

CHAPTER IV

RESEARCH FINDING AND DISCUSSION

This chapter is aimed to find out whether any difference between the use of problem sticks as teaching media on students' speaking skill at second grade of SMPI Brawijaya Pungging, Mojokerto. This chapter presents the result of research findings which is intended to answer the problem of the study and research discussion. This chapter is divided four subheadings: data presentation, data analysis and discussion. Besides, this chapter analyzes statistically the data gained from the result of pre-test and post-test of both experimental and control group. For this case, the t-test was applied.

A. Data presentation

Problem sticks was used to improve the student' speaking ability in learning process. This study was conducted to find out whether there is difference between the students who are taught using problem sticks and those are taught without using problem sticks. This study used quasi experimental designed which consists of two subject experimental and control group. One class, VIII A consists of 38 students', was selected and split up into two groups as the sample of the research. From such class, the researcher got VIII B as the experimental group and VIII A as the control group.

This study was conducted by the researcher to find out how the teacher uses problem sticks in teaching and learning English, how problem sticks improves students' speaking skill and whether students who are taught through

problem sticks have better speaking skill than those who are not taught through problem sticks. The data was collected from the students' pretest and posttest score and questionnaire. The pretest was conducted first to the experimental and control group. The result of the pretest provides information about both of groups' ability in speaking. The posttest was administered then to both of groups after the experimental group got the treatments and the control group taught through conventional teaching. The analytical scoring adapted from Arthur Hughes is used to score the students' speaking skill. The components on the scoring which are used in this test are pronunciation, grammar, vocabulary, fluency and comprehension.

1. The Result of Pre-Test and Post-Test of Experimental Group

The data was collected from two groups; the experimental and control groups. The pretest was administrated before the problem sticks was implemented in experimental group.

Pretest was conducted on Tuesday, June 11th 2013. The pretest in experimental group was given on the first meeting, while the control group was given pretest on the second meeting. Pretest was conducted by the researcher as the replacement of the English teacher. The researcher asked the students to tell material from book entitled "Describing People". The pretest was conducted to determine the students' English speaking ability.

1) The Result of Experimental Group's Pretest Score

In this study, the experimental group was the students of VIII A. The researcher took 20 students as the sample of the experimental group. In

the experimental groups, the students were given treatments by teaching them using problem sticks. The main data of the experimental group were collected from pretest and posttest.

The data from pretest was aimed to measure the students' speaking skill before they got the treatments. The pretest of the experimental group was done on Tuesday, June 11th 2013. In pretest, students were asked to use the problem sticks. The topic was describing people. So, the students were free to choose one of the describing people. The whole scoring of the students' speaking skill was adapted from Arthur Hughes. There were five categories with five levels to score the students' speaking skill. The whole of the students' pretest score are presented as follows:

Table 4.1
Students of the Experimental Group's Pretest Score

| Student | Pretest | | | | | Score |
|---------|---------|----|----|----|----|-------|
| | G | V | C | F | P | |
| 1 | 8 | 8 | 12 | 8 | 12 | 48 |
| 2 | 12 | 12 | 12 | 12 | 12 | 60 |
| 3 | 8 | 12 | 8 | 8 | 12 | 48 |
| 4 | 8 | 12 | 12 | 8 | 12 | 52 |
| 5 | 8 | 12 | 12 | 8 | 12 | 52 |
| 6 | 12 | 12 | 12 | 12 | 12 | 60 |
| 7 | 8 | 12 | 12 | 8 | 8 | 48 |
| 8 | 12 | 16 | 12 | 12 | 12 | 64 |
| 9 | 8 | 12 | 12 | 8 | 16 | 56 |
| 10 | 12 | 12 | 12 | 12 | 12 | 60 |
| 11 | 8 | 8 | 12 | 8 | 12 | 48 |
| 12 | 12 | 12 | 12 | 12 | 12 | 60 |
| 13 | 12 | 16 | 16 | 12 | 12 | 68 |
| 14 | 8 | 12 | 12 | 8 | 12 | 52 |
| 15 | 12 | 12 | 12 | 12 | 12 | 60 |

| | | | | | | |
|-----------|-----|-----|------|-----|------|------|
| 16 | 12 | 12 | 12 | 12 | 12 | 60 |
| 17 | 8 | 12 | 12 | 8 | 12 | 52 |
| 18 | 8 | 12 | 16 | 12 | 12 | 60 |
| 19 | 8 | 12 | 12 | 8 | 8 | 48 |
| 20 | 8 | 12 | 12 | 12 | 12 | 56 |
| Σ | 192 | 240 | 244 | 200 | 236 | 1112 |
| \bar{X} | 9.6 | 12 | 12.2 | 10 | 11.8 | 55.6 |

In which:

G : Grammar

V : Vocabulary

C : Comprehension

F : Fluency

P : Pronunciation

2) The Activities during Treatment of Experimental Groups

a) The first treatment was held on Wednesday, June 12th 2013. The process of first treatment is presented as follows:

- (1) Open the lesson.
- (2) Elaborate what problem sticks are and show the examples of problem sticks.
- (3) Explain and present problem sticks to the students before they are asked to use problem sticks.
- (4) Divide students into some groups.
- (5) Prepare the tools which are be able to speak up about material of asking for and giving suggestion in problem sticks.
- (6) View the students' problem sticks in front of the class.

- (7) Evaluate and discuss problem sticks to find which part should be improved.
 - (8) Give the feedback and conclusion of what have been learned.
 - (9) Close the lesson.
- b) The second treatment was held on Wednesday, June 19th 2013. The process of second treatment is presented as follows:
- (1) Open the lesson.
 - (2) Elicit the students and remind the previous meeting about the evaluation and discussion of problem sticks.
 - (3) Gather in their groups.
 - (4) The researcher observes to the students for each groups.
 - (5) Evaluate and discuss problem sticks to find which part should be improved.
 - (6) Give the feedback and conclusion of what have been learned.
 - (7) Close the lesson.

3) The Result of Experimental Group's Pretest Score

While, after the researcher gave treatments by teaching them using problem sticks, the researcher conducted posttest to find out whether there was improvement of the students' speaking skill or not. The posttest was administered on Friday, June 21st 2013. The students were also asked to use of problem sticks, but the topic was describing people. So, the result of the students' posttest score is presented as follows:

Table 4.2
Students of the Experimental Group's Posttest Score

| Student | Posttest | | | | | Score |
|-----------|----------|------|------|------|------|-------|
| | G | V | C | F | P | |
| 1 | 18 | 16 | 12 | 14 | 12 | 72 |
| 2 | 12 | 16 | 16 | 12 | 16 | 72 |
| 3 | 12 | 16 | 12 | 12 | 16 | 68 |
| 4 | 12 | 16 | 12 | 12 | 12 | 64 |
| 5 | 16 | 16 | 18 | 14 | 16 | 80 |
| 6 | 12 | 16 | 16 | 12 | 12 | 68 |
| 7 | 12 | 12 | 12 | 12 | 12 | 60 |
| 8 | 20 | 16 | 16 | 12 | 16 | 80 |
| 9 | 24 | 20 | 16 | 12 | 16 | 88 |
| 10 | 16 | 16 | 16 | 16 | 12 | 76 |
| 11 | 12 | 16 | 16 | 12 | 16 | 72 |
| 12 | 18 | 16 | 20 | 12 | 16 | 82 |
| 13 | 16 | 16 | 16 | 16 | 12 | 76 |
| 14 | 14 | 12 | 16 | 12 | 16 | 70 |
| 15 | 12 | 16 | 16 | 16 | 16 | 76 |
| 16 | 16 | 24 | 16 | 12 | 16 | 84 |
| 17 | 16 | 16 | 16 | 12 | 16 | 76 |
| 18 | 12 | 16 | 12 | 16 | 12 | 68 |
| 19 | 16 | 16 | 20 | 12 | 16 | 80 |
| 20 | 14 | 16 | 12 | 16 | 16 | 74 |
| Σ | 300 | 324 | 306 | 264 | 292 | 1486 |
| \bar{X} | 15 | 16.2 | 15.3 | 13.2 | 14.6 | 74.3 |

2. The Result of Pre-Test and Post-Test of Control Group

1) The Result of Control Group's Pretest Score

The members of control group were the students of VIII B. The students consisted of 38 students as the sample. In the control group, the students were not taught through problem sticks. But, the students were taught through conventional teaching which is usually done by the

teacher. The main data of the control group's scores were collected from pretest and posttest.

The pretest was aimed to know the students' speaking skill at the control group. The pretest of the control group was administered on Tuesday, June 11th 2013. The scoring which was used was adapted from Arthur Hughes. There were five categories with five levels. The result of the students' pretest score is presented as follows:

Table 4.3
Students of the Control Group's Pretest Score

| Students | Pretest | | | | | Score |
|-----------|---------|-----|------|------|------|-------|
| | G | V | C | F | P | |
| 1 | 8 | 12 | 12 | 12 | 12 | 56 |
| 2 | 8 | 12 | 12 | 12 | 12 | 56 |
| 3 | 8 | 12 | 12 | 12 | 12 | 56 |
| 4 | 8 | 12 | 12 | 12 | 12 | 56 |
| 5 | 12 | 12 | 16 | 12 | 12 | 64 |
| 6 | 8 | 12 | 12 | 8 | 12 | 52 |
| 7 | 12 | 12 | 12 | 8 | 12 | 56 |
| 8 | 8 | 12 | 12 | 12 | 12 | 56 |
| 9 | 8 | 12 | 12 | 8 | 12 | 52 |
| 10 | 8 | 12 | 12 | 12 | 12 | 56 |
| 11 | 8 | 12 | 12 | 12 | 12 | 56 |
| 12 | 8 | 12 | 12 | 12 | 12 | 56 |
| 13 | 8 | 12 | 12 | 12 | 12 | 56 |
| 14 | 12 | 12 | 12 | 12 | 12 | 60 |
| 15 | 12 | 12 | 12 | 12 | 12 | 60 |
| 16 | 12 | 12 | 12 | 12 | 12 | 60 |
| 17 | 8 | 12 | 12 | 8 | 12 | 52 |
| 18 | 12 | 16 | 12 | 16 | 12 | 68 |
| 19 | 8 | 12 | 12 | 12 | 12 | 56 |
| 20 | 8 | 8 | 12 | 8 | 8 | 44 |
| Σ | 184 | 240 | 244 | 224 | 236 | 1128 |
| \bar{X} | 9.2 | 12 | 12.2 | 11.2 | 11.8 | 56.4 |

2) The Activities of Control Groups

- a) The first of control group was held on Wednesday, June 12th 2013.

The activities in control groups as follow:

- (1) Open the class
- (2) Give greeting to students
- (3) Ask students to open the students' book (LKS).
- (4) Teach the students using conventional teaching.
- (5) Give exercise
- (6) Give feedback to students.
- (7) Close the class.

- b) The second of control group was held on Wednesday, June 19th 2013. The activities have similarity same the first meeting of control group. The activities in control groups as follow:

- (1) Open the class
- (2) Give greeting to students
- (3) Teach the students using conventional teaching.
- (4) Give exercise
- (5) Give feedback to students
- (6) Close the class.

3) The Result of Control Group's Pretest Score

After the researcher taught the students using conventional teaching, the post-test was administered. It was aimed to be compared to the posttest score of the control group. The posttest was conducted

on Friday, June 21st 2013. The whole students' posttest score is presented as follows:

Table 4.4
Students of the Control Group's Posttest Score

| Students | Posttest | | | | | Score |
|-----------|----------|------|------|------|------|-------|
| | G | V | C | F | P | |
| 1 | 16 | 20 | 16 | 16 | 14 | 82 |
| 2 | 8 | 12 | 12 | 12 | 12 | 56 |
| 3 | 12 | 16 | 16 | 12 | 16 | 72 |
| 4 | 12 | 16 | 18 | 16 | 14 | 76 |
| 5 | 16 | 16 | 18 | 16 | 12 | 78 |
| 6 | 18 | 18 | 16 | 16 | 16 | 84 |
| 7 | 12 | 8 | 12 | 12 | 12 | 56 |
| 8 | 12 | 16 | 12 | 16 | 16 | 72 |
| 9 | 12 | 16 | 16 | 12 | 16 | 72 |
| 10 | 18 | 16 | 16 | 16 | 16 | 82 |
| 11 | 16 | 12 | 16 | 16 | 14 | 74 |
| 12 | 12 | 16 | 16 | 12 | 16 | 72 |
| 13 | 12 | 16 | 16 | 12 | 14 | 70 |
| 14 | 12 | 16 | 16 | 12 | 16 | 72 |
| 15 | 12 | 16 | 16 | 12 | 12 | 68 |
| 16 | 16 | 16 | 16 | 12 | 12 | 72 |
| 17 | 12 | 18 | 16 | 12 | 16 | 74 |
| 18 | 16 | 16 | 16 | 12 | 12 | 72 |
| 19 | 12 | 16 | 16 | 12 | 16 | 72 |
| 20 | 12 | 16 | 18 | 12 | 16 | 74 |
| Σ | 268 | 312 | 314 | 268 | 288 | 1450 |
| \bar{X} | 13.4 | 15.6 | 15.7 | 13.4 | 14.4 | 72.5 |

2) Data Analysis of the Students' Scores

a. The Analysis of the Experimental Group's Scores

After giving the pretest, treatments, and posttest to the experimental group, the researcher got the result from pretest and posttest scores presented as follows:

Table 4.5
Total and Mean of Pretest and Posttest Score of
Experimental Group

| Test | | G | V | C | F | P | Total |
|--------------------|-----------|------------|-------------|-------------|-------------|-------------|--------------|
| PRE | Σ | 192 | 240 | 244 | 200 | 236 | 1112 |
| | \bar{X} | 9.6 | 12 | 12.2 | 10 | 11.8 | 55.6 |
| POST | Σ | 300 | 324 | 306 | 264 | 292 | 1486 |
| | \bar{X} | 15 | 16.2 | 15.3 | 13.2 | 14.6 | 74.3 |
| Improvement | | 5.4% | 4.2% | 3.1% | 3.2% | 2.8% | 18.7% |

From the table 4.5 above, it can be seen that there is progress of the students speaking skill. In pretest, the means of the students' score is 9.6 for grammar, 12 for vocabulary, 12.2 for comprehension, 10 for fluency, and 11.8 for pronunciation. So, the means of the students' total score is 55.6. It shows that the students' speaking skill was still low. Therefore, the researcher taught the students through problem sticks as the treatment for the experimental group to improve the students' speaking skill. While in posttest, the means of the students' score is 15 for grammar, 16.2 for vocabulary, 15.3 for comprehension, 13.2 for fluency, and 14.6 for pronunciation. So, the means of the students' total score is 74.3.

The score of the posttest compared with the pretest shows that the students' scores increase significantly after they got the treatments. The significant increase of the students' score also shows that the problem sticks improves the students' speaking skill. The improvement is 5.4% in grammar, 4.2% in vocabulary, 3.1% in comprehension, 3.2% in fluency, and 2.8% in pronunciation. The improvement of the students' total score is 18.7%. The significant improvement of the students' speaking skill can be seen in the charts as follows:

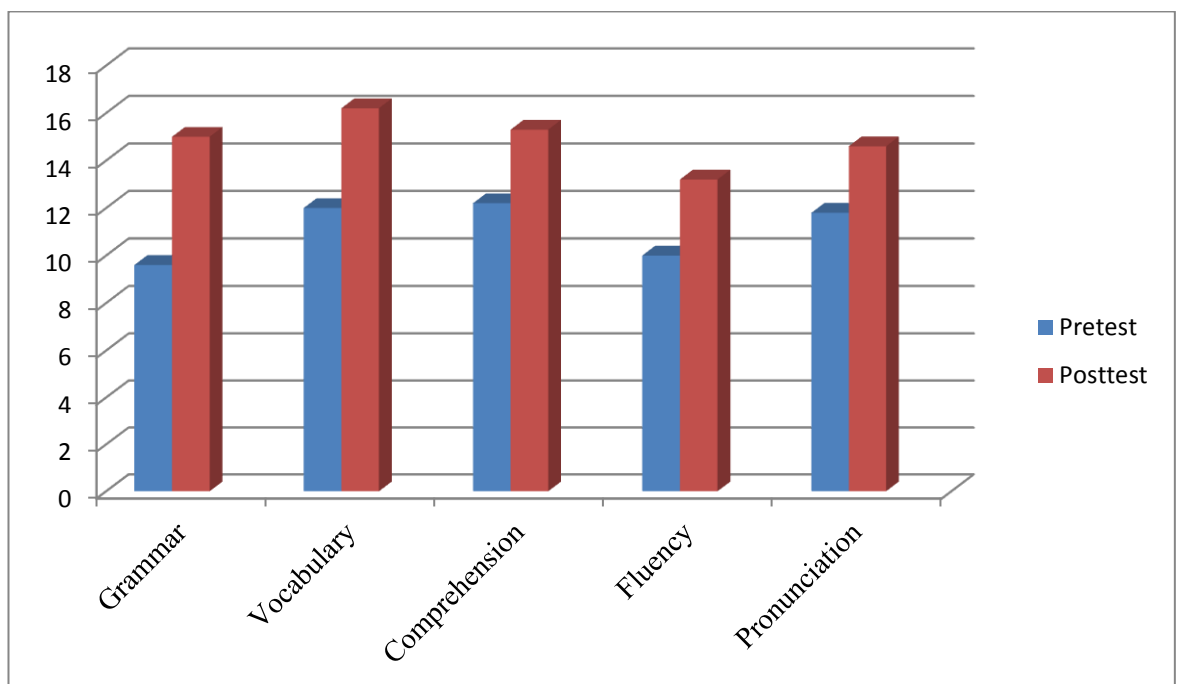


Figure 4.1

Chart of the Experimental Group's Pretest and Posttest Score

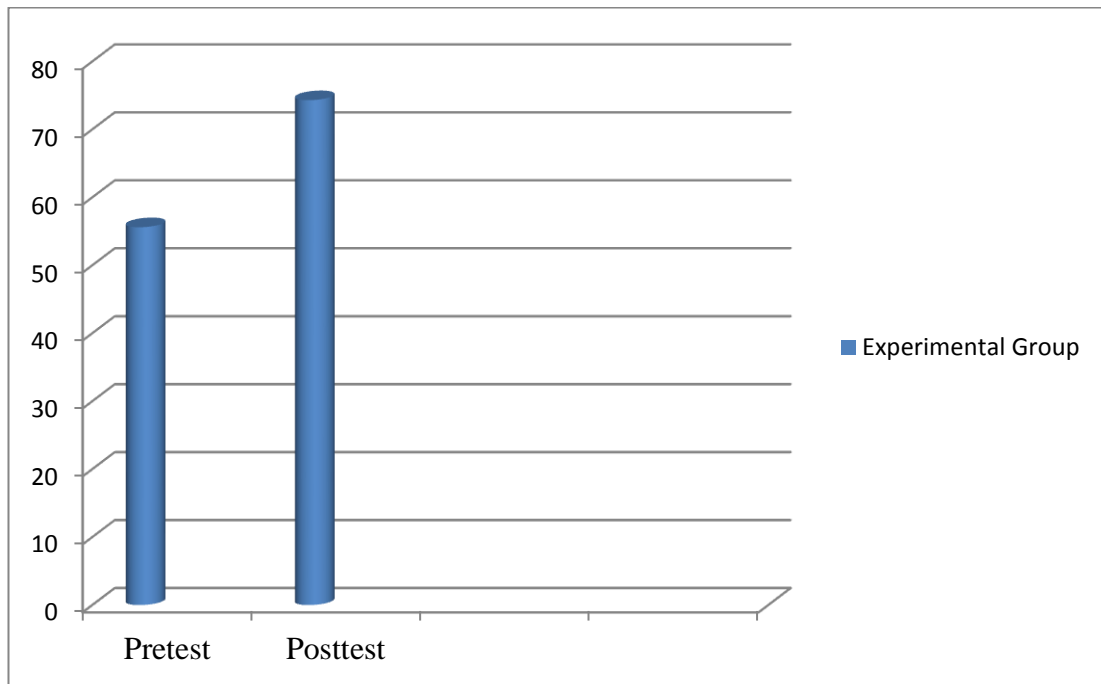


Figure 4.2
Chart of the Experimental Group's Score

b. The Analysis of the Control Group's Score

After conducting pretest, conventional teaching, and posttest to the control group, the researcher got the result of pretest and posttest scores presented as follows:

Table 4.6
Total and Mean of Pretest and Posttest Score of Control Group

| Test | | G | V | C | F | P | Total |
|--------------------|-----------|-------------|-------------|-------------|-------------|-------------|-------------|
| PRE | Σ | 184 | 240 | 244 | 224 | 236 | 1128 |
| | \bar{X} | 9.2 | 12 | 12.2 | 11.2 | 11.8 | 56.4 |
| POST | Σ | 268 | 312 | 314 | 268 | 288 | 1450 |
| | \bar{X} | 13.4 | 15.6 | 15.7 | 13.4 | 14.4 | 72.5 |
| Improvement | | 4.2% | 3.6% | 3.5% | 2.2% | 2.6% | 16.1% |

From the table 4.6 above, it can be seen that there is progress of the students' speaking skill. In pretest, the means of the students' score is 9.2 for grammar, 12 for vocabulary, 12.2 for comprehension, 11.2 for fluency, and 11.8 for pronunciation. So, the means of the students' total score is 56.4. The students of control group have the same level of speaking skill as the students of experimental group. But, the researcher did not teach control group through problem sticks. They were taught using conventional teaching which is usually used by the teacher. Meanwhile, the means of the students' posttest score is 13.4 for grammar, 15.6 for vocabulary, 15.7 for comprehension, 13.4 for fluency, and 14.4 for pronunciation. So, the mean of the students' total score is 72.5.

The posttest score, compared with the pretest, shows that the students' scores increase. The increase of the students' score means that there's also improvement of students' speaking skill at control group. The improvement is 4.2% in grammar, 3.6% in vocabulary, 3.5% in comprehension, 2.2% in fluency, and 2.6% in pronunciation. The improvement of the students' total score is 16.1%. The improvement of the students' speaking skill at control group can be seen in the charts below:

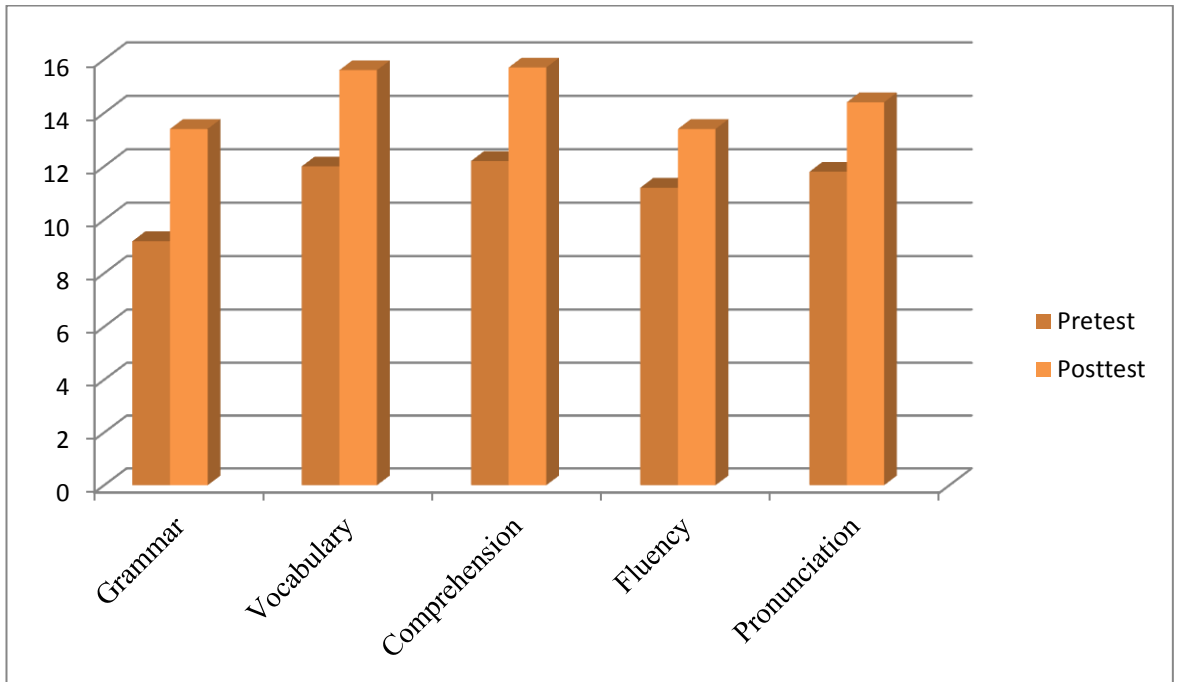


Figure 4.3
 Chart of the Control Group's Pretest and Posttest Score

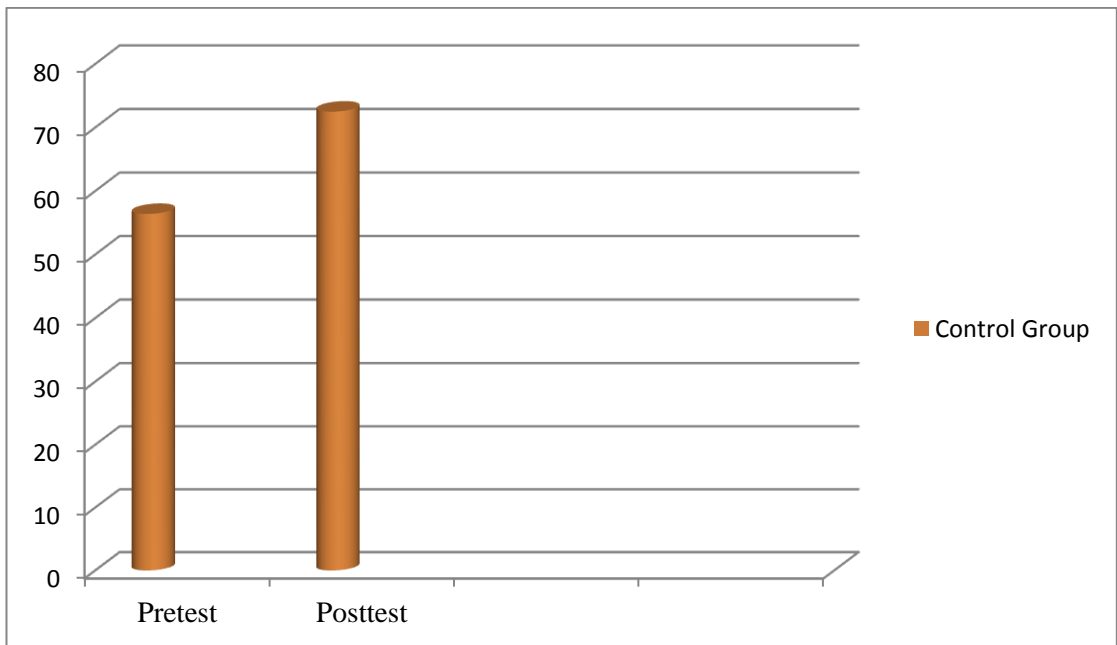


Figure 4.4
 Chart of the Control Group's Score

From the result of pretest and posttest scores of experimental group, we could see that the posttest score was higher than pretest. It would then be compared with pretest to find out the improvement. The improvement can be seen through the following table:

Table 4.7
Pre-test and Post-test Difference

| Group | Pre-test Mean | Post-test Mean | Difference Mean |
|---------------------|----------------------|-----------------------|------------------------|
| EXPERIMENTAL | 55.6 | 74.3 | 18.7 |
| CONTROL | 56.4 | 72.5 | 16.1 |

1. The Result of Questionnaires

Questionnaire also used to collect the data by during the researcher conducting her research. The researcher used this technique to know the students' responses to the use of problem sticks as media in speaking. The questionnaire consists of 10 questions and it was given to the students in the last meeting. (*See appendix 5*)

The following are the indicators that being measured and elaborated in the questionnaire:

1. The students' opinion about English
2. The students' opinion about Speaking
3. The students' opinion about problem sticks as teaching media in teaching speaking.

4. The students' opinion about the use of problem sticks as teaching media in teaching speaking.

The result of the students' answer of questionnaire is presented in the following table:

| NUMBER OF QUESTIONS | NUMBER OF ANSWERS | | | | NUMBER OF STUDENTS |
|---------------------|-------------------|----|----|---|--------------------|
| | A | B | C | D | |
| 1 | 2 | 16 | 2 | - | 20 |
| 2 | 2 | 14 | 4 | - | 20 |
| 3 | 4 | 5 | 10 | 1 | 20 |
| 4 | 5 | 7 | 6 | 2 | 20 |
| 5 | 4 | 11 | 3 | 2 | 20 |
| 6 | 3 | 9 | 7 | 1 | 20 |
| 7 | - | 13 | 5 | 2 | 20 |
| 8 | 5 | 9 | 6 | - | 20 |
| 9 | 1 | 11 | 3 | 5 | 20 |
| 10 | 4 | 12 | 3 | 1 | 20 |

After the analyzing them, the frequency of occurrence of each opinion type is counted to know the proportion of each opinion type. It is calculated using percentage formula:

$$\text{The score} = \frac{\text{The Total of opinion of each type}}{\text{Total of students}} \times 100\%$$

- a. The students' opinion about English (1)

| No. | A | B | C | D |
|-----|-----|-----|-----|---|
| 1 | 10% | 80% | 10% | - |

b. The students' opinion about Speaking (2)

| No. | A | B | C | D |
|-----|-----|-----|-----|---|
| 2 | 10% | 70% | 20% | - |

c. The students' opinion about problem sticks as teaching media in teaching speaking (3,4,5,6)

| No. | A | B | C | D |
|-----|-----|-----|-----|-----|
| 3 | 20% | 25% | 50% | 5% |
| 4 | 25% | 35% | 30% | 10% |
| 5 | 20% | 55% | 15% | 10% |
| 6 | 15% | 45% | 35% | 5% |

d. The students' opinion about the use of problem sticks as teaching media in teaching speaking (7,8,9,10)

| No. | A | B | C | D |
|-----|-----|-----|-----|-----|
| 7 | - | 65% | 25% | 10% |
| 8 | 25% | 45% | 30% | - |
| 9 | 5% | 55% | 15% | 25% |
| 10 | 20% | 60% | 15% | 5% |

B. The Data Analysis

1. T-test

After all the data of the students' score had been collected, the researcher analyzed the data through t-test. T-test is a tool which is used for

comparative hypothesis of two samples if the data is in interval or ratio.¹ It is aimed to find out whether the students who are taught through problem sticks have better speaking skill or not. Before that, the researcher was did normality test and homogeneities test. The normality test was used to check whether the posttest score of experimental group and control group were normally distribution or not. While homogeneity test was used to calculate the homogeneity of variance of both experimental and control group posttest score.² The procedure is as follows:

a. Normality Test

The researcher uses normality test to check whether the posttest score of experimental group and control group are normally distributed or not. There are some steps to calculate the normality test. The steps are:³

Determine the length of interval class, the formula is:

The length of interval class

$$= \frac{\text{biggest data} - \text{smallest data}}{6 \text{ (the number of interval)}}$$

$$= \frac{88 - 56}{6}$$

$$= 5,3 = 5$$

1. Arrange the data into a frequency distribution table

Table 4.8

Normality Test Table

¹Sugiono, *Statistika Untuk Penelitian*...121.

² Arifin, Zaenal, *Metodologi Penelitian Pendidikan* (Lentera Cendekia: Surabaya , 2009), 123.

³Sugiyono.*Statistika Untuk Penelitian*...80.

| Interval | f_0 | f_h | $f_0 - f_h$ | $(f_0 - f_h)^2$ | $\frac{(f_0 - f_h)^2}{f_h}$ |
|----------|-------|-------|-------------|-----------------|-----------------------------|
| | | | | | f_h |
| 56-61 | 3 | 1 | 2 | 4 | 4 |
| 62-67 | 1 | 5 | -4 | 16 | 3,2 |
| 68-73 | 17 | 14 | 3 | 9 | 0,642857143 |
| 74-79 | 10 | 14 | -4 | 16 | 1,142857143 |
| 80-85 | 8 | 5 | 3 | 4 | 0,8 |
| 86-91 | 1 | 1 | 0 | 0 | 0 |
| Total | 40 | 40 | 0 | | 9,03 |

2. Calculate f_h (the frequency of the expected)
3. Calculate f_h , based on the percentage area of each field in normal curve, and then multiplied by the number of data from the result of post-test (the number of individuals in the sample).
 - The first line : 2,7 % x 40 = 1,08 become 1
 - The second line : 13,53 % x 40 = 5,412 become 5
 - The third line : 34,13 % x 40 = 13,652 become 14
 - The fourth line : 34,13 % x 40 = 13,652 become 14
 - The fifth line : 13,53 % x 40 = 5,412 become 5
 - The sixth line : 2,7 % x 40 = 1,62 become 1
4. Insert the value of f_h to the f_h column table, and then calculate the value of $(f_0 - f_h)^2$ and $\frac{(f_0 - f_h)^2}{f_h}$. The value of $\frac{(f_0 - f_h)^2}{f_h}$ is the calculated value of Chi square (χ^2)
5. $X_{table} = 9.03$
 - Df = 5-1 = 4

$$\alpha = 0.05 = 5\%$$

6. Chi square value was 9.03 and chi square table was 9.48 with df = 5, and alpha 0.05. It could be concluded that the data from the posttest of experimental and control group were normally distributed as chi square value (9.03) was smaller than the chi square table (9.48).

b. Homogeneity Test

Homogeneity test is used to check whether the posttest score of experimental and control group have similar variance or not. The followings are steps of homogeneity test, there are:

1. Find the biggest variant score and the smallest variant score, the formula is:

$$\begin{aligned} F_{score} &= \frac{S_1^2}{S_2^2} \\ &= \frac{49,21053}{48,11579} \\ &= 0.977754 \end{aligned}$$

2. Find the F table

$$\text{dk numerator} : 20-1 = 19$$

$$\text{dk denominator} : 20-1 = 19$$

$$F = (0,05 ; 19,19) = 2.15$$

3. Conclusion

Based on the calculation above, F table is bigger than the F score. Thus, it can be concluded that the score of test both group is

in normal distribution and homogeneous variant. After that, the next step is calculating the data by t-test. The result from t-test shows whether the experimental group has better speaking skill than control group.

Then, the researcher used t-test to calculate the data from the experimental and control group's posttest score. But, before using t-test, the researcher should find standard deviation and variance of the data from both of the experimental and control group. Standard deviation and variance of each group are presented as follows:

Table 4.9
Standard Deviation (SD) and Variance (V) of
Experimental and Control Group

| Group | Total Score | Mean | Std. Deviation | Variance |
|---------------------|--------------------|-------------|-----------------------|-----------------|
| Experimental | 1486 | 74,3 | 7,015021477 | 49,21052 |
| Control | 1450 | 72,5 | 6,936554582 | 48,11579 |

Afterward, the researcher calculated t-test from posttest scores of experimental and control group. The steps are presented below:

- a. To test the result of posttest between experimental and control group. The formula is:

$$t = \frac{x_1 - x_2}{\sqrt{\left\{ \frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2} \right\} \frac{1}{n_1} + \frac{1}{n_2}}}$$

$$t = \frac{74,3 - 72,5}{\left\{ \frac{(20 - 1)5,985 + (20 - 1)8,235}{20 + 20 - 2} \right\} \frac{1}{20} + \frac{1}{20}}$$

$$t = \frac{6,8}{\left\{ \frac{113,715 + 156,465}{38} \right\} \frac{2}{30}}$$

$$t = 8,066$$

- b. Determine alpha (α) = 0.05
- c. Find the number of degree of freedom using the following formula:

$$\begin{aligned} df &= (N_1 + N_2) - 2 \\ &= (20 + 20) - 2 \\ &= 40 - 2 \\ &= 38 \end{aligned}$$

After the data had been calculated above, it was found that the standard deviation of the experimental group was 7.015021477 and the control group was 6.936554582. And then, the researcher compared the result to t-table distribution which significant and degree of freedom (DF) were 0.05 and 38. It was found that t-table was 2.021 while the result of t-value was 2.0753.

So, it was clear that there was significant different between the students' speaking who were taught using problem sticks and who were not taught using problem sticks of the eight graders at SMPI Brawijaya. In the experimental group was effective than the control group who were taught by problem sticks.

c. Hypothesis Testing

There are some steps to test the hypothesis. The steps are as follows:

This research used standard significance 95% ($\alpha = 0,05$) to test the hypothesis. The researcher used test-two sides to take the conclusion.

The foundation of decision rule is:

- 1) If $t_{\text{value}} > t_{\text{table}}$, it means that Null Hypothesis (H_0) is rejected and Alternative hypothesis (H_a) is accepted. So, students who are taught through problem sticks have better speaking skill than those who are not taught problem sticks.
- 2) If $t_{\text{value}} < t_{\text{table}}$, it means that Null Hypothesis (H_0) is accepted and Alternative Hypothesis (H_a) is rejected. Thus, students who are not taught through problem sticks have better speaking skill than those who are taught through problem sticks.

Based on the calculation of the data, the result of the t-value is 2.0753. Meanwhile, the t-table with 5% significance and the degree of freedom (df) 38 is 2.021. It means that the t-value is higher than t-table (the value which is required to reject null hypothesis at the level of 0.05) and the difference is significant. Thus, the alternative hypothesis (H_a) is accepted. The alternative hypothesis is students who are taught through problem sticks have better speaking skill than those who are not taught through problem sticks. In the other hand, the null hypothesis is rejected. The null hypothesis is students who are not taught through problem sticks have better speaking skill than those who are taught through problem sticks. It is presented on the table below:

Table 4.10
Summary of Data Analysis of T-test

| Technique | t_{value} | t_{table} | Result |
|------------------|--------------------------|--------------------------|---------------|
| Problem Sticks | 2.0753 | 2.021 | Significant |

2. The Result of Questionnaires

Based on the percentage shows, there is good respond when using problem sticks was implemented in the classroom. The students feel that this technique make them learning speaking interesting and make students brave to present their opinion in the class. The students' active in learning process by using problem sticks.

C. Discussion

This study is about the use of problem sticks to improve speaking skill of the second graders. This research uses quasi-experimental research as the design of the research. This section is intended to analyze the result or research findings based on the related theory. All data collected from the research instrument provides information of the research findings. The result of the students' score is calculated using t-test and the result of students' responses.

1. Students' score

The researcher conducted the research in four meeting for each group. In the first meeting, pretest was administered in both of the experimental and control group. The aim of conducting pretest was to know the students' improvement before getting the treatments. Besides, pretest was conducted to ensure that both of experimental and control

group have similarity of speaking skill. The second and the fourth meeting, the researcher gave treatments. The treatment was teaching using problem sticks at the experimental group. In the contrary, the control group was taught using conventional teaching. The treatments were given in two meeting for each groups. In last meeting, the students were given posttest after they got the treatments. It was conducted to measure students' improvement after getting the treatments. According to Bailey, speaking is a process of interaction where speakers intend to build meaning through producing, receiving and processing information. Based on that theory, the researcher implemented the use of problem sticks to improve speaking skill on asking for and giving opinion of the second graders to the experimental group. The students were asked to use the material of asking for and giving opinion on problem sticks. Afterward, their problem sticks discussed of each groups in the classroom. The aim was to find out students' strength and weakness so that they could improve their speaking skill. In short, the researcher introduced a new alternative of variation in teaching speaking for students of SMPI Brawijaya Pungging, Mojokerto.

The result of students' speaking improvement could be seen from pre test and post test from each group. In the experimental, the improvement progress reached is 18.7%. While in the control group, the improvement progress is only 16.1 %. On the other words, the

experimental group is getting higher improvement progress than control group.

The researcher used t-test to test the hypothesis and know the significant difference of the experimental and control group. It's used to check whether H_0 was accepted or not. The criteria is if $t\text{-value} < t\text{-table}$ it means H_0 is accepted, while if $t\text{-value} > t\text{-table}$ it means H_0 is rejected. In the previous subheading, it could be seen that $t\text{-value}$ was 2.0753. Whereas, $t\text{-table}$ with the level of significance 0.05 and degree of freedom 38 are 2.021. To test hypothesis is still related to take the conclusion to answer the third statement of the problem. After the result of $t\text{-value}$ is found, it means the hypothesis can be concluded. If the null hypothesis (H_0) is untruthful, the alternative hypothesis can be accepted. In this experimental research, the alternative hypothesis (H_a) is stated that students who are taught through problem sticks have better speaking skill than those who are not taught through problem sticks. In the contrary, the null hypothesis is stated that students who are not taught through problem sticks have better speaking skill than those who are taught through problem sticks.

The result of the research showed that students of experimental group have better improvement than students of control group. It is simply concluded that null hypothesis (H_0) "Students who are not taught through problem sticks have better speaking skill than those who are taught through problem sticks" is rejected. Meanwhile, the alternative hypothesis

(Ha) “Students who are taught through problem sticks have better speaking skill than those who are not taught through problem sticks” is accepted.

2. The result of questionnaires

According to Thorndike, response is a reaction that appears when students learn, which can also change your mind, feeling or movement/action. In this discussion, the result of questionnaire has been briefly explained the result of the questionnaire will be analyzed based on the research problem that going to be discussed. In this part the discussion will be divide into 4 matter. The first was about the students’ responses of English lesson. Based on the result of questionnaire, it could be calculated that the most of students liked English lesson, although 10% stated that they rather liked English lesson.

The second was about the students’ responses of speaking skill, it was showed that 70% of them admitted that they liked speaking skill, although 20 % rather liked learning speaking.

The third was about the students’ opinion about the problem sticks were used as media. Based on the result of questionnaire, it could be calculated that the use of problem sticks as teaching media in teaching speaking about 50% of the students admitted that the use of problem sticks were easy to be followed. While, 35% of the students admitted that the problem sticks was very interesting technique to be learned in teaching speaking and about 55% of the students said that they liked problem sticks

as media in their teaching speaking. In addition, most of the students considered that the use of problem sticks as teaching media was appropriated and be able to help them explore their opinion.

The last is about the students' responses toward the use of problem sticks in their speaking. After the problem sticks implemented in the class, there were 45% of the students who stated that this media was very necessary in their speaking. In addition, there was 55% of the students who admitted that they had a very good progress in their speaking ability after the researcher applied this media in the class and 60% of the total students agreed that this media was gave beneficial to improve the students' speaking ability.

Based on the result of the questionnaire above, it could be concluded that the use of problem sticks as teaching media has beneficial for the students in improved their speaking ability. In addition, the researcher thinks that students' response is good and can make students comfortable. By using problem sticks, the students can improve students' speaking skills.