CHAPTER III RESEARCH METHODOLOGY

This chapter consists of several aspects, such asthe design of the study, Unit of analysiswhich consists of the setting and the population of the study, the technique of sample taking, the method of data collection and the method of data analysis.

3.1 The Design of the Study

In this study, the researcher used quantitative research. The method in this investigation that the researcher used is true-experimental design. Actually there are three kinds of true-experimental design. They are pretest-posttest control group design, posttest-only control group design and solomon four group design.Mubarok (2015:89) stated that true-experimental design is because the researchers can control all external variables that affect the experimentation.

In this study, the researcher chose posttest-only control group design to conduct this study. In this design, there were two groups that selected randomly. The first was the experimental group which got treatment before posttest was given. The second was control group that was given the post-test only.

Through the posttest, the researcher could analyze both of groups that there were significance achievement in speaking between group who were taught by using information gap technique and those who were not taught by using information gap technique in teaching speaking. So, the researcher could prove that information gap was effective technique in teaching speaking.

Table 3.1

The Concept of Posttest Only Control Group Design

		Pre-test	Treatment	Post-test
E	R		X	01
С	R			02

In which:

E = Experimental Group;

C = Control Group;

 \mathbf{R} = Random;

X = Treatment using Information gap technique;

 O_1 = Post – test for the experimental group;

O₂ = Post –test for control group;

(Mubarok, 2015:90)

3.2 Unit of Analysis

In conducting the study, the researcher investigated the setting, the population and the technique of sample taking of this study of the study. The technique of sample taking was taken based on the population of this study. From the population the researcher took the sample of the study. It was described by researcher as follows:

3.2.1 The Setting of the Study

This study was conducted on MA NahdlatulUlama' located on Jl. Tahunan-Batealit Km.7 BatealitJepara. The researcher conducted the study in the odd semester of eleventh grade students.

3.2.2 The Population of the Study

Actually there were two classes of the eleventh grade of MA NahdlatulUlama' BatealitJepara in the academic year of 2017/2018.

They were XI A class which consisted of 30 students and XI B class which consisted of 30 students. It meant that the total of population of this study were 60 students.

3.2.3 The Sample of the Study

The researcher used probability sampling for taking the sample of this study. According to Mubarok (2015:35), probability sampling is a sampling technique that gives an opportunity or an equal opportunity for every element (member of) the population to be elected as members of the sample. It meant that the both of XI A and XI B class had the same chance became the experimental or control group.

There are four kinds of probability sampling. They are simple random samples, proportionate stratified random sampling, disproportionate stratified random sampling and cluster sampling. However, the researcher used simple random sampling to determine the experimental and control group.

First, the researcher made two lotteries to determine the experimental and control group. Then she mixed the lotteries and asked the student representative of XI A and XI B class to take the lotteries randomly. Finally, the researcher made decision based on the result of student chosen showed that the XI A class as an experimental group and the XI B class as the control group from the lotteries that they got.

3.3 The Method of Data Collection

The important thing of this research was collecting the data. According to Mubarok (2015:41), data collection is a method or tools which are used by researcher to get the valid data. To find the data for this study, the researcher used quantitative method such as the test.

The test was the important role to collect the data. According to (Brown, 2004: 3) the test is a method of measuring a person's ability, knowledge or performance in a given domain. In this study, the test was called post-test

because researcher gave the test after the treatments were given to the experimental group. When students did the post-test, the researcher gave score to students. It was the easy way for researcher to analyze and conclude the data.

3.4 The Method of Data Analysis

In the table below shows the schedule of conducting the study that elaborated after the table.

Table 3.2

No Activities	Date of September						Class		
		7 th	9 th	11^{th}	15 th	16 th	18 th		
1	Preparation								
1	Try-out test								XIIA
2	Treatment								XI A
3	Treatment								XI A
4	Treatment								XI A
5	Post-test								XI B
6	Post-test								XA

The Schedule for True-Experimental Research

3.4.1 Trying Out Test

A good or bad quality of the data was based on the instrument test that was used to measure the students' ability. Through trying out test, the researcher knew that instrument test was valid and reliable or not.

The trying out test was conducted in the twelve grade students before doing the treatment on September 7, 2017. It was conducted outside of the experimental and control class but in the same population. There were 31 students as the subject of the trying out test. The researcher analyzed validity, reliability, difficulty level, and discriminating power as follow.

a. Validity

Based on Hughes (1989:22), he stated that a test is said to have content validity if its content constitutes a representative sample of the language skills, structures etc. with which it meant to be concerned.

In this study the researcher used point biserial correlation to determine the test validation. Point biserial correlation was formulated by Arikunto (2013: 326) as follows:

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

In which:

r _{xy}	= validity of each item;
Ν	= the number of students participates in the test;
ΣXY	= the sum of multiple of score from each student
	With the totals core in each item;
ΣX	= the sum of score in each item;
$\sum X^2$	= the sum of the square score in each item;
ΣY	= the sum of score from each student;
$\sum Y^2$	= the sum of the square score from each student;
	(Arikunto, 2013:326)

The validity computation is consulted to the r_{table} of Product Moment by determining the significance level 5% and n which is according to the data. The instrument is valid if the $r_{xy}>r_{table}$ for $\alpha = 5\%$ and N=31.

b. Reliability

Brown (2008:20) stated that a reliable test is consistent and dependable, if you give the same test to the student or matched students on two different occasions, the test should yield similar results.

This following formula was to measure the reliability of the trying out test. The researcher used Kuder-Richardson formula number 20 (symbolized KR20).

$$\mathbf{r_{11=}}\left(\frac{N}{N-1}\right)\left(1-\left(\frac{\Sigma pq}{\sigma_{x}^{2}}\right)\right)$$

In which:

 r_{11} = the reliability of the test;

N = the number of items;

p = proportion the subject answering the itemincorrectly;

q = proportion the subject answering the item correctly;

 σ_x^2 = the total variance;

(Carmines and Zeller, 1979:48)

To find out the reliability level, the result must be consulted to the r_{table} of product moment with the number of participants are 31 students and significant level is 5%. If the result of r_{11} is higher than r_{table} of product moment, it can be said that the instrument is absolutely reliable.

c. Difficulty level

The easy or difficult of item number is determined by the index of item difficulty level. The item number of a test called easy if the index of item difficulty is high. If the item number is low, it means that the item number is difficult.

The researcher applied the following formula to compute the difficulty level:

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

In which:

P : the difficulty level;

- B : the number of students who answered the itemcorrectly;
- J : the number of students in class

(Arikunto, 2009:176)

The criteria that used to determine the difficulty level as follows:

Table 3.3

The Index of Difficulty

Interval	Criteria
$0 < P \le 0.3$	Difficult
$0.3 < P \le 0.7$	Medium
$0.7 < P \le 1$	Easy

(Arikunto, 2002:210)

d. Discriminating Power

The index of discriminating power used by the researcher to analyze whether or not a test item has the ability to differentiate students with good mastery from students who have difficulty in speaking activities.

The following formula was used to compute the discriminating power of the test items:

$$D = \frac{BA}{JA} - \frac{BB}{JB}$$

In which:

D	: discriminating power;
BA	: the number of students in the upper group who
	answered the item correctly;
BB	: the number of students in the lower group who
	answered the item correctly;
JA	: number of all students in the upper group;
JB	: number of all students in the lower group
	(Arikunto, 2009:177)

The criteria that used by researcher to determine the discriminating power as follows:

Table 3.4

The Index of Discriminating Power

Interval	Criteria
$0.00 < D \le 0.2$	Poor
$0.21 < D \le 0.40$	Satisfactory

$0.41 < D \le 0.70$	Good
$0.71 < D \le 1.00$	Excellent

(Arikunto, 2002:218)

3.4.2 Treatment

In this study, the researcher conducted the treatment three times for experimental group which described in the table as follows:

Table 3.5The Treatment Activities

Schedule	Activities
First treatment (expressing of satisfaction and dissatisfaction)	 Teacher directed students to the material by showing the picture then asked "what was the expression of the man". Teacher asked the students what was the definition of satisfaction and dissatisfaction expressing. Teacher explained how to asking someone feeling about satisfaction and dissatisfaction. Teacher explained how to express satisfaction and dissatisfaction. Teacher gave chance to students to ask some questions. Teacher gave the example in the short conversation about satisfaction and dissatisfaction and dissatisfaction expression. Teacher shared pictures to students for giving exercises (did conversation in pair based on

	the pictures).
	8. Teacher explained the direction of the
	exercises.
	9. Teacher asked some students to practice the
	conversation in front of the class.
Second treatment (asking and answering losing vocabularies about living room)	 Teacher directed students to the material by showing the picture that will was described. Teacher asked the students to mention all of the things on the picture. Teacher asked students "Please guess, what is the room? Then, please mention one word to describe the room!". Teacher read vocabularies and asked students to repeat after her. Teacher explained the definition of vocabularies. Teacher checked students` understanding by giving exercises (did conversation in pair). Teacher explained the direction of the exercises.
	8. Teacher asked some students to practice the conversation in front of the class.
Third treatment (describing and guessing the things of living room)	 Teacher directed students to the material by describing thing. Teacher asked the students to guess the thing which was described by teacher. Teacher explained the materials such as the definition, the generic structure, the purpose of the descriptive text. Teacher explained how to describe easily.

5. Teacher shared the cards to students for doing
exercises.
6. Teacher explained the instruction and asks
students to do speaking activities.
7. After students finish to practice speaking in
pair, teacher asked some students to practice
the conversation in front of the class.

3.4.3 Posttest

Posttest is the most important instrument for collecting data in a true experimental research. It is to know the effectiveness of information gap technique in teaching speaking after got the result of t-test.

In the table below shows the schedule of experimental and control group that was conducted twice by the researcher.

Table 3.6

The Posttest Schedule for Experimental and Control Group

Group	Date	Posttest
Experimental	18-Sep-17	Asking and answering the losing things in the mess living room
Control	15-Sep-17	Asking and answering the losing things in the mess living room

The first posttest was done to the experimental group after the treatments were given. The second posttest was given to control group without given the treatment. The result of both had been calculated and compared with those posttests result of experimental and control group.

The writer used the same questions of posttest for the experimental and control group. The posttests were consisted of two pictures for each pair of students while each picture has 10 questions. It meant that, 10 questions from the first picture (sheet A) were for the first student (A) and 10 questions of the second picture (sheet B) were for the second student.

In this posttest, the picture of the first student related to the picture of the second student, so that the students can communicate to each other based on the pictures. The student tried to find their losing things in the living room by asking to their pairs until they found them. After students A used sheets A, they had to swift their sheets to students B and continued conducting conversation based on the pictures that they held.

In the posttest activities, the experimental students were looked enthusiastically in practicing English speaking. However, the controlstudents were looked ashamed and were lazy to practice speak English.

The student score was counted based on the scoring rubric was used to measure students' achievement in speaking test. It is adapted from Brown (2004: 172).

Table 3.7The Scoring Rubric of Posttest

Elements of Scoring	Score	Aspect of scoring
Grammar	1	Speaker's errors in grammar are frequent, but it can be understood by a listener.

	2	Speaker does not have through or
		confident control the grammar.
	3	Speaker can control grammar and be able
		to speak the language with sufficient
		structural accuracy.
	4	Speaker is able to use the language
		accurately on all levels and errors in
		grammar are quite rare.
	5	Equivalent to that of an educated native
		speaker
	1	Speaking vocabulary inadequate to
		express anything but the most elementary
		needs.
	2	Has speaking vocabulary sufficient to
		express himself simply with some
		circumlocutions.
Vocabulary	3	Vocabulary is broad enough that rarely
vocabulary		has to grope for a word.
	4	Speaker can understand and participate in
		any conversation with a high degree of
		precision of vocabulary.
	5	Speech on the levels is fully accepted by
		educated native speakers in all it features
		including breath of vocabulary.
	1	Speaker can understand simple questions
Comprehension		and statements if delivered with slowed
		speech repetition or paraphrase.
	2	Speaker can get the gist of most
		conversations of non-technical subject.
	3	Comprehension is quite complete at a

		normal note of an appl
		normal rate of speech.
	4	Speaker can understand any conversation
		within the range of his experience.
	5	Equivalent to that of an educated native
		speaker.
	1	Speaker hasn't sufficient fluency
		description.
	2	Speaker can handle with confidence but
Fluency		not with facility most social situations.
	3	Speaker can discuss particular interests of
		competence.
	4	Speaker is able to use the language
		fluently. It is a high degree of fluency.
	5	Speaker has complete fluency in the
		language that accepted by native
		speakers.
Pronunciation	1	Speaker pronunciation errors are frequent
		but can be understood by a native
		speaker.
	2	Speaker accent is intelligible through
		often quite faulty.
	3	Accent may be obviously foreign.
	4	Errors in pronunciation are quite rare.
	5	Equivalent to and fully accepted by
		educated native speakers.

Brown (2004:172)

The score from each component above was added to get the total number of 25 for maximum score. However, to count the students score was the posttest student score was divided to maximal score then it was multiplied by one hundred. It can be seen in the formula as follows:

$$Score = \frac{Student Score}{Maximal Score} X 100$$

The criteria of students' score were described by researcher as follows:

Table 3.8

The Criteria of Scoring

Grade	Criteria of Mastery	Level
А	90 - 100	very good
В	70 - 89	good
С	60– 69	enough
D	50 - 59	poor
Е	40-49	very poor

3.4.4 T-Test Statistical Analysis

The researcher analyzed the data by using some formulas. The results were to measure the students' achievement and to know the effectiveness of implementing information gap technique in teaching speaking. There were some steps for analyzing the data such as computing the scoring technique and t-test.

T-test was to know the influence of information gap technique in teaching speaking. However, student scores, mean and standard deviation computed before using formula of t-test that can be seen in the formula as follows:

a. Scoring Technique

In the scoring technique, the researcher counted the total score of each item of grammar, vocabulary, comprehension, fluency and pronunciation of each student. Each item had the total score of 5 points so after the all of items were added will get the total 25 points.

The researcher used formula below to obtain the total score:

$$S=\frac{R}{N}X\ 100$$

In which:

- S : Score
- R : total number of right answer
- N : total number of item

b. Mean

Mean is the average score of all respondents in the classroom. The researcher corrected all students' post-test by counting the mean of the respondents' score. It was done by adding all students' scores the dividing this sum by the number of students.

Mean was formulated by the researcher as follows:

$$M=\frac{\sum X}{n}$$

In which:

Μ	: mean;
ΣX	: the total of respondents' scores;

N : the number of respondent;

c. Standard Deviation

After counting the mean, the researcher computed standard deviation that was formulated as follow:

$$S = \sqrt{\frac{(n1 - 1)S_1^2 + (n2 - 1)S_2^2}{n1 + n2 - 2}}$$

In which:

- S : standard deviation;
- S₁² :varianceof subject participating in the test of experimental group;
- S₂² : variance of subject participating in the test of control group;
- n1 : the number of subject participating in the test of experimental group;
- n₂ : the number of subject participating in the test of controlgroup;

d. T-Test

The researcher uses t-test formula to know the t-value of significant difference between the means of the posttest of two groups.

Formula:

$$t = \frac{x_1 - x_2}{S x \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

In which:

- t : t-value;
- x_1 : the average score of experimental group;
- x_2 : the average score of control group;
- S : standard deviation
- n1 : The number of subjects participating in the test of experimental group;
- n2 : The number of subjects participating in the test of control group;

(Nusrotus,2015:75)