CHAPTER III

METHODS OF INVESTIGATION

A. Research Design

The type used in this research was quantitative. It was a quantitative because it emphasizes the systematic measurement and quantification of variables, statistical analysis of the quantitative data, and the used of numeric models.[1] While the method employed was experimental research in which its purpose was to search or compare the certain treatment toward other within controlled condition.[2] Here, there were experimental class and control class, which had been chosen in the eighth grade students. Both two classes were given pretest to know the difference of competence level between them at the first condition. The pretest result was said well if there is no significant difference. After doing pretest, the experimental class was given a certain treatment (X) while the control one was not. Here, the treatment refers to the teaching by "Story Maze" as medium to tell a story in speaking. The design can be figured out as follow.

The design of experimental research[3]

Cx	O_1	X	O_2
Cy	O_3	_	O_4

In which:

O_1 = Pretest value of experimental class

O_2 = Posttest value of experimental class

O_3 = Pretest value of control class

O_4 = Posttest value of control class

X = Treatment

---

[1]Suharsimi Arikunto, *Prosedur Penelitian: Suatu Pendekatan Praktik*, (Jakarta: PT Rineka Cipta, 2006), Revised Ed., p. 12

[2]Sugiyono, *Metodologi Penelitian Pendidikan, (Pendekatan Kuantitatif, Kualitatif, dan R&D)*, (Bandung: Alfabeta, 2007), 3 rd Ed, p. 107.

[3]*Ibid,* p. 112

Cx = Experimental class

Cy = Control class

B. Variables of the Research

Variable was the object of research or something that become the concern of research.[4] In this study, there were two variables. They were Independent Variable (X) and Dependent Variable (Y).

1. Independent Variable (X)

Independent variable was variable that the experimenter expects to influence the other.[5] In this study, an independent variable was the story maze as a medium to increase speaking skill.

2. Dependent Variable (Y)

Dependent variable was variable upon which the independent variable was acting.[6] The dependent variable of this study was the students' speaking achievement.

C. Setting of the Study

The research conducted in SMP Muhammadiyah 8 Mijen Semarang. That school was chosen because almost of the students there still have low ability in their speaking skill. So that, the writer researched in that school to increase students' speaking skill, especially in telling story by using story maze as a medium of instruction.

D. Population and Sample

Population was formulated as the whole groups of people or object that have been formulated clearly.[7] The population of this research were students of the Eighth grade students of SMP Muhammadiyah 8 Mijen Semarang. The

---

[4] Suharsimi Arikunto *Op. Cit.,* p. 118

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

[6] David Nunan, *Lok. Cit*, p. 25

[7] Suharsimi Arikunto *Op. Cit.* p. 130

eight classes divided into four classes, there were A, B, C, and special class. The population in this research was all students of Eighth grade students of SMP Muhammadiyah 8 Mijen Semarang in academic year of 2009/2010. The number of the entire students was 104.

Sample was some of chosen population using certain procedure so that can be expected to represent its population. Sampling was the process done to choose and take sample correctly from population so that it can be used as valid representative to the population.[8] In this research, the writer took two classes from four classes as the subject of research. In this study, cluster-sampling technique was used. Cluster sampling is a method that used to choose the sample of group from many groups that all of the group consist of smaller units.[9] Two classes were chosen by cluster sample, in which the each class consists of 28 students. Class VIII B was chosen as the experimental class, which was taught by "Story Maze" while class VIII A was chosen as the control class, which was taught by conventional technique.

E. Technique of Data Collection

These following methods were attempted by the writer to gain the data:

1. Documentation

   It referred to the archival data that helped the writer to collect the needed data. The writer used the document related to the object research such as students name list, syllabus, recording of students' test and the English subject schedule. It helped the writer conducted the experiment.

2. Test

   It was a set of questions and exercises used to measure the achievement or capability of the individual or group.[10] In this research, there were two kinds of test, pre test and post-test, which were given to the students as participants, either the experimental or the control class. Before carried out the teaching, the pre test was given to both classes in

---

[8]Sugiarto, et al., *Teknik Sampling*, (Jakarta: Gramedia Pustaka Utama, 2003), 2nd Ed, p.4
[9]*Ibid*, p. 90
[10] Suharsimi Arikunto *Op. Cit.,* p. 150.

order to make sure that the two classes had similar and equal level of proficiencies. The post-test was given to the experimental class after being taught by "Story Maze" and was given to the control class after being taught by Conventional Method. The post-test was aimed to assess their achievement on telling story in speaking. Before carried out the pre test, the writer did tryout in two classes randomly. The purpose of tryout is to know the students ability and the difficulty level of test.

3. Observation

It referred to the activity of giving total concern to research object by the sense. In this research, the concern of research was focused on the students' observable behavior pertaining to their ability to tell a story.

F. Technique of Data Analysis

1. Scoring System

In this research, the writer scored the test by classifying the aspect to the criteria, based on Harris (1969) that can be stated as follow: [11]

No.	Aspects	Score	Criteria
1.	Pronunciation	5	Has few traces of foreign accent
		4	Always intelligible, though one is conscious of a definite accent
		3	Pronunciation problems necessitate concentrated listening and occasionally lead to misunderstanding
		2	Very hard to understand because of pronunciation problems. Must frequently be asked to repeat
		1	Pronunciation problems so severe as to make speech virtually unintelligible

---

[11]D Harris, *Testing English As A Second Language*, (USA: Mc. Graw Hill 1969), P.84

2.	Grammar	5	Makes few (if any) noticeable errors of grammar or word order
		4	Occasionally makes grammatical and/or word-order errors which do not, however, obscure meaning
		3	Makes frequent errors of grammar and word order which occasionally obscure meaning
		2	Grammar and word-order errors make comprehension difficult. Must often rephrase sentences and/or restrict himself to basic patterns
		1	Errors in grammar and word order so severe as to make speech virtually unintelligible
3.	Vocabulary	5	Use of vocabulary and idioms virtually that a native speaker
		4	Sometimes uses inappropriate terms and/or must rephrase ideas because of lexical inadequacies
		3	Frequently uses the wrong words; conversation somewhat limited because of inadequate vocabulary
		2	Misuse of words and very limited vocabulary make comprehension quite difficult.
		1	Vocabulary limitations are extreme to make conversation virtually impossible
4.	Fluency	5	Speech as fluent and effortless as that of a native speaking
		4	Speed of speech seems to be slightly affected by language problems
		3	Speed and fluency are rather strongly affected

			by language problems
		2	Usually hesitant; often forced into silence by language limitation
		1	Speech is so halting and fragmentary as to make conversation virtually impossible
5.	Comprehension	5	Appears to understand everything without difficulty
		4	Understands nearly everything at normal speed, although occasional repetition may be necessary
		3	Understands most of what is said at slower-than-normal speed with repetitions
		2	Has great difficulty following what is said. Can comprehend only "social conversation" spoken slowly and with frequent repetitions
		1	Cannot be said to understand even simple conversational English

Based on the table above, score five was the highest mark for the indicator of successful achievement. To find out the scores of the test, the writer counted all scores from five indicators then multiplies with four.

2. Prerequisite Test

Before testing the hypothesis that compared the difference of students' academic achievement using t-test formula, there was a prerequisite test to know the legality of the sample. Here, the normality and homogeneity test were employed.

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. To

find out the distribution data, normality test is done using the Chi-square formula. Steps of Chi-square test are as follows: [12]

1) Determine the range (R); the highest score - the lowest score.

2) Determine the class interval (K) with formula:

K = 1+ (3,3) log n

3) Determine the length of the class, using the formula:

$$P = \frac{R}{K}$$

4) Make a frequency distribution table

5) Determines the class boundaries (bc) of each class interval

6) Calculating the average Xi ($\overline{X}$), with the formula:

$$\overline{X} = \frac{\sum f_i x_i}{\sum f_i}$$

7) Calculate variants, with the formula:

$$S = \sqrt{\frac{\sum f_i (x_i - \overline{x})^2}{n-1}}$$

8) Calculate the value of Z, with the formula:

$$Z = \frac{x_i - \overline{x}}{s}$$

x_i = limit class
$\overline{x}$ = Average
S = Standard Deviation

9) Define the wide area of each class interval

10) Calculate the frequency expository (Ei), with formula:

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

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

class	bc	Z	P	L	Ei	$\dfrac{Oi - Ei}{Ei}$

12) Calculate the chi-square (X^2), with the formula:

---

[12]Sudjana, *Metode Statistika*, (Bandung: Tarsito, 1996), p. 273.

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

13) Determine the degree of freedom (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 dk = k-3, where k is the number of class intervals and $\alpha = 5\%$

14) Determining the value of X^2 table

15) Determining the distribution normality with test criteria:

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

b. Homogeneity Test

Homogeneity test is used to find out whether the group is homogenous or not. The writer used formula as follows:[13]

$$F = \frac{Biggest\ Variance}{Smallest\ Variance}$$

Hypothesis:

$$H_o : \sigma_1^2 = \sigma_2^2$$
$$H_A : \sigma_1^2 \neq \sigma_2^2$$

H_o received if $X^2{}_{count} < X^2{}_{(1-\alpha)(k-1)}$

3. Hypothesis Test

Compare the result of the test of the two groups. This step was done to prove the research hypothesis. Here, the t-test formula is used. In this case, because the group size is the same, the formula for computing the t-test value is like this.[14]

$$t = \frac{\overline{X}_1 - \overline{X}_2}{\sqrt{\dfrac{S_1^2}{N_1} + \dfrac{S_2^2}{N_2}}}$$

---

[13]Sugiyono, Statistika *Untuk Penelitian,* (Bandung: Alfabeta, 2007), p. 140.
[14]James Dean Brown and Theodore S. Rodger, *Doing Second Language Research*, (British: Oxford Press, 2002), p. 208.

In which

t   : t - value

$\overline{X_1}$: Average score of experimental group

$\overline{X_2}$: Average score of control group

N_1 : Number of students of experimental group

N_2 : Number of students of control group

S_1^2 : Standard deviation for experimental group

S_2^2 : Standard deviation for control groups

The test criterion is: H_a is accepted if $t_{calculated} > t_{table}$ by degrees of freedom of $df = (n_1 + n_2 - 2)$ and by the chance of 0.05 level of significance.

G. Procedure and Timeline

The data collection started in 1 February 2010 until 27 February 2010. That can be written the details of timeline as follows:

1. The writer asked permission to headmaster SMP Muhammadiyah 8 Mijen Semarang in the end of January 2010. After giving research permission letter to the headmaster of that school, the writer meet the English teacher and asked for the data of students. Then writer came into the eighth class to observe the teaching learning process.

2. The writer did tryout in 1 February 2010. Before carried out the pre test, the writer did tryout in classes A and B randomly. The purpose of tryout is to know the students ability and the difficulty level of test.

3. The writer gave pre test to both control class (A) and experiment class (B) in 4 February 2010. Before carrying out the teaching speaking with the treatment of story maze, the pre test gave to both classes in order to make sure that the two classes had similar and equal level of proficiencies. In this session, the writer asked students to tell personal activity based on key words in front of class. Before students told the

story, the writer pleased the students to prepare their story at least fifty words or in three minutes. The students also may open dictionary if they had many difficult vocabulary and may check their pronunciation in their dictionary. After it, the writer called one by one student to come in front of class to tell personal activity based on key words during three minutes. The writer recorded their speaking, especially telling story.

4. The writer taught experiment class and control class in 8, 11, 15 and 18 February 2010. The students in both classes got same materials but they were taught by different methods. The writer used conventional method in teaching control class and used story maze as a medium of instruction in teaching the experiment class.

There were some basic principles in using story maze, there are:

a) Key words

b) Pictures

c) Some questions related to the pictures

d) Model in telling the story maze

There were some steps in using story maze in the classroom:

a) Writing key words and translating them. The teacher wrote key words on the blackboard or whiteboard. She or he gave examples how to pronounce the word, and then translated it into Indonesian Language. She or he asked the students to repeat to pronounce the words together.

b) Showing a large paper, that consists of the pictures as an example of the story maze. Before telling the story maze, the teacher asked some questions related to the pictures.

c) Teacher told the story. After telling the story, discussing what the students hear. The students can ask about object, place or point of the story.

d) Teacher showed new picture to the students. The teacher asked some questions related to the pictures.

e) Making group discussion. They should work out their story orally and should make sure that each one of them know and can tell the story.

f) Asking the representatives as volunteers to stand by the paper and telling the story to the whole class based on their comprehension.

5. The writer gave posttest to both control and experiment class in 25 February. The procedure was same with the pretest. Writer pleased the students to prepare their story at least fifty words. The students also may open dictionary if they have many difficult vocabulary and may check their pronunciation in their dictionary. After it, the writer called one by one student to come in front of class to tell personal activity during three minutes. The writer recorded their telling story.