

CHAPTER IV

RESEARCH FINDING AND DISCUSSIONS

A. Description of Research Finding

1. The Implementation of Learning

This Research used experimental design of the use of picture word inductive model as a vocabulary teaching technique on students' vocabulary achievement in MTs Sunan Kalijaga Bawang Batang on on 7th February – 7th March 2011.

The implementation of this Research was divided into three classes, namely the try out class (VII B), the experimental class (VII E) and the control class (VII C). Before the activities were conducted, the materials and lesson plan were determined to the process of learning. Learning in the experiment class was conducted by using Picture word inductive model as the technique in teaching vocabulary, while the control class using the traditional technique (without using Picture word inductive model technique).

In this research, there were two tests namely pretest and posttest. The pretest was given before the students follow the learning process that was provided by the researcher. Most of the questions consist of pictures as media to help the students to answer the appropriate word with the picture.

After the learning process, posttest was given to experiment and control classes to obtain the data that will be analyzed.

2. Analysis of Pre requisite test

Before the writer determines the sample, the writer should conduct a homogeneity test by choosing 2 classes with cluster random sampling. They are between class VII C (control class) and VII E (experiment class) as the sample, This test conducted to determine whether the the sample are homogenous or not. In this case, the writer gave the test to the students that consist of 20 items of test. After conducted the test, data analysis was carried out to find out the homogeneity of the sample.

a) The result of pre requisite of Class VII E

Based on the result of pre requisite of Class VII E the highest score achieved is 85 and lowest is 50. It means that the range (R)= 35, the number of class is 6, and the interval of the class is 6.

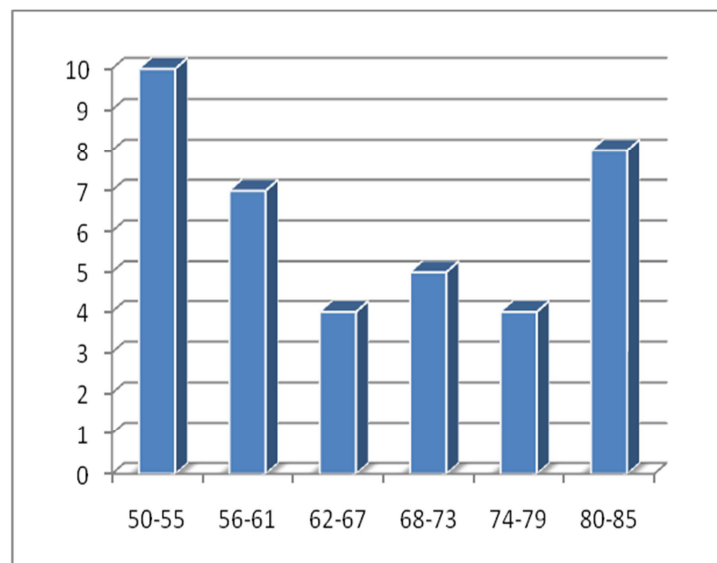
The result of the calculation above is, then inputted into the frequency distribution as follow:

Table 4.1. Frequency Distribution score of pre requisite test of the Experiment Class (Class VII E)

N o	Interva l class	(fi)	Xi	fixi	(xi-X)	(xi-X) ²	fi(xi-X) ²
1	50– 55	10	52,5	525	-13,57	184,1449	1841,449
2	56 – 61	7	58,5	409,5	-7,57	57,3049	401,1343
3	62– 67	4	64,5	258	-1,57	2,4649	9,8596
4	68 –73	5	70,5	352,5	4,43	19,6249	98,1245
5	74 – 79	4	76,5	306	10,43	108,7849	435,1396
6	80 – 85	8	82,5	660	16,43	269,9449	2159,559
	Sum	38	405	2511	8,58	642,2694	4945,266

To make easier to understand, the writer applied frequency distribution of score into charts as follows:

Chart 4.1. Histogram Frequency score of pre requisite test of the Experiment Class (Class VII E)



a. Calculating of the average $\bar{X}$ ($\bar{x}$) :

$$\begin{aligned}\bar{X} &= \frac{\sum f_i x_i}{\sum f_i} \\ &= \frac{2511}{38} = 66.07\end{aligned}$$

b. Calculate variance

$$\begin{aligned}S^2 &= \frac{\sum f_i (x_i - \bar{X})^2}{n-1} \\ &= \frac{4945.266}{37} \\ &= 130.1\end{aligned}$$

c. Calculate standard deviation

$$\begin{aligned}&= \sqrt{130.1} \\ &= 11.41\end{aligned}$$

b) The result of pre requisite of class VII C

Based on the result of pre requisite of Class VII E the highest score achieved is 85 and lowest is 50. It means that the range (R)= 35, the number of class is 6, and the interval of the class is 6.

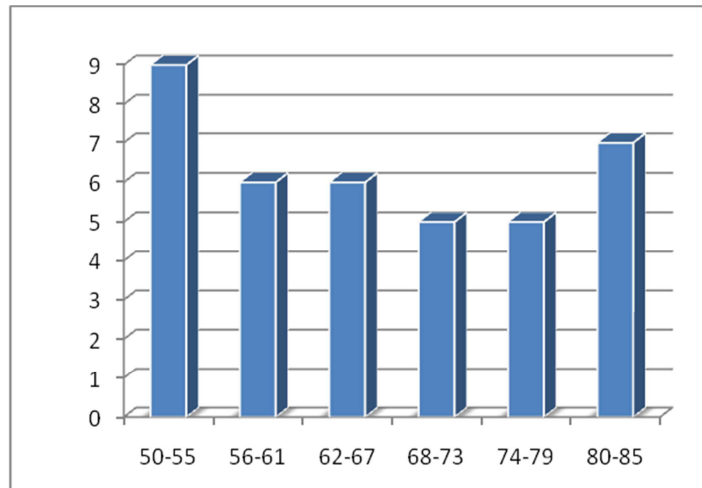
The result of the calculation above is, then inputted into the frequency distribution as follow:

Table 4.2. Frequency Distribution of score pre requisite test of the Contol Class (Class VII C)

N0	Interval class	(fi)	Xi	Fixi	(xi-X)	(xi-X) ²	fi.(xi-X) ²
1	50– 55	9	52,5	472,5	-13,57	184,1449	1657,304
2	56 – 61	6	58,5	351	-7,57	57,3049	343,8294
3	62– 67	6	64,5	387	-1,57	2,4649	14,7894
4	68 –73	5	70,5	352,5	4,43	19,6249	98,1245
5	74 – 79	5	76,5	382,5	10,43	108,7849	543,9245
6	80 – 85	7	82,5	577,5	16,43	269,9449	1889,614
Sum		38	405	2523	8,58	642,2694	4547,586

To make easier to understand, the writer applied frequency distribution of score into charts as follows:

Chart 4.2. Histogram Frequency score of pre requisite test of the Control Class (Class VII C)



a) Calculating of the average $\bar{X}$ ($\bar{x}$) :

$$\begin{aligned}\bar{X} &= \frac{\sum f_i x_i}{\sum f_i} \\ &= \frac{2523}{38} = 66,39\end{aligned}$$

b) Calculate variance

$$\begin{aligned}S^2 &= \frac{\sum f_i (x_i - \bar{X})^2}{n-1} \\ &= \frac{4547,586}{37} \\ &= 122,9\end{aligned}$$

c) Calculate standard deviation

$$\begin{aligned}&= \sqrt{122,9} \\ &= 11,08\end{aligned}$$

- Homogeneity test

This test conducted to determine whether the samples are homogenous or not. The hypothesis in homogeneity test are:

$$H_0: \text{homogeny variance} = \sigma_1^2 = \sigma_2^2$$

$$H_a: \text{non homogeny variance} = \sigma_1^2 \neq \sigma_2^2$$

$$F_{max} = \frac{\text{Biggest Variance}}{\text{Smallest Variance}}$$

$$= \frac{130,1}{122,9}$$

$$= 1.05$$

$$\begin{aligned} Db &= n-1 \\ &= 38 - 1 = 37 \end{aligned}$$

The result variance of pre requisite 20 test items is:1.05. because result of $F_{count}(1.05)$ is lower that $F_{table} (1.71)$, ($F_{count} < F_{table}$) by 5% degree of significant so H_0 is accepted, it means the data is homogeneous or both of groups have the same variance.

3. Analysis of Try-out Scores

As it was stated in chapter three that to get good instruments are used for collecting the data, the test was chosen as the instrument tried out beforehand. The result of the try-out test was analyzed statistically to know the validity, reliability, degree of test difficulty, and degree of question distinction.

a. Validity of Instrument

To know the validity of instrument, the Person Product Moment Correlation formula was used when analyzing each of test items. It was obtained that from 25 test items; there were 20 test items which were valid. The 20 valid test items were used as the instrument for collecting the

data. The number of invalid test items was 5. There were on numbers 2, 12, 18, 23, and 25. They were to be said invalid with the reason the computation result of their r_{xy} score was lower than the r_{table} score.

Table 4.3. Validity of Each Item

Criterion	t_{table}	Number of question	Total
Valid	0,374	1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 19, 20, 21, 22, 24	20
Invalid		2, 12, 18, 23, 25	5

b. Reliability of the Instrument

The result of the reliability 25 test items is: 0,958 with $\alpha = 5\%$ from the product moment table. Because of the r_{count} (0,958) is bigger than r_{table} (0,374) so the instrument is reliable.

c. Degree of Test Difficulty

The value of the difficulty was computed by using the formula: $P = \frac{B}{JS}$.

Tabel 4.4. Degree of Difficulty of Each Item

Criteria	Number of questions	Total
Difficult	2, 12, 18, 23, 25	5
Medium	1, 5, 6, 9, 10, 13, 14, 15, 16, 17, 19, 20,	14
Easy	21, 22 3, 4, 7, 8, 11, 24	6

d. Degree of Question Distinction

The analysis of degree of question distinction shows the students' competence instrument answering each test items. To do this analysis, the number of tryout subjects was divided into two groups, upper and lower class. Value of the difficulty was computed by using the formula:

$$DB = P_T - P_B$$

Tabel 4.5. Degree of Question Distinction

Criteria	Number of questions	Total
Less	3, 5, 10, 11, 12, 14, 18, 25	8
Enough	1, 2, 4, 6, 7, 8, 13, 15, 17, 19, 23, 24	12
Good	9, 16, 20, 21, 22	5
Excellent		

B. Hypothesis Test

Hypothetical analysis is intended to process the data collected from pretest and posttest. The goal of this analysis is to prove the hypothesis whether it is received or rejected.

Based on the test given to both groups after being treated by different means of teaching technique, the post test score was gained from the students. The average score reached by the experimental group was 77.6 while the control group reached 72.6 as their average score. It could be seen that the final score of each group was relatively so different. However, it should be measured using statistical procedures. Thus, the researcher analyzed the post test data to test the hypothesis that have been stated.

a. The data of score pre-test of the experiment class

Based on the result of research of experiment class before being taught by using picture word inductive model as the media in teaching vocabulary the highest score achieved is 80 and lowest is 60. It means that the range (R) = 20, the number of class is 7 and the interval of the class is 3.

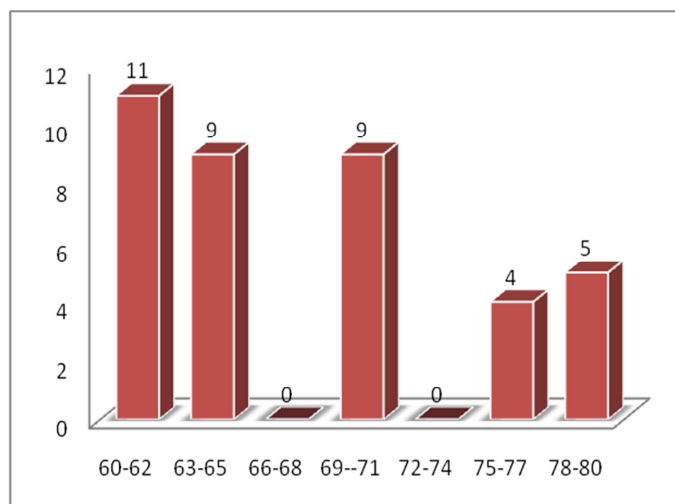
The result of the calculation above is, then inputted into the frequency distribution as follow:

Table 4.6. Frequency Distribution of score pre test of the Experiment Class (Class VII E)

No	Interval class	(fi)
1	60– 62	11
2	63 – 65	9
3	66– 68	0
4	69 –71	9
5	72 – 74	0
6	75 – 77	4
7	78- 80	5
	Sum	38

To make easier to understand, the writer applied frequency distribution of score into charts as follows:

Chart 4.3. Histogram Frequency score of pre-test of the Experiment Class



b. The data of score pre-test of the control class

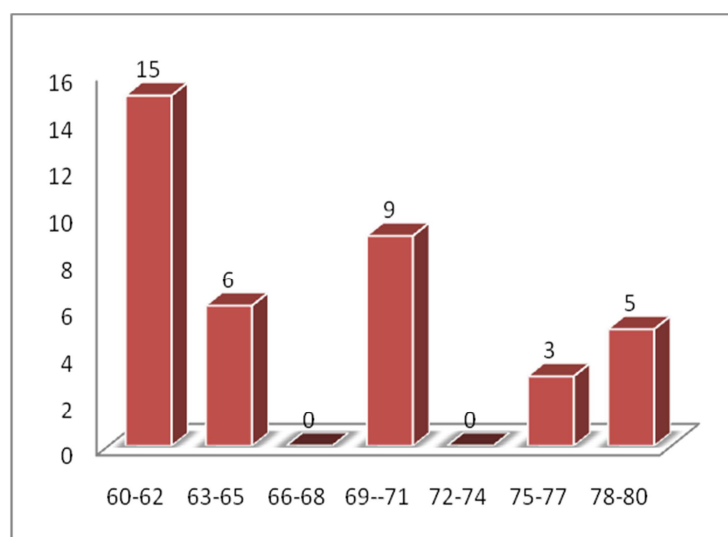
Based on the result of research of Class experiment class before being taught by explanation only (without picture word inductive model) in teaching vocabulary the highest score achieved is 80 and lowest is 60. It means that the range (R)= 20, the number of class is 7 and the interval of the class is 3.

Table 4.7. Frequency Distribution of score pre test of the Control Class

No	Interval class	(fi)
1	60– 62	15
2	63 – 65	6
3	66– 68	0
4	69 –71	9
5	72 – 74	0
6	75 – 77	3
7	78- 80	5
	Sum	38

To make easier to understand, the writer applied frequency distribution of score into charts as follows:

Chart 4.4. Histogram Frequency score of pre-test of the Control Class



c. The data of score post-test of the experiment class

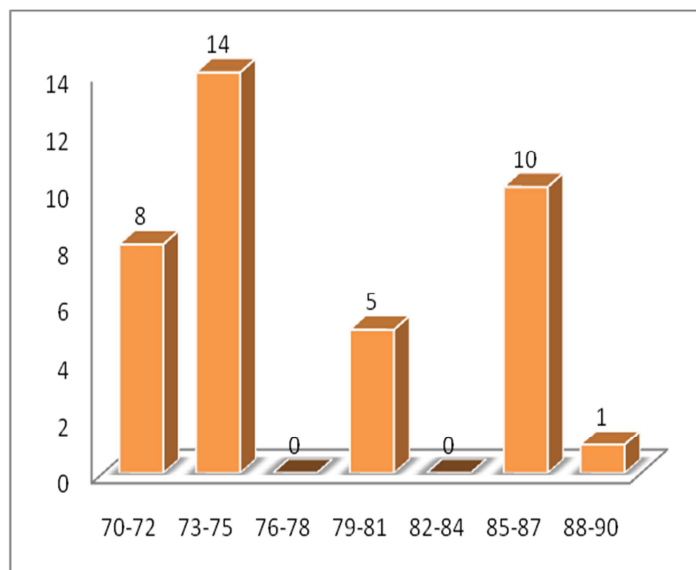
Based on the result of research of Class experiment class after being taught by using picture word inductive model as the media in in teaching vocabulary the highest score achieved is 90 and lowest is 70. It means that the range (R)= 20, the number of class is 7 and the interval of the class is 3.

**Table 4.8. Frequency Distribution of score post test
of the Experiment Class**

No	Interval class	(fi)
1	70 – 72	8
2	73 – 75	14
3	76 – 78	0
4	79 – 81	5
5	82 – 84	0
6	85 – 87	10
7	88 – 90	1
	Sum	38

To make easier to understand, the writer applied frequency distribution of score into charts as follows:

**Chart 4.5. Histogram Frequency score of post-test
of the Experiment Class**



d. The data of score post-test of the control class

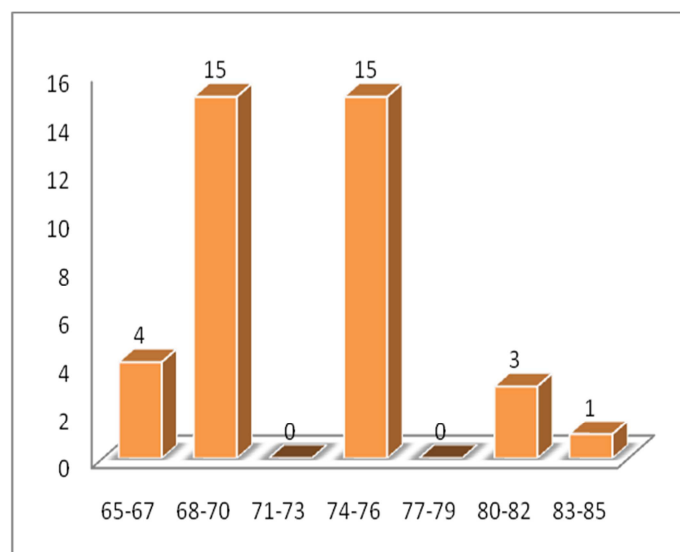
Based on the result of research of control class after being taught by using explanation only (without picture word inductive model) in in teaching vocabulary the highest score achieved is 85 and lowest is 65. It means that the range (R)= 20, the number of class is 7 and the interval of the class is 3.

**Table 4.9. Frequency Distribution of score post test
of the Control Class**

No	Interval class	(fi)
1	65 – 67	4
2	68 – 70	15
3	71 – 73	0
4	74 –76	15
5	77 – 79	0
6	80 – 82	3
7	83 – 85	1
	Sum	38

To make easier to understand, the writer applied frequency distribution of score into charts as follows:

**Chart 4.6. Histogram Frequency score of post-test
of the Control Class**



e. Analysis t test

**Table 4.10. Student's Vocabulary Achievement
of Experiment Class**

No.	PRE TEST		POST TEST	
	X_1	X_1^2	X_2	X^2
E-1	70	4900	80	6400
E-2	65	4225	75	5625
E-3	60	3600	70	4900
E-4	60	3600	75	5625
E-5	70	4900	85	7225
E-6	80	6400	85	7225
E-7	60	3600	75	5625
E-8	65	4225	70	4900
E-9	70	4900	80	6400
E-10	65	4225	70	4900
E-11	80	6400	85	7225
E-12	70	4900	80	6400
E-13	65	4225	75	5625
E-14	80	6400	90	8100
E-15	65	4225	70	4900
E-16	60	3600	70	4900
E-17	60	3600	75	5625
E-18	65	4225	75	5625
E-19	75	5625	85	7225
E-20	60	3600	75	5625
E-21	70	4900	85	7225
E-22	70	4900	75	5625
E-23	65	4225	70	4900
E-24	65	4225	75	5625
E-25	70	4900	85	7225
E-26	75	5625	85	7225
E-27	80	6400	85	7225
E-28	75	5625	85	7225
E-29	80	6400	85	7225
E-30	75	5625	80	6400
E-31	60	3600	75	5625
E-32	60	3600	70	4900
E-33	60	3600	75	5625
E-34	70	4900	75	5625
E-35	60	3600	75	5625
E-36	65	4225	75	5625
E-37	60	3600	70	4900
E-38	70	4900	80	6400
Sum	2575	176225	2950	230300

**Table 4.11. Student's Vocabulary Achievement
of Control Class**

N0.	PRE TEST		POST TEST	
	X_1	X_1^2	X_2	X^2
C-1	65	4225	70	4900
C-2	70	4900	75	5625
C-3	60	3600	70	4900
C-4	75	5625	80	6400
C-5	60	3600	65	4225
C-6	70	4900	75	5625
C-7	60	3600	65	4225
C-8	60	3600	65	4225
C-9	65	4225	70	4900
C-10	65	4225	70	4900
C-11	70	4900	75	5625
C-12	75	5625	80	6400
C-13	60	3600	70	4900
C-14	70	4900	75	5625
C-15	70	4900	75	5625
C-16	65	4225	70	4900
C-17	70	4900	75	5625
C-18	60	3600	70	4900
C-19	60	3600	70	4900
C-20	70	4900	75	5625
C-21	80	6400	85	7225
C-22	75	5625	80	6400
C-23	65	4225	70	4900
C-24	60	3600	70	4900
C-25	60	3600	70	4900
C-26	70	4900	75	5625
C-27	65	4225	65	4225
C-28	65	4225	75	5625
C-29	60	3600	70	4900
C-30	70	4900	75	5625
C-31	60	3600	70	4900
C-32	70	4900	75	5625
C-33	65	4225	75	5625
C-34	60	3600	70	4900
C-35	60	3600	75	5625
C-36	60	3600	70	4900
C-37	60	3600	75	5625
C-38	60	3600	75	5625
Σ	2485	163675	2760	201200

Based on the table arranged above, the mean and standard deviation of both group are then computed as can be seen in the following table.

Table 4.12. The computation of students' mean and standard deviation of Experiment Class

Experiment Class	
Pre Test	Post Test
$M_1 = \frac{\sum X_1}{N}$ $= \frac{2575}{38}$ $= 67.8$	$M_1 = \frac{\sum X_1}{N}$ $= \frac{2950}{38}$ $= 77.6$
$X_1^2 = \sum X_1^2 - \frac{(\sum X_1)^2}{N}$ $= 176225 - \frac{(2575)^2}{38}$ $= 176225 - 174490.1$ $= 1734.9$	$X_1^2 = \sum X_1^2 - \frac{(\sum X_1)^2}{N}$ $= 230300 - \frac{(2950)^2}{38}$ $= 230300 - 229013.2$ $= 1286.7$
$S_1 = \sqrt{\frac{X_1^2}{N-1}}$ $= \sqrt{\frac{1734.9}{38-1}}$ $= 69.0$	$S_1 = \sqrt{\frac{X_1^2}{N-1}}$ $= \sqrt{\frac{1286.7}{38-1}}$ $= 78.9$

**Table 4.13. The computation of students' mean
and standard deviation of Control Class**

Control Class	
Pre Test	Post Test
$M_2 = \frac{\sum X_1}{N}$ $= \frac{2485}{38}$ $= 65.4$	$M_2 = \frac{\sum X_1}{N}$ $= \frac{2760}{38}$ $= 72.6$
$X_2^2 = \sum X_1^2 - \frac{(\sum X_1)^2}{N}$ $= 163675 - \frac{(2485)^2}{38}$ $= 163675 - 162505.9$ $= 1169.1$	$X_1^2 = \sum X_1^2 - \frac{(\sum X_1)^2}{N}$ $= 201200 - \frac{(2760)^2}{38}$ $= 201200 - 200463.1$ $= 736.9$
$S_1 = \sqrt{\frac{X_1^2}{N-1}}$ $= \sqrt{\frac{163675}{38-1}}$ $= 66.5$	$S_1 = \sqrt{\frac{X_1^2}{N-1}}$ $= \sqrt{\frac{201200}{38-1}}$ $= 73.7$

Having calculated the mean and the standard deviation of both groups, the computation result could be continued to the following t-test computation step by step.

$$t = \frac{M_1 - M_2}{\sqrt{\frac{S_1^2}{N_1} + \frac{S_2^2}{N_2}}}$$

$$t = \frac{77.6 - 72.6}{\sqrt{\frac{78.9}{38} + \frac{73.7}{38}}}$$

$$t = \frac{5}{\sqrt{\frac{1526}{38}}}$$

$$t = \frac{5}{2.0}$$

$$t = 2.5$$

$$db = N_1 + N_2 - 2$$

$$db = 76 - 2 = 74$$

Thus, the t-value in this case is about 2.5 By 74 degrees of freedom (df), the t-value could be looked in the t-test table. Because the exact degrees of freedom (df) of 74 is not shown in the table, the researcher took the closest value above it which is 120. In that row, the critical value for t at the 0.05 level of significance is 1.98. The t-value calculated for the difference between students's vocabulary achievement taught by picture word inductive model and those taught by explanation only was 2.5 and that value is greater than the critical value found in the table at 0.05 level of significance. 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.

Because $t_{\text{calculated}} > t_{\text{table}}$ ($2.5 > 1.98$) it means that H_0 is rejected and H_a is accepted. It means that picture word inductive model is more effective than explanation only in Teaching vocabulary.

C. Discussion of the Research Findings

Before doing the research, tryout was done to measure that the instrument had validity, reliability, degree of test difficulty, and degree of test distinction. After the data was analyzed, it showed that 20 items were valid.

After doing the tryout, pretest and posttest were given to the experiment and control classes. After the data was collected, it was analyzed statistically by using t test formula.

Having known the result of t value, and consulted it to the appropriate t table, it has been found that there is a significant difference between two groups. This indicates that the difference of two groups' mean probably did not happen accidentally. It could be said in another way; this result mean that the mean of students taught by using Picture Word Inductive Model is higher than the mean of the students taught by explanation only (without picture word inductive model).

Based on the post test score of the students related to their achievement on English passive voice, it can also be seen that the mean between the two groups was different in which the experimental group's score (class VII E) was higher than the control one (class VII C). Meanwhile, it has been seen that at the first time before they were given the treatment, they were in equal capabilities and had equivalent level of competence.

That difference result was caused by some factors that could be analyzed through the teaching and learning they have experienced during the experiment. The higher mean score gained by the experimental group was caused by the students' activeness they have practiced in class through picture word inductive model technique. As stated earlier that the activities offered in picture word inductive model technique allowed the experimental group (class

VII E) to receive the teacher presentation or explanation and share their knowledge related to the English vocabulary. It might support the students to do their best in working out with the given subject matter. In contrary, it could be seen that the control group (class VII C) were merely taught by explanation only which is usually refers to the lecturing. The students received the explanation only from one side that was from their teacher. The role of teacher, here, was said dominantly. Whereas the students' potentials in giving explanation could be taken benefit from. This situation could not explore the students' cognitive potentials and their activeness maximally.

Based on the result of pretest and posttest, it could be concluded :
Picture Word Inductive Model can improve the students' vocabulary achievement the seventh grade VII of MTs Sunan Kalijaga Bawang Batang in academic year of 2010/2011. It can be seen from the result of analysis by using t tes formula :

- 1) The vocabulary achievement of experimental group before treatment is bigger than control group before treatment. It can be seen from the mean of pretest of experiment class (67.8) is bigger than the mean of control group (65.4) before the treatment.
- 2) The vocabulary achievement of experimental group after treatment better than experimental group before treatment. It can be seen from the mean of posttest the experiment class (77.6) is higher than experiment class (67.8) before the treatment.
- 3) The vocabulary achievement of control group before treatment is lower than control group after treatment. It can be seen from the mean of pretest of control class (65.4) is lower than the mean of posttest of control class (72.6) after the treatment.
- 4) The vocabulary achievement of experimental group after treatment better than control group after treatment. It can be seen from the mean of posttest of the experiment class (77.6) is bigger than the mean of posttest of control class (72.6) after the treatment.

- 5) The case in both groups is the same that there is an improvement in each group's cognitive achievement. However, the improvement on control group is not as much as on the experimental group. It is convinced by the statistical result of the hypothesis test. The test by means of t-test formula shown that $t_{calculated} = 2.5 > t_{table} = 1.98$ at 0.05 level of significance by 74 degrees of freedom. It means that the using of picture word inductive model technique is more effective to improve the students' understanding on English vocabulary than by using of non picture word inductive model technique (explanation only).

So, it could be concluded that picture word inductive model could improve the students' vocabulary achievement of experiment class but it less effective technique to teach vocabulary at junior high school students with many reasons. First, the English teacher at MTs Sunan Kalijaga Bawang Batang follows the group of teachers' training every year by the Educational Institution which is purposed to improve the teachers' ability in teaching the students at junior high School. So, the English teachers at MTs Sunan Kalijaga Bawang Batang especially have more experiences about the techniques, materials than the researcher has. Second, Based on the regulation of Tarbiyah Faculty, the research must be done 30 days so the treatment only was given three times.

The technique of teaching is one of the factors that influence the result of the study. In the process of teaching, the teachers must choose appropriate technique, so the students will enjoy the lesson. Based on the result of tests, the process of learning English using picture word inductive model as a vocabulary teaching technique in MTs Sunan Kalijaga Bawang Batang could help the students to memorize vocabulary, so they could improve their vocabulary achievement. Besides, the students who had been taught using picture word inductive model felt more fun and they were not bored in the classroom during the process of teaching learning. In the process of learning, the students in the experiment class were enjoyed and fun.

D. The advantages of the Picture Word Inductive Model

The following list of advantages of the Picture Word Inductive Model is drawn from Calhoun:

- 1) The strategy emphasizes phonics, grammar, mechanics, and usage of Standard English.
- 2) Pictures provide concrete visuals for the learning of new words, phrases, and sentences.
- 3) Because students are using pictures related to content material under study, they feel a part of the classroom community and can participate in class activities.
- 4) The picture word chart serves as an immediate reference, or picture dictionary, that enables students to eventually add the words to their own sight vocabulary. The teacher can choose to emphasize almost any sound and symbol relationship (introduced or taken to mastery).
- 5) Students are assisted in seeing the patterns and relationships of the English language, enabling them to apply this learning to newly encountered words.
- 6) Students hear and see words spelled correctly and participate in correct spelling and writing.
- 7) Learners benefit from the teacher modeling of the key words and concepts. With extensive practice, students begin to learn how to create sentences and paragraphs related to the subject under study.

E. Limitation of the Research

The researcher realizes that this research had not been done optimally. There were obstacles faced during the research process.

Some limitations of this research are:

1. The researcher's ability

The researcher realizes that the implementation of the research process was less smooth; this was more due to lack of the researcher's experience and knowledge.

2. Limitation of time

Based on the regulation of Tarbiyah Faculty, the research must be done 30 days. So, the relative short time made this research could not be done maximally.

3. Limitation of application

In this research, the researcher only gave three times treatment to the experiment class, so the result of the research was not maximal.

4. Limitation of the design

In this research, the researcher used short design. So the research cannot be done maximally.

Considering all those limitations, there is a need to do more research about teaching vocabulary by using picture word inductive model so that the more optimal result will be gained.