# III. RESEARCH METHOD

In this chapter the researcher deals with severals points; they are : research design, population and sample, variables, research procedures, data collection and instrument, data analysis, and hypotesis testing.

## 3.1 Research Design

The researcher conducted a quantitave reaserch based on the experiment class with one group pre-test and post-test design. The researcher took two classes as investigation class where they were choosen randomly. The first class was acknowledged as an experimental class in which they had a treatment of jigsaw technique by using recount text as their material of study. And the second class was the try out class, the function of try out class is to examine the tryout question before they were made into pre-test and post-test.

In this study, reading test was done at the first meeting to see the proficiency of student's toward reading achievement and to find out whether there was any improvement after the researcher conducted the treatment to the students. The research had several steps such as, pre-test, three treatment classes, and post test. The result of pre-test and post-test here would be administered by the researcher to see the improvement toward the implementation of jigsaw technique in

teaching recount text. According to Hatch and Farady (1982), the design of the study is as follows:

$$\textbf{T1} \qquad \textbf{X} \qquad \textbf{T2}$$

Where :

T1 = Pretest

X = Treatments

T2 = Posttest

## 3.2. Population and Sample

Population is the whole subject of the research (Arikunto 2002). The population was in the second grade students of Vacational School 1 Negri Katon, where there were four classes available. Each class consisted of approximately 32 students. Concerning the fact that every class had relatively the same level of proficiency in English, the researcher took two classes randomly by using lottery to be labelled as try out class and treatment class. It was applied based on the consideration that every class in population had the same chance to be chosen in order to avoid the subjectivity in the research (Setiyadi, 2006:39). To determine which one was the try out class and which one was the treatment class, the researcher used four peace of paper where in each paper the name of the class had been written, without known by the researcher. The researcher then took two papers and decided that the first paper taken would be the try out class and the last paper taken would be the experimental class. The tryout class was TKJ 2 and the treatment class was TKJ 1.

**3.3 Research Procedures**

In order to ensure that the result dealt with its best procedure to mantain a good process, the researcher deals with several steps as follow :

1. Determining the research problems

   The problem of the research was focused on finding out whether there was significance in understanding reading compreshension, measured by comparing their score on pre-test and post-test.

2. Determining the reseach design

   In this step the researcher decided to use one group pre-test post-test design as a way to do the research.

3. Finding the population and sample

   The population of this research were the students at the second grade of SMK N 1 Negri Katon, where there are approximately 32-35 students in each class, and the researcher took two classes randomly by using lottery.

4. Determining the research instrument

   The meterial took from text book based on curriculum for both pre-test and post-test acticity.

5. Administering the try out test

   The researcher prepared a test in order to know the quality of the pre-test test. The try out test was given to the students who were equal in language proficiency to the sample of research. This test was held to ensure that the question in the pre-test and post-test will be good in terms of validity, realibility, level of difficulty, and discrimination power. The test consisted

of 30 question with four choices; A, B, C, and D, and the time to do the test is 60 minutes.

6. Administering pre-test

   This test was conducted to find out student's basic reading comprehension, how far was the students proficiency toward mastering reading comprehension. The researcher gave the test before conducting the treatment, meanwhile the number of the test would be 25 with 45 minutes for the students to answer the test.

7. Conducting the treatment '

   After the pre-test, the researcher conducted the treatment in three meetings and it takes 90 minutes for each meeting of the treatment. The researcher would teach reading comprehension through jigsaw technique by using recount text.

8. Conducting the post-test

   After the treatment given, the researcher gave the post-test to find out whether there is any improvement between their score in the pre-test and the post-test. The tests are multiple choice test with 30 question done in 45 minutes.

9. Analyzing the data

   Both pretest and postest results of the class was analyzed by using Repeated Measures t-test to compare the data of the two means score (Hatch and Farhady,1982:108). The researcher analyzed the result of post-test by comparing out with the result on pre-test. If there was an increase

in the score of post-test it simply means that the research conducted gave a good progress for students to master reading comrprehension.

10. Concluding and reporting the result of analysis data

As the pre-test and post-test already analyzed, the researcher then drew the conclusion regarding the result of the research and report it on the script by also adding the suggestion for further research.

## 3.4 Data Collecting Technique

In collecting the data, there are several techniques used by the researcher, such as:

1. Try Out Test

The try out test was admininstered to TKJ 1 class, where they were given 30 numbers of questions. The questions were multiply choice question with four options which were A, B, C, and D. The try out test was conducted in 90 minutes. In determinig the quality of the test, the researcher took a research toward the questions in terms of validity, reliability, level of difficulty and discriminations power. From the research it can be seen that there were three items considered difficult and twenty five items were considered average, the rest two items were easy. The researcher dropped five questions and make the twenty five questions as pretest and posttest questions.

**Table 1.** Difficulty Level of the Tryout items

| NO | Item Number | Value Range | Criteria |
|---|---|---|---|
| 1 | 1, 21, 25 | < 0.30 | **Difficult** |
| 2 | 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 17, 18, 19, 20, 22, 23, 24, 26, 27, 28, 29, 30 | 0.3- 0.70 | **Average** |
| 3 | 12, 16 | >0.70 | **Easy** |

**Table 2**. Discrimination Power of the Tryout items

| NO | Item Number | Value Range | Criteria |
|---|---|---|---|
| 1 | 1, 12, 16, 21, 25 | <0.20 | **Poor** |
| 2 | 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 17, 18, 19, 20, 22, 23, 24, 26, 27, 28, 29, 30 | ≥0.20 | **Satisfactory** |

2. Pre-test

In pre-test part the reseaercher took TKJ 1 as the pre-test class adn they were given 25 multiple choice questions where the choices contain one true answer and three distractors. The time given for students to do the test was 45 minutes. The aim of this test was to measure the competence of the student toward reading comprehension before the treatment conducted.

3. Treatment

The treatment was done in three meetings soon after the pre-test conducted/. The teacher taught reading for 90 minutes in every meetings by using Jigsaw.

4. Post-test

After the studets had treatment on learning reading through jigsaw, the researcher gave the studets post test to measure their achievement in learning reading. The item of post-test was similiar with pre-test which

was 25 items with four choices done in 45 minutes. The difference of pre-test and post-tes was only in the order of the number of the test.

1. Questionnaire

   After the students being evaluated, the students had to fill out the questionnaire to express their feeling during the use of jigsaw technique. There are 10 questions of the questionnaire and the students had to checklist its aspects based on the option given honestly.

## 3.5 Instrument

The researher provided two reading tests to check the comprehension of students in reading. There were pre-test and post-test, the pre-test given in the first meeting before the technique and the post-test given after the students recieved the treatment, the type of the test would be a reading test consist of text in form of recount. There were 25 questions with four answer choices. The purpose of the pre-test was to know the understanding of reading comprehension at the first step before the treatment given. In the other side, the purpose of post-test wass to find-out whether there is significancy of improvement after the students recieved the treatment.

## 3.6 Criteria of a Good Try Out Test

The purpose of try out test was to measure that the test arranged by the researcher is good and applicable to be used during the research. Try out test was the question to formulate the pre-test and post-test. A measurement of a good test

considers several factors such as: validity (content validity and construct validity), reliability, level of difficulty and discrimination power.

**3.6.1 Validity**

Validity refers to the extent to which the test measures what is intended to measure. It means that it relates directly to the purpose of the test. A test can be considered valid if it can precisely measure the quality of the test. There are several types of validity according to the different purpose of the tests. In this research, the writer will use content validity and construct validity.

**3.6.1.1 Content Validity**

Content validity is the extent to which a test measures a representative sample of the subject matter content, the focus of content validity is adequancy of the sample and simply on the appearance of the test (Hatch and Farhady,1982:251). In this research, the researcher formulated table specification, so every test item could be matched with both goal and materials which have been taught. The content of the item is presented in the table of specification below:

Table 3. The Table of Specification of Data Collecting Instrument

| No | Reading Skills | Item Numbers | Percentage (%) |
|----|----------------|--------------|----------------|
| 1 | Determining main idea | 2, 6, 15, 19, 25, 30 | 20% |
| 2 | Finding detailed information | 1, 8, 10, 14, 16, 20, 23, 28 | 30% |
| 3 | References | 4, 9, 22 | 10% |
| 4 | Inferences | 11, 21, 26 | 10% |
| 5 | Vocabulary | 3, 7, 13, 18, 24 | 30% |
| **Total** | | 30 | **100%** |

Based on the table the table above the researcher had more focus on two aspects of content such as determining main idea and finding detailed information. It happened due to the reason that students were considered understand the text when they can get whole aims of the text which mean understands main idea. Moreover it was found that jigsaw had focuses on how student can explain their home group about the text they read. In this case, finding the detailed information could help the students to explain the story completely based on the detailed question given by the students. Finding inference and reference had relatively equal proportion. It happened because the researcher assumed that the ability of referring and inferring could be achieve if the students were able to master the vocabulary and understand the aim of the text as well.

In arranging the questionnaire the researcher dealt with three aspects such as attitude, motivation, and achievement. The researcher put an assumption that these three aspects could show the response of the students toward the use of jigsaw as teaching technique. Attitude can be directly seen and felt by the students, the questionnaire regarding the attitude may help the researcher to directly took a conclusion regarding the use of jigsaw. Moreover, according to Barroz (1974) attitude means the individuals prevailing tendency to respond favorably or unfavorably to an object (person or group of people, institution or events). Through that statement it is clear that attitude can show the response of the students directly.

The second part of questionnaire is motivation. Gottfried (1990) defines academic motivation as "enjoyment of school learning characterized by a mastery orientation; curiosity; persistence; task-endogeny; and the learning of challenging, difficult, and novel tasks". Students' curiosity was put within the questionnaire to as a part that they positive response through their attitude in learning.

The third was in term of achievement. APA (1999) defines that achievement is viewed basically as the competence a person have in area of content. The question related to whether they get new knowledge or not may support the purpose of the questionnaire that through having positive response students also got an achievement during their learning process.

Table 4. The Table Specification of Questionnaire

| No | Aspect of Questionnaire | Items Numbers | Precentage (%) |
|----|------------------------|---------------|----------------|
| 1 | Attitude | 1,4,10 | 30% |
| 2 | Motivation | 2,8 | 20% |
| 3 | Achievement | 3,5,6,7,10 | 50% |
| **Total** | | 10 | 100% |

The researcher managed to have 50% question in terms of achievement because the research question was not only deal with the response of the students but also their achievement. The researcher assumed that if the students felt that they could gain more achievement during the learning process it means that their response was good and proven by their performance. The second was in terms of attitude, it took 30% due to the reason that attitude may reflect their feelings and thought during the learning process. The last was motivation which took 20% over all the

percentage. It happened to review the eagerness of the students during the learning process.

### 3.6.1.2 Construct Validity

Construct validity concerned with whether the test was actually in line with the theory of what it means to know the language (Shohamy. 1985; 74). Knowing the test was true reflection of the theory in reading comprehension, the researcher would examine whether the test questions actually reflect the means of reading comprehension or not. The test consisted of some reading skills namely, determining the main idea, supporting details, and specific information.

### 3.6.2 Reliability

Reliability was defined as the extent to which a questionnaire, test, observation or any measurement procedure produced the same results on repeated trials. In short, it is the stability or consistency of scores over time or across ratters. It was a measure of accuracy, consistency, dependability, or fairness of scores resulting from the administration of particular examination. According to Heaton (1988:162) reliability is a necessary characteristic of any good test.

To measure the coefficient of the reliability between odd and even number (reliability of half test), the researcher used Pearson Product Moment, in the following formula:

$$r_{xy} = \frac{N(\sum XY) - (\sum X)(\sum Y)}{\sqrt{\{N \sum X^2 - (\sum X)^2\}\{N \sum Y^2 - (\sum Y)^2\}}}$$

Note

$\sum x$ = total score of odd number

$r_{xy}$ = the correlation of odd group and even group

$x^2$ = square of X

$Y^2$ = square of Y

$N$ = total number of students

<div align="right">(Henning, 1987:60)</div>

After getting the reliability of half test, the researcher then used " Spearmean Brown's Prophency Formula" to determine the reliability of the whole test as follows:

$$r_{11=\frac{2xr11/22}{(1+\frac{r11}{22})}}$$

Note:

$r_{11}$ = coefficient reliability between the odd and even number

$r22$ = coefficient reliability for all items

<div align="right">(Hatch and Farhady, 1982: 198)</div>

The criteria of reliability:

a) A very low reliability ranges from 0.00 to 0.19

b) A low reliability ranges from 0.20 to 0.39

c) An average reliability ranges from 0.40 to 0.59

d) A high reliability ranges from 0.60 t0 0.79

e) A very high reliability ranges from 0.80 to 1.00

### 3.6.3 Level of dificulty

Arikunto (1993:209) says that the test item are good if they are not too difficult and not too easy or in the other word the difficulty level is average.

The classification of the difficulty level was as follow (Arikunto, 1993:212):

0,0 – 0,3       = too difficult

0,3 – 0,7       = average

0,7 – 1,0       = too easy

The formula that will be used to determine the difficulty level of each test item was as follow:

*LD = R/N*

In which:

LD     = level of difficulty

R       = the number of correct answers

N       = the number of students taking the test

### 3.6.4  Discrimination Power

According to Arikunto (1993:213), discrimination power is the ability of the item to differentiate between the students who have high ability and those who have low ability. The discrimination power of an indication item the extent, to which the item discriminates between test taker from the less able. The formula of the discriminate power is:

$$D = U - L \div \frac{1}{2} N$$

In which :

D        : discrimination power

U        : the number of students from the upper who answer correctly

L        : the number of students from the lower who answer correctly

N        : the number of students

(Shohamy, 1985:82)

The criteria of discrimination power are:

1.  If the value positive, it has positive discrimination because large number or more knowledge students than poor students get the item correct. If the value is zero, it means that there is no discrimination.

2.  If the value negative, it has negative discrimination power because lower and higher level of students gets the item correct.

3.  In general, the higher discrimination index is better. In the classroom situation most items should be higher than 0.20 indexes.

    (Shohamy, 1985:82)

### 3.6.5 Scoring System

In scoring the students' results of the test, Arikunto's formula would be used. The ideal highest score was 100. The score of pretest and posttest would be calculated by using this formula:

$$S = (R:N) \times 100$$

Description:

S = the final score of the test

R = the total number of the right answers

N = the total items


## 3.7 Data Analysis

Analysis means categorizing, ordering, manipulating, and summarizing of data obtain answer to research questions (Kerlinger, 1988:125). The purpose of analysis was to reduce data to be intelligible and interpretable so that the relation of research problem could be studied.

In order to find out how significant the increasing of the students' reading comprehension in recount text through Jigsaw techinque, the data would be analyzed by these following procedures:

1. Scoring the pretest and posttest

2. Tabulating the results of the tests and calculating the scores of the pretest and posttest

3. Here, the researcher will also use manual calculation how to analyze the data according to Hatch and Farhady

$$SD= \frac{\sqrt{\sum D^2}-(^1/n)\,(\sum d)^2}{n-1} \qquad Sd=\frac{SD}{\sqrt{n}} \qquad r=\frac{T_1-T_2}{Sd}$$

Notes :

r  = Ratio

T1 =  Mean of pre-test

T2 = Mean of Post-test

Sd = Standard error of differences between means

d   = Error of differences between mean

n   = Subjects on sample

SD = Standard Deviation

## 3.8  Hypothesis Testing

The hypothesis testing showed that there was any increase the students' reading comprehension significantly, would be statistically tested by using statical computerization (SPSS 17), in which the significant would be determined by $p < 0.05$. therefore, the hypothesis were as follows:

*Hα* ➝ There is significant increase of students' reading comprehension ability after the application of Jigsaw technique for understanding teaching reading descriptive text.

$H_0$ ➝ There is no significant increase of students' reading comprhension ability after the application of Jigsaw technique for understanding teaching reading recount text.

(Setiyadi, 2006:97)

The criteria are:

Ha (alternative hypothesis) is accepted if *alpha level* is lower than 0.05 ($\alpha < 0.05$).

Ho (null hypothesis) is accepted if *alpha level* is higher than 0.05 ($\alpha > 0.05$).

In this research $T_{ratio}$ (5.864) was higher than $T_{table}$ (2.0369).

Meanwhile for the result of questionnaire the hypotesis testing would be as follows:

*Hα* → There is a positive respond from the students toward the apllication of jigsaw technique in teaching reading recount text.

*H₀* → There is no positive respond from the students toward the application of jigsaw technique in teaching reading recount text.

To answer the second research problem the researcher assumed that *Hα* is accepted if there is more than 50% students checklist poin 1 and 2 in questionnaire which are "sangat setuju" and "Setuju". In the other side, *Hα* will not be accepted if there are more than 50% students answer the point 3 and 4 which are "Kurang Setuju" and "Tidak Setuju".