CHAPTER III
RESEARCH METHODOLOGY

A. THE RESEARCH APPROACH

This research is categorized of Pre Experimental Design which uses One-Group Pretest-Posttest Design. The reason of using this method is because the aim of this research to know the effectiveness of teaching model. With this experiment the researcher wants to try the teaching model and the effect of it. The following is the design of the research:

TASK	
English-Arabic combined task	English only
$\overline{Y}$	$\overline{Y}$

B. SETTING AND PARTICIPANTS

This study will be conducted at MA Matholi'ul Huda Bugel Kedung Jepara academic year 2009/2010. In this study, the samples are students of class of XB and XF MA Matholi'ul Huda Bugel Kedung Jepara academic year 2009/2010. The total population is 264 students. This study uses a sample because the population is more than 100 students.

C. VARIABLES

A variable is a defined characteristic that varies.[1] It has at least two values and usually more. This research has two variables namely independent variable and dependent variable. Correlation analysis does not distinguish between independent and dependent variable.

Independent variable is the variable which given the influence while dependent variable is the variable which get the influence. In this research English-Arabic combined task as independent variable, and English grammatical understanding called as dependent variable[2].

D. POPULATION AND SAMPLE

Population is the entire of group of entities or persons to whom the results of a study are intended to apply.[3] In this study the populations are students of MA Matholi'ul Huda Bugel Kedung Jepara graders X academic year 2009/2010. The total of the students are 264 who are grouped into seven classes.

Sample is a part of population. According to Suharsimi Arikunto, there are two ways in deciding a sample. First, when a population is less 100 students, all of population can be a sample. Second, when a population is over 100 students, the researcher can take 10%-15% or 20%-25% from the population as a sample. Because of the population are over 100 students so the researcher takes 20% from 264 students so the researcher takes 64 students from two classes XB as control class and XF as experimental class.

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[1] Suharsimi Arikunto, *Prosedur Penelitian Suatu Pendekatan Praktik*, (Jakarta: PT Rineka Cipta, 2006), 13th edition, p. 116.

[2] Narbuko and Achmadi, *Metodologi Penelitian*, (Jakarta: Bumi Aksara, 2004), p. 119.

[3] Suharsimi Arikunto, *op cit* P. 130.

F. TECHNIQUE OF DATA COLLECTION

The techniques used in collecting the data are:

Test of English Grammatical Understanding

The researcher will give the learners two test, first is pre test and second is post test, and before giving the test the researcher gives the treatment by giving explanation about the two languages and contrasting them, combining the two languages in task. Pre-test will be given at the beginning of research to both control and experiment class (similar question that related to the topic) while post-test will be given after the treatment to both control and experiment class because it is the point that researcher can compare the differences result of the test between control and experimental class.

F. TECHNIQUE OF DATA ANALYSIS

1. **Try-out instrument of the test**

When the quality of the data can be said good or bad, if the test instrument fulfils three important qualifications such as validity, reliability and difficulty level of each item.

The writer prepared 15 questions for the student's task that the researcher gives to qualify the appropriate questions of the task. After finishing the test, the results were collected in order to be scored. An analysis was made based on the result of test by using the formula of validity, reliability and the degree of test difficulty.

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

a. The Validity

Validity shows whether an instrument is valid. In this study, the validity of each item is calculated using the *point biserial* formula[4]:

$$r_{pbis} = \frac{Mp - Mt}{St}\sqrt{\frac{p}{q}}$$

In which,

r_{pbis} = Coefficient of correlation biserial

M_p = Mean of the right answer from the item

M_t = Mean of the total score

S_t = Standard deviation of the total score

p = The proportion of students who give the right answer

q = The proportion of students who give the wrong answer

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

b. Reliability

Reliability refers to the consistency of test scores, if it measured twice or more because each research can be possibly wrong. Alpha formula is used to know reliability of test is

K - R. 20.

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[4] Suharsimi Arikunto, *Dasar-dasar Evaluasi Pendidikan,* (Jakarta: PT. Bumi Aksara, 2002), p.283.

[5] I*bid*, p.116.

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

Where:

r_{11} : The reliability coefficient of items

n : The number of item in the test

P : The proportion of students who give the right answer

q : The proportion of students who give the wrong answer

S^2 : The standard deviation of the test

c. Degree of Test Difficulty

A good question is a question that is not really difficult and not really easy. Formula for degree of test difficulty is.

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

Where:

P : The difficulty's index

B : The Number of students who has right answer

JS : The number of students

The criteria are:

P = $0{,}00 \leq p \leq 0{,}30$ Difficult item

P= $0{,}30 \leq p \leq 0{,}70$ Sufficient

P= $0{,}70 \leq p \leq 1{,}00$ Easy.

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

a) Normality Test

It is used to certain normality of the data that is going to be analyzed whether both groups have normal distribution or not. The

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

1. Determine the range (R); the largest data reduced the smallest.
2. Determine the many class interval (K) with formula:

   K = 1+ (3,3) log n
3. Determine the length of the class, using the formula:

   $$P = \frac{range}{number\ of\ class}$$
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:

   $$S = \sqrt{\frac{\sum f_i (x_i - \bar{x})^2}{n-1}}$$
8. Calculate the value of Z, with the formula:

   $$Z = \frac{x - \bar{x}}{s}$$

   x = limit class

   $\bar{x}$ = Average

   S = Standard deviation
9. Define the wide area of each 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	$\frac{Oi - Ei}{Ei}$

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

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

Determine dk = k-3, where k is the number of class intervals and α =5%

13. Determining the value of χ^2 table
14. Determining the distribution normality with test criteria:

If $\chi^2_{count} > \chi^2_{table}$, the data is not normal distribution and the other way if the $\chi^2_{count} < \chi^2_{table}$, the data is normal distribution [6]

b) Homogeneity Test

In experimental research, they are two (experiment class) and (control class) that are taken from population have same variant or not[7].a test should be given to both classes of students before the experiment just to make sure that the both classes really are the same

The steps as follows:

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

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

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

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

[7] Nurul zuriah, *Metodologi Penelitian Sosial dan Pendidikan: Teori Aplikasi*, (Jakarta: PT Bumi Aksara, 2006), p. 60.

Where:

Vb : Bigger Varian

Vk : Smaller Varian

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

3) Determine F_{table} with $\alpha = 5\%$

4) Determining the distribution homogeneity with test criteria:

If $F_{count} > F_{table}$, the data is not homogeneous and the other way if the $F_{count} < F_{table}$, the data is homogeneous.[8]

c) Test of Differences

It is used to examine average whether experiment group and control group have been decided having different average. [9]

T-test is used to analyze the data of this research. A t-test would be the measure you would use to compare the mean scores of the two groups[10]

If $\sigma_1^2 = \sigma_2^2$ (has same variant), the formula is:

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

With

[8] Sudjana, *op cit*, p. 249.

[9] Anas Sudijono, *Pengantar Statistik Pendidikan* (Jakarta: PT. Raja Grafindo Persada, 1995) 6th Ed, p. 264.

[10] Ibid. p.269.

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

Where:

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

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

n_1 : The number of experiment group

n_2 : The number of control group

$S_1^{\ 2}$: The standard deviation of experiment group

$S_2^{\ 2}$: The standard deviation of both groups

If = $\sigma_1^{\ 2} \neq \sigma_2^{\ 2}$ (has no same variant) the formula is:

$$t^1 = \frac{\overline{X} - \overline{X_2}}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_1^2}{n_2}}}$$

The hypotheses are:

Ho = $\mu_1 = \mu_2$

Ha = $\mu_1 \neq \mu_2$

μ_1 : average data of experiment group

μ_2 : average data of control group

Criteria test is: Ho is accepted if $-t_{(1-\frac{1}{2}\alpha)} < t < t_{(1-\frac{1}{2}\alpha)}$, where $t_{(1-\frac{1}{2}\alpha)}$ obtained from the distribution list t with $dk = (n_1 + n_2 - 2)$ and opportunities $(1 - \frac{1}{2}\alpha)$. Values for other t Ho rejected.[11]

[11] Sudjana., *Lock. Cit* p. 240.

2. Analysis Phase End

a. Normality Test

Steps normality second step is the same as the normality test on the initial data.

b. Homogeneity Test

Steps homogeneity second step is the same as the homogeneity test on the initial data.

c. Test Average (t-test)

Proposed hypothesis test in average similarity with t-test is as follows:

Ho $= \mu_1 = \mu_2$

Ha $= \mu_1 > \mu_2$

If $\sigma_1^2 = \sigma_2^2$ (has same variant), the formula is:

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

With

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

Where:

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

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

n_1 : The number of experiment group

n_2 : The number of control group

S_1^2 : The standard deviation of experiment group

S_2^2 : The standard deviation of both groups

If = $\sigma_1^2 \neq \sigma_2^2$ (has no same variant) the formula is:

$$t^1 = \frac{\overline{X} - \overline{X_2}}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_1^2}{n_2}}}$$

Testing criteria that apply Ho is accepted if $t_{count} > t_{table}$ with determine dk = (n_1 + n_2 - 2) and α = 5% with opportunities (1 - α) Values for other t Ho rejected.[12] This Analysis used to interprets more complete of the result of hypothesis. In this Analysis the researcher interprets from the results of the data which already proceed. Then, compare t-test or t_o with t table in the value 5%.

a. If the result of t < t table, it means there are no differences in English-Arabic learner's understanding grammatical pattern of English simple past tense between those assigned English-Arabic combined task and those assigned English task only.
b. If the result of t > t table, it means there are differences in English-Arabic learner's understanding grammatical pattern of English simple past tense between those assigned English-Arabic combined task and those assigned English task only.

[12] *ibid*, p. 243.