CHAPTER III

RESEARCH METHODOLOGY

A. Research Design

This study belongs to experimental study. An experimental study is a scientific investigation in which the researcher manipulates one or more independent variables, controls any other relevant variables, and observes the effect of the manipulations on the dependent variable(s).

In this study, the writer used quasi-experimental design. Quasi experimental designs are similar to randomized experimental designs in that they involve manipulation of an independent variable but differ in that subjects are not randomly assigned to treatment groups.²⁰

The reasons why the writer used quasi experimental design or quantitative approach are: first, from the aspect of methodology,this study is to measure the measure the effect of teaching grammar using Inductive Method toward the students' score in grammatical use of the second grade or eighth year students at *MTs*. Islamiyah Palangkaraya. Second, from the aspect of psychology, the object of this study is the second grade or eighth year students at *MTs*. Islamiyah Palangkaraya. Second, from the aspect of psychology, the object of this study is the second grade or eighth year students at *MTs*. Islamiyah Palangkaraya. The writer chose this grade because in this grade the simple past tense was taught and this school is Islamic junior high school. Because the writer was from Islamic college, the writer felt that this study should be conduct in this school. And from the aspect of sociology, this study would give significant effets to the people especially in education.

²⁰Donald Ary, Lucy Cheser Jacobs, Chris Sorensen, and Ashgar Razavieh, *Introduction to Research in Education*, 8th Edition, Wadsworth, USA: Cengage Learning, 2011, p. 316.

The writer used randomized control group pre-test, post-test design with a kind of treatment. There were two groups in this model, control group and experiment group. Both groups would be given pre-test to measure the score of students before treatment given (Y1 and Y2). The treatment would be given for experiment group (X). Posttest would be given for both groups to measure the students score after treatment is given (Y1 and Y2). The scheme of this model is:

Table 3.1

Scheme of Quasi Experimental Design for Pre test-Post test

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Subject	Pre-test	Treatment	Post-test
E	Y1	Х	Y2
С	Y1	-	Y2

Where :

- E : Experiment group
- C : Control group

In this experiment, the writer will teach the students directly with the same material. Therefore, the use of inductive method is applied on experiment group only, and for the control group the writer will apply conventional method. Meanwhile, the control group is not given the treatment.

B. Variable of the Study

There are two variables in this study, as follows:

- 1. Independent variable: Using the inductive method in teaching grammar (X).
- 2. Dependent variable: Score of students' achievement on grammatical use (Y).

C. Population and Sample

1. A population is defined as all members of any well-defined class of people, events, or objects.²¹The population in this study is all of the second grade students at Mts. Islamiyah Palangkaraya. Making the study easy to be done, it will be taken sample group by using purposive sampling in which the sample will be chosen based on certain purposes. In purposive sampling – also referred to judgement sampling- sample elements judged to be typical, or representative, are chosen from the population.²² Numbers of population are about 75 students. It is classified into three classses.

Table 3.2

The Number of the Eighth Grade Students in MTs. Islamiyah

No.	Classes	Number of Students
1.	VIII A	26
2.	VIII B	26
3.	VIII C	24
	Total Number	76

Palangkaraya

2. The small group that is observed is called a sample. A sample is a portion of a population.²³For the sample, the researcher gives a

²¹*Ibid.*, p.148. ²²*Ibid.*, p. 156 ²³*Ibid.*, p.148.

placement test in order to classify into group A and B. The sample will be arranged based on the rank that is made by the researcher according to their score in placement test. The classes are:

Table 3.3

The Number Sample of the Eighth Grade Students in MTs.

Islamiyah	Pal	lang	karaya
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No.	Classes	Number of the Students
1.	VIII A	26
2.	VIII B	26
	Total Number	52

D. Research Instruments

The data are very important in the study. They are needed to support and prove the study itself. The researcher is helped by them to find the aims of the study, they are, to measure the achievement students in grammar. In addition, to know the interpretation of the calculated result, the researcher uses the test as the instrument of the study.

Kerlinger in Sukardi stated that a test is a systematic procedure in which the individuals tested are presented with a set of of constructed stimuli to which they respond, the responses enabling the tester to assign the testes numerals.

The students will be tested in pre- test and post-test. Pre-test is expected to measure how large the ability of students' grammatical skill before treatment will be conducted to experiment group. Then, post-test will be tested as the final result of comparing the students' score in pre-test and posttest to measure the treatment will has significance effect or not.

For the instrument test, the researcher made two kind of test, multiple choice and writing test. Those tests are made based on the lesson plans that used by the school. For multiple choice test, there are 40 items that presented about simple past tense. Item number 1-10 were about simple past tense in verbal. There was a short story that consisted 4 paragraph. The story is "The Monkey and The Crocodile". This story used simple past tense. Some of verbs were missing so the students must choose the right answer that was fitted to the sentences. Item number 11-20 were about nominal in past tense. There was a paragraph about school experience. Some of 'to be' in the paragraph were missing so the students also must choose the right answer. Item number 21-30 were about negative form and interrogative form of simple past tense in verbal and nominal. And the last, item number 31-40 were about simple past tense in positive, negative, and interrogative form. There were 2 conversations and some of verbs and 'to be' were missing so the students must choose the right answer.

For writing test, the researcher made some instructions to do the test. The students must write a narrative text about 10 sentences. The students must choose the available topics then write it with the correct grammar (simple past tense) and the examples.

In this study, the researcher uses scoring method to evaluate the students' writing test. Here they are:

Table 3.4

The Scoring Guide for the Measurement of Writing Test²⁴

Components	Level	Criteria
Content	27-30	Excellent to Very Good: knowledgeable, substantive, thorough development of thesis, relevant to assigned topic.
	22-26	Good to Average: some knowledge of the subject, adequate range, limited development of thesis, lack of details, mostly relevant to the topic.
	18-21	Fair to Poor : limited knowledge, little subtances, in adequate development of thesis.
	13-16	Very Poor: does not show knowledge of subject, not substantive, not pertinent.
Organization	18-20	Excellent to Very Good: fluent expression, ideas clearly stated/supported, succinct, well-organized, logical sequencing, cohesive.
	14-17	Good to Average: somewhat choppy, loosely organized but main ideas stand out, limited support, logical but incomplete sequencing.
	10-13	Fair to Poor: non-fluent, ideas confused or disconnected, lacks of logical sequencing and development.
	7-9	Very Poor: does not communicate, no organization, or not enough to evaluate.
Vocabulary	18-20	Excellent to Ver Good: sphisticated range, effective word/idiom choice and usage, word from mastery, appropriate register.
	14-17	Good to Average: adequate range, occasional errors of word/ idiom form choice, usage but meaning not obscured.
	10-13	Fair to Poor: limited range, frequent errors of word/idiom form, choice, usage, meaning confused

²⁴ M. Soenardi Djiwandono, *Tes Bahasa : Pegangan Bagi Pengajar Bahasa*, Jakarta : PT. Indeks, 2008, p. 62-64.

	I	· · ·
		or obscured.
	7-9	Very Poor: essentially translation, little knowledge of English vocabulary, idioms, word form, or not enough to evaluate.
Language Use	22-25	Excellent to Very Good: effective complex construction, few errors agreement, tense, number, word order/function, articles, pronouns, preposition.
	18-21	Good to Average: effective but simple construction, minor problems in complex construction, several errors of agreement, tense, number, word order/function, articles, pronouns, preposition but meaning seldom obscured.
	11-17	Fair to Poor: major problems in simple/complex construction, frequent errors of negation, agreement, tense, number, word order/function, articles, pronouns, preposition and/or fragments, run-ons, deletions, meaning confused or obscured.
	5-10	Very Poor: virtually no mastery of sentence constrction rules, dominated by errors, does not communicate, or not enough to evaluate.
Mechaniques	5	Excellent to Very Good: demonstrates of mastery conventions, few errors of spelling, punctuation, capitalization, paragraphing.
	4	Good to Average: occasional errors of spelling, punctuation, paragraphing but meaning not obscured.
	3	Fair to Poor: frequent errors of spelling, punctuation, capitalization, paragraphing, poor handwriting, meaning confused or obscured.
	2	Very Poor: mastery of conventions, dominated by errors of spelling, punctuation, capitalization, paragraphing, handwriting illegible or not enough to evaluate.

E. Research Instruments Try Out

Before the test was given to the real sample, firstly the test was given to the second grade students at the others junior high scool. The procedures of the try out are: first, the researcher tried out the instruments to the respondents. The instrument try out was tested to the other class of school of population of the study but in the same grade. The try out test was administrated to VIII -C class of the eighth grade students at MTs. Islamiyah Palangkaraya. The researcher held the first try out test on Saturday, February 8th 2014 which followed by 24 students. The time allocation of try out test was 80 minutes. Then, the researcher gave the scores to the students' answer. It could be seen the description of first try out and second try out scores on appendix. Last, the researcher analyzed the obtained data to know the instrument validity, reliability, and index of difficulty. For the detail calculation, it could be seen on appendix.

1. Research Instruments Validity

According to Donald Ary, "Validity is defined as the extent to which an instrument measured what it claimed to measure." ²⁵Validity is defined as the extent to which scores on a test enable one to make meaningful and appropriate interpretations. Validity has three distinct aspects, all of which are important. They are content validity, face validity, and construct validity.

a. Content Validity

Content validity refers to the extent to which the instrument represents the content of interest. Content validation is essentially and of

²⁵*Ibid.*, p.225.

necessity based on judgement, and such judgement must be made separately for each situation.²⁶

b. Face Validity

A concept that is very closely related to content validity is face vaidity. To achieve "peak" performance on a test, a learner needs to be convinced that the test is indeed testing what it claims to test. Face validity is almost always perceived in terms of content : if the test samples the actual content of what the learner has achieved or expects to achieve, then face validity will be perceived.²⁷

c. Construct Validity

Construct validity is concerned with the extent to which a test measures a specific trait or construct. It is the type of validity that is essential for the tests that are used to assess individuals on certain psychological traits and abilities.²⁸

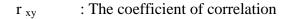
To measure the validity of the test measurement in multiple choice and writing test, the researcher use the formulation Product Moment by Pearson as follows:

$$\mathbf{r}_{xy} = \frac{N \sum XY - (\sum X) \cdot (\sum Y)}{\sqrt{(N \sum X^2} - (\sum X)^2) \cdot (N \sum Y^2 - (\sum Y)^2)}$$

Notes:

²⁶ Ibid, p. 214.

²⁷ H. Douglas Brown, *Teaching by Principles : An Interactive Approach to Language* Pedagogy, 2nd Edition, London : Longman, 2001, p. 388. ²⁸Donald Ary, *Introduction to Research in Education,*p. 218.



- $\sum X$: Sum of score in X distribution
- $\sum Y$: sum of score in Y distribution
- $\sum X^2$: sum of squared score in X distribution
- $\sum Y^2$: sum of squared score in Y distribution
- $\sum XY$: sum of product of paired X and Y score
- N : Number of paired X and Y score²⁹

Furthermore, it is calculated by using T-test calculation below:

$$T_{\text{observed}} = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}$$

Where:

- $t = the value of t_{observed}$
- r = the coefficient correlation of the result of $r_{observed}$
- n = the total number of students

The distribution of t_{table} at alpha 5 % and the degree of freedom (n-2) with the measurement of validity using these criteria :

²⁹ Riduwan, *Metode & Teknik Menyusun Tesis*, Bandung: Alfabeta, 2010, p. 136.

 $t_{observed} > t_{table} = Valid$ $t_{observed} < t_{table} = Invalid$

The criteria of interpretation for the validity:

0.800 - 1.000 = Very High Validity 0.600 - 0.799 = High Validity 0.400 - 0.599 = Fair Validity 0.200 - 0.399 = Poor Validity 0.00 - 0.199 = Very Poor Validity ³⁰

The result of validity measurement of tesst instrument based on the criteria as follows:

- (a) If the value of $t_{observed}$ is greater than t_{table} , it means that the test item is valid and it can be used as the instrument of the study.
- (b) If the value of $t_{observed}$ is lower than t_{table} , it means that the test item is invalid and it cannot be used as the instrument of the study.

From the measurement of validity of the first try out that was contained 40 items were known that there were 20 valid items and 20 invalid items. For the second try out, there were 34 valid items and 6 invalid items. For writing test was valid. For the detail explanation, it can be seen at appendix.

³⁰ *Ibid*, p. 136.

2. Research Instrument Reliability

According to Donald Ary, "Reliability is the degree of consistency with which it measures whatever it is measuring." ³¹To measure the reliability test , the researcher will use two formulations for multiple choice and writing test or essay. The formulation for multiple choice, the researcher applied KR-21 formulation as explained below:

$$r_{11} = \frac{k}{k-1} \left(1 - \frac{M(k-M)}{K.V_t} \right)$$

Where:

 r_{11} = reliability of instrument

K = the total number of test items

M = mean of score

V.t = the total varians³²

The last decision was comparing the value of r_{11} and r_t :

$r_{11} > r_t$ = reliable	
$r_{11} < r_t = not reliable$	

From the measurement of first instrument try out reliability was found that the r_{11} value = 0.831 was greater than $r_{table} = 0.369$ or 0.831 > 0.369. It meant the whole numbers of test items were reliable and it was determined as high reliability. For measurement of try out of writing test reliability, the researcher used inter-rater reliability. Inter-rater is two raters to score the students writing to

³¹Donald Ary, *Introduction to Research in Education*,p. 236.

³² Riduwan, Metode & Teknik,.....p. 120.

get the score composition as fairly and consistently as possible. The first rater was Nor Halisah, a friend of the researcher who also conducted an experiment in writing and error analysis and the second rater was the researcher of the study. In order to find concurrent reliability used Product Moment Correlation. For the detail explanation of the instrument reliability calculation could be seen in the appendix.

3. Level of Difficulty

The index of difficulty (or the facility value) of an item simply shows how easy or difficult the particular itemproved in the test. The index of difficulty (F.V) is generally expressed as the fraction (or percentage) of the student who answer the item correctly. It is calculated using the formula:

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

F.V = Facility Value

R = The number of correct answer

N = The number of the students taking the test³³

To interpret the index of difficulty, it was used interpretation as follows :

P < 0.30 = difficult

P 0.30- 0.70 = fair

P > 0.70 = easy

³³ James Dean Brown, *Testing in the Language Programs*, New Jersey: Prentice Hall Regents, 1996, p. 66-69.

The result of index difficulty measurement of the first try out showed that there were 2 difficult items, 25 fair items, and 13 easy items. For the detail, see appendix.

F. Data Collection Procedures

The aim of this study was to investigate the effect of using Inductive method on grammatical use by experimental group of students.

Here are some procedures in collecting data of this study:

- 1. The researcher will do the observation. Observation is a technique in collecting data where the researcher does the observation directly to the teaching activities in class, they are included:
 - a. Location

The location of MTs. Islamiyah Palangkaraya is Jalan Dr. Murjani no. 75.

b. The number of class

The total number of class for eight grade is 76 students. The writer chose 2 class (VIII A and VIII B) as the experiment class and control group. The class A has 26 students and class B also has 26 students.

c. The number of teachers

MTs. Islamiyah Palangkaraya has 24 teachers.

d. The number of students

The total number of students is 250 students. For the total number of eight grade is 76 students.

- 2. After doing the observation, the researcher determined the class into experiment group and control group.
- 3. The researcher gave try out test to another class before testing for pre test and post test. The first try out test was given to class C on February 7, 2014 and the second try out was given on February 15, 2014. For the detail, see the appendix.
- 4. The researcher gave the pretest to the experiment group (class A) and control group (class B) on February 20, 2014.
- The researcher taught the experiment group using inductive method for six meeting from February 21 – March 6, 2014.
- The researcher taught the control group using conventional method also for six meeting from February 22 – March 6, 2014.
- 7. Then, the researcher gave score to the data from the experiment group and the control group.
- 8. The researcher analyzed the obtained data from the mean of the post test score of the experiment group and control group.
- 9. The researcher also concluded the effect size of the treatment given.
- 10. The researcher interpreted the statistical result.
- 11. The researcher concluded the activity of the study based on the data obtained from the measurement.

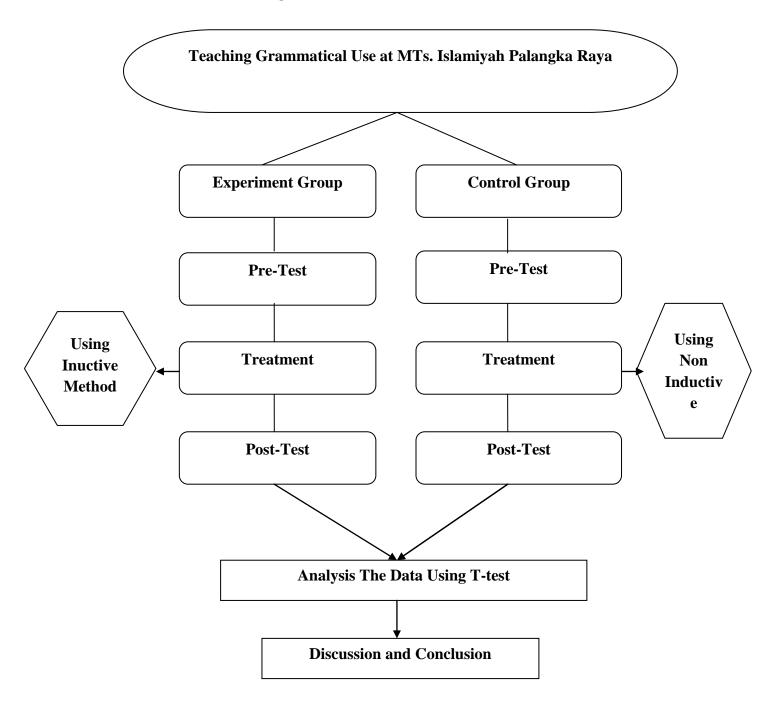


Figure 3.1 Data Collection Procedure

Table 3.5

Teaching Procedures	for Evneriment and	Control Crown
reaching ribectures	for Experiment and	Control Group

Teaching Procedures for Experiment	Teaching Procedures for Control Group	
Group		
a. First Activities	a. First Activities	
1. The teacher greets the students.	1. The teacher greets the students.	
2. The teacher opens the lesson.	2. The teacher opens the lesson.	
3. The teacher prepares the condition of	3. The teacher prepares the	
class.	condition of class.	
4. The teacher introduces herself.	4. The teacher introduces herself.	
5. The teacher checks the students'	5. The teacher checks the students'	
present list.	present list.	
b. Core Activities	b. Core Activities	
> The First Meeting	The First Meeting	
1. The teacher introduces the	1. The teacher introduces	
material will be discussed.	the material will discus.	
2. The students asks the students	2. The teacher asks the	
about the topic.	students about the	
3. The teacher writes a sentence	topic.	
about verbal sentence of	3. The teacher explains the	
Simple Past Tenses (irregular	material about simple	
verbs) in whiteboard.	past tense in the form	
4. The teacher asks the students	of positive, negative	
about what they see from the	and interrogative	
sentence or what they know	(irregular verbs).	
about the structure of the	4. The teacher writes	
sentence, for example about	the formulas in the	
the subject, object, adverb or	whiteboard and	
what kind of the verb of	explains it.	

sentence.

- 5. If the students are confused, the teacher gives some clues.
- After the students answer or give their opinions about the sentence, the teacher writes their answers and gives a little of explanation about the sentence.
- The teacher asks the students about the verb or the adverb in sentence and what kind of the sentence.
- Then, the teacher gives another sentences. The sentences are negative sentence and interrogative sentence in Simple Present Tense.
- 9. The teachers asks the students again about the sentences. The teacher asks what kind of the sentences and the stucture of sentence. The teacher also asks about what specific words or sign that make different.
- 10. The teacher asks the students to make a sentence in simple past tense then chooses one or more students to explain the sentence they make.

5. Then the teacher explains about it and give some examples.

- The Second Meeting
 - 1. The teacher introduces the topic to the students.

2. The teacher writes the formula of simple past tense (reguler verbs).

3. The teacher gives some examples.

- 4. The teacher explains the material.
- 5. The teacher asks them to do some assignment.
- The Third Meeting
 - 1. The teacher introduces the topic to the students.
 - 2. The teacher gives them some formula of the simple past forms of Be.
 - The teacher explains the formulas and give some examples.
 - The teacher asks the students to make a sentence to know whether the students understand or not.

- 11. Then, the teacher asks them to do some assignments.
- ➢ The Second Meeting
 - 1. The teacher introduces the material will be discussed.
 - 2. The students asks the students about the topic.
 - The teacher writes a sentence about verbal sentence of Simple Past Tenses (regular verbs) in whiteboard.
 - 4. The teacher asks the students about what they see from the sentence or what they know about the structure of the sentence, for example about the subject, object, adverb or what kind of the verb of sentence.
 - 5. If the students are confused, the teacher gives some clues.
 - After the students answer or give their opinions about the sentence, the teacher writes their answers and gives a little of explanation about the sentence.
 - The teacher asks the students about the verb or the adverb in sentence and what kind of the sentence.

- 5. The teacher asks them to do assignment.
- The Fourth Meeting
 - 1. The teacher introduces the topic to the students.
 - 2. The teacher write adverb of time in simple past tense.
 - 3. The teacher explains it to the students and gives some examples.
 - The teacher asks them to make a sentence of each adverb of time .
 - 5. The teacher asks them to do assignment.
- The Fifth Meeting
 - 1. The teacher introduces the topic to the students.
 - 2. The teacher reads a narrative text.
 - 3. The teacher asks the students to read the same text.
 - 4. The teacher explains what language features use in narrative text.
 - 5. The teacher asks the students to answer some questions related to the text.

- Then, the teacher gives another sentences. The sentences are negative sentence and interrogative sentence in Simple Present Tense.
 - 9. The teachers asks the students again about the sentences. The teacher asks what kind of the sentences and the stucture of sentence. The teacher also asks about what specific words or sign that make different.
 - The teacher asks the students to make a sentence in simple past tense then chooses one or more students to explain the sentence they make.
 - Then, the teacher asks them to do some assignments.
- The Third Meeting
 - The teacher asks some questions such as 'how was your day ', 'where were you', and 'when were you sleep last night' to the students. The teacher also can write them on whiteboard.
 - Then the teacher asks one or two students write their answer or answer it orally. The answers from the students must

- 5. The teacher asks them to collect their assignment.
- The Sixth Meeting
 - 1. The teacher introduces the topic to the students.
 - 2. The teacher gives them a narrative text.
 - 3. The teacher reads it loudly.
 - 4. Then, the teacher asks the students to read it.
 - 5. After that, the teacher explains what the narrative text and the purpose.
 - 6. The teacher asks them to do assignment.

C. Closing Activities

- 1. The teacher gives the conclusion of the material.
- 2. The teacher gives advice to the students.
- 3. The teacher closes the lesson.

be related to simple past tense
in nominal sentence such as 'I
was fine' or 'I was at the
class'.

- 3. After that the teachers asks the students about the sentences (the answers of the questions). The teacher asks the structure (for example subject, be, adverb or complement) or kind of the sentences.
- 4. The students answer or give their opinion about those sentences.
- 5. Then the teacher asks them to make one or two sentences in nominal sentence and show them to the teacher. The teacher presents feedback about students' error.
- 6. The teacher gives some assignments.

> The Fourth Meeting

- The teacher writes some sentences of simple past tense and adverb of time.
- 2. The teacher asks the students to identify the sentences.
- 3. The students gives the opinion or answer the questions.
- 4. After the students discuss, the

teacher asks them one by one
to make a sentence in simple
past tense with the adverb of
time.

- 5. The teacher presents feedback about students' error.
- 6. The teacher gives some assignments.
- > The Fifth Meeting
 - 1. The teacher gives a text and asks the students to read it.
 - 2. After that the teacher asks them about the subject of the text, underline the verbs in simple past form, and list the action verbs.
 - 3. The teacher asks them to do it in pair.
 - After collect their exercises, the teacher invites the students to disscuss about the text.
 - 5. If the students are still confused, the teacher will explain it and gives some clues.
- ➢ The Sixth Meeting
 - 1. The teacher gives another text about a fairytale.
 - 2. Then the teacher asks them to read it together.
 - 3. The teacher asks them to

identify the text to know what
kind of the text and language
features (simple past tense) in
it.
4. The teacher makes groups of
five students to solve and
identify the text. If they are
ready, the teacher asks them to
present their opinions about the
text.
5. After that, the teacher asks
them to answer the questions
in the text.
c. Closing Activities
1. The students gives the conclusion of
the material with the help of the
teacher.
2. The teacher gives advice to the
students.
3. The teacher closes the lesson.

G. Data Analysis

To answer the problem of study about Inductive Method gives effect or not on grammatical use of the second grade students at MTs Islamiyah Palangkaraya, the writer follows some procedures to analyze the obtained data as follows: 1. After doing research for two months, the writer collected the obtained scores from experiment and control group.

2. The writer arranged the obtained scores into the ditribution of prequency both pre test and post test result.

- 3. The writer calculated the mean, median, modus, standard deviation, and standard error of variable X1 from the experiment group.
- 4. The writer calculated the mean, median, modus, standard deviation, and standard error of variable X2 from the control group.
- 5. The writer calculated the standard error for the difference mean between variable X1 and X2.
- 6. The writer used t-test to answer the problem of the study, whether there was difference on grammatical use in teaching grammar using Inductive Method and without using it, with the formula:

$$t_0 = \frac{Mx1 - Mx2}{SEmx1 - SEmx2}$$

Where:

Mx1 - Mx2 = Differentiation of Two Means

SEmx1 - SEmx2 = The standard error of the difference between two means³⁴

With the criteria :

³⁴ Suharsimi Arikunto, *Managemen Penelitian*, Jakarta: Rineka Cipta, 2003, p. 507-508.

If $t_{test} > t_{table}$ = Ha is accepted and Ho is rejected

If $t_{test} < t_{table}$ = Ha is rejected and Ho is accepted

- The writer used SPSS program after using t-test to answer the problem of the study, whether there was difference between using Inductive Method or without using it.
- 8. The writer calculated the degree of freedom with this formula :

$$df = (N_1 + N_2 - 2)$$

Where :

- df : Degree of Freedom
- N₁ : Number of subject 1
- N₂ : Number of subject 2
- 2 : Number of Variables
- 9. The writer determined the significant level of t observed by comparing the t observed and t table.
- 10. The writer interpreted the result of the data analysis.
- Giving discussion to clarify the research finding about result of this study. For the detail information, go to chapter 4.