:

1. Test

Test is a question to measure competence, knowledge, intelegent, and ability talent which is possesed by individual or group to collect data.[7] In this research, the test was given to tryout class, control class and experimental class.

The instrument of the test in this research is objective test. Objective test is frequently critized on the ground that they are simple to answer than subjective test. Objective test are divided into transformation, completion, combination, addition, rearrangement, mathcing, correct and incorrect (true/ false). and multiple choice.[8] The writer used multiple choice form and matching items form. The choice of the test type is based on the consideration that multiple choice test are:

a. Easier to be scored and it does not take much time score.

b. More objective to score because it just has one correct answer.

c. Not subjectivities to score.

[7]M. Chabib Thoha, *Teknik Evaluasi Pendidikan*, (Jakarta: PT Raja Grafindo Persada, 2001) p. 43.
[8]J.B Heaton, *Writing English Language Test*, (London: Longman, 1975), p. 12-13.

J.B. Heaton states "although it is among the most difficult of all objective item types to construct, it is simple to score and administer".[9]

In this research, the writer used pre test and post test, they are:

a. Pre-Test

Before the teacher taught new material by using music performance, the teacher gave a test to the students. Pre-test was given before the experimental and control classes in same way. This test was given before the experiment was run.

b. Post-Test

Post-test was given to the experimental class and the control class. It was given in order to know the score of students' achievement after they were taught using music performance (experimental class) and without using music performance (control class).

2. Documentation

Documentation is the collecting, abstracting, and coding of printed or written information for future reference.[10]

The researcher function to the document related to the object research such as students' name list and the English subject shcedule. The instruments here are documents. Document are used to get the information about the students' achievement there. The researcher collected the data of the activity in the class by taking photograph which helped by his friend or done by him self. The photograph taken when the students doing the try-out test and post test, and while the researcher conducted teaching. In control class and treatment in experiment in experimental class. Then, the researcher made some conclusions based on the documentation. In this study, documentation only used to support the data about the students' condition reflected on their activity in the class.

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[9] J.B Heaton, *Writing English Language Test*, p. 14.
[10] David B. Guralnik, *Webster's New World College Dictionary Of The American Language,* (New York: Warner Book,2002), p.422.

3. Observation

In the psychological definition, observation involved an activity that focused toward the object by using all senses.[11] In this study, an observation was used to observe the subject of the study in same aspects. The aspects that were observed were students' attendance, students actively in asking questions to teacher, students actively in answering questions, students' ability in doing assignment from teacher, students' attention during the lesson, and students' cooperative attitude during the lesson.

F. Data Analysis Technique

There are three kinds of test that will be held in experimental research, they are try-out test, pre-request test, and hypothesis test. So there must be three process of analyzing the data collected from test.

1. Try-out test

The writer prepared 25 items as the instrument of the test. Before the items were given to the students, the writer gave tryout test to analyze validity, reliability, difficulty level and also the discrimination power of each item. The tryout was given to VI A of the students of SDN 01 Manggungsari Weleri Kendal. After finishing the test, the answer sheets were collected in order to be scored. An analysis was made based on the result of test by using the formula of validity, reliability, the degree of test difficulty and discriminating power.

From 25 test text of tryout, some items were chosen as the instrument of the test. The choosing of the instrument had been done by considering: validity, reliability, the degree of test difficulty and discriminating power.

a. The Validity

The validity is an important quality of any test. It is a condition in which a test can measure what is supposed to be measured. According to Arikunto, a test is valid if it measures what it purpose to be measured.[12]

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[11]Suharsimi Arikunto, *Prosedur Penelitian Suatu Pendekatan Praktik*, p.156

[12]Suharsimi Arikunto, *Prosedur Penelitian: Suatu Pendekatan Praktik,* p. 65.

Is measurement that shows the validity of instrument? The validity of an item can be known by doing item analysis. It is counted using product – moment correlation formula:

$$r_{xy} = \frac{N \sum XY - \sum (X) \sum (Y)}{\sqrt{\left\{ N \sum X^2 - \left(\sum X \right)^2 \right\} \left\{ N \sum Y^2 - \left(\sum Y \right)^2 \right\}}}$$

r_{xy} : The correlation coefficient between X variable and Y variable

N : The number of students

X : The number of each item score

Y : The number of total score

Calculation result of r_{xy} is compared with r_{table} of product moment by 5% degree of significance. If r_{xy} is higher than r_{table}, the item of question is valid.[13]

b. **Reliability**

It means "consistent".[14] Reliability refers to the consistency of test scores. Besides having high validity, a good test should have high reliability too. Alpha formula is used to know reliability of test is

K - R. 20.

$$r_{11} = \left(\frac{k}{k-1} \right) \left(\frac{S^2 - \sum pq}{S^2} \right)$$

Where:

r_{11} : The reliability coefficient of items

k : The number of item in the test

p : The proportion of students who give the right answer

q : The proportion of students who give the wrong answer

S^2 : The standard deviation of the test

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[13]Suharsimi Arikunto, *Dasar-Dasar Evaluasi Pendidikan* (Jakarta: Bumi Aksara, 2007)7th Ed, p.78.

[14]J.B Heaton, *Writing English Language Test*, p.155.

Calculation result of r_{11} is compared with r_{table} of product moment by 5% degree of significance. If r_{11} is higher than r_{table}, the item of question is reliable.[15]

c. Item Analysis

After scoring the try out test, item analysis was carried out to find out the effectiveness of the items. Item analysis discussed two main things:

1) Difficulty level

Heaton states that " the index of difficulty of an item simply shows how easy or difficult yhe particular item proved in the test".[16] if a teacher knows deeply about item difficulty in making a test, he can make his test easy, medium, or difficult. A good test is a test that is not really difficult and not really easy. Formula for degree of test difficulty is.

$$P = \frac{B}{JS}$$

Where:

P : The difficulty's index

B : The Number of students who has right answer

JS : The number of students17

The criteria are:

$P = 0.00 \le p \le 0.30$ Difficult question

$P = 0.30 \le p \le 0.70$ Sufficient

$P = 0.70 \le p \le 1.00$ Easy

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[15]Suharsimi Arikunto, *Dasar-Dasar Evaluasi Pendidikan* , p.198.
[16]J.B Heaton, *Writing English Language Test*, p. 172.
[17]J.B Heaton, *Writing English Language Test*, p. 207-208.

2) Discriminating Power

It is used to know how accurate the question differ higher subject and lower subject.

To calculate the index of disriminating power, the writer used the formula as follow:

$$D = \frac{B_A}{J_A} - \frac{B_B}{J_B} = P_A - P_B$$

Where:

D : The degree of question distinctive

JA : The number of participant the upper group

JB : The number of participant in the lower group

BA : The number of participants in the upper group who answered the item correctly

B_B : The number of participants in the lower group who answered the item correctly

PA : The proportion of participants in upper group that answered true

PB : The proportion of participants in lower group that answered true.[18]

The criteria are:

$0.00 \leq p \leq 0.20$ Less

$0.20 \leq p \leq 0.40$ Enough

$0.40 \leq p \leq 0.70$ Good

$0.70 \leq p \leq 1.00$ Excellent

2. **Pre-request Test**

Before the writer determines the statistical analysis technique used, He examined the normality and homogeneity test of the data.

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. The

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[18] J.B Heaton, *Writing English Language Test*, p. 213

normality test with Chi-square is done to find out the distribution data. Step by step Chi-square test is as follows:

$$X^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i}$$

Where:

X2 = Chi-square

Oi = Frequency that was obtained from data

Ei = Frequency that was hoped

k = The sum of interval class

If $X^2{}_{count} > X^2{}_{table}$, the data is not normal distribution and the other way if the $X^2{}_{count} < X^2{}_{table}$, the data is normal distribution.[19]

b. Homogeneity Test

Is used to know whether experiment class and control class, that are taken from population have same variant or not. According to 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.[20]

The steps as follows:

1) Calculate variants both classes (experimental and control classes), with the formula:

$$S_1{}^2 = \frac{\sum(x-\bar{x})^2}{n_1 - 1} \text{ And } S_2{}^2 = \frac{\sum(x-\bar{x})^2}{n_2 - 1}$$

2) Determine $F = \dfrac{Vb}{Vk}$

Where:

Vb : Bigger Varian

Vk : Smaller Varian

Determine dk $= (n_1 - 1) : (n_2 - 1)$

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[19]Sudjana, *Metode Statistika*, (Bandung: Tarsito, 1996), 6th Ed p. 273.
[20]David Nunan, *Research Method in Language Learning,* p. 27.

If $F_{count} > F_{table}$, the data is not homogeneous and the other way if the $F_{count} < F_{table}$, the data is homogeneous.[21]

3. Hypothesis Test

To respond the objectives of the study, the researcher examined the data in the following steps. Firstly, the test was done in both groups, experimental and control group. Secondly, the result of the test of test was scored by using analytic scale. Thirdly, the means score of the two groups were determined. Finally, the two means were compared by applying t-test formula. T-test was used to differentiate if the result of students' taught using picture and those taught non picture was significant or not.

$$t = \frac{\overline{X}_1 - \overline{X}_2}{S\sqrt{\dfrac{1}{n_1} + \dfrac{1}{n_2}}}$$

With

$$S = \sqrt{\frac{(n_1-1)S_1^2 + (n_2-1)S_2^2}{n_1 + n_2 - 2}}$$

Where:

$\overline{X}_1$: The mean score of the experimental group

$\overline{X}_2$: The mean of the control group

n_1 : The number of experiment group

n_2 : The number of control group

S_1^2 : The standard deviation of experiment group

S_2^2 : The standard deviation of both groups

If the obtained score was higher than t-table score by using 5% alpha of signifinicance, Ho was rejected. It means that Ha was accepted.

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[21]Sudjana, *Metode Statistika*, p. 250