

### **III. RESEARCH METHODS**

This chapter describes the Design of the Research; Population and Sample; and Data Collecting Technique. It also describes Research Procedure; Scoring System of Reading Test; Analysis Research Instrument; Data Analysis; and Hypothesis Testing.

#### **3.1. Research Design**

This research was carried out to investigate the students' reading ability after being taught using Jigsaw technique. In conducting this research, the writer used one group pretest posttest design (Hatch and Farhady, 1982:20). Pretest and posttest were administered to determine whether Jigsaw technique can be used to increase students' reading comprehension achievement. The questionnaire was administered in order to investigate what problems were faced by the students in learning reading comprehension using Jigsaw technique.

This research used one class. The class had both pretest and posttest, and 9 times treatments that consisted of 3 sessions of meetings, 3 sessions of structured instructions, and 3 sessions of unstructured instructions. Structured instruction refers to the activity that has been arranged before by the teacher, for example: the

teacher prepares the material (about narrative text) and explains it. Then, the students answer the questions based on the material. Unstructured instructions refers to the activity that not having prepare yet. For example: After the class, the teacher asks the students to find out other narrative text from the internet or newspapers and also tells them to answer the question that has been given, then it will be discussed in the next meeting. The design can be illustrated as follows:

**T1    X    T2**

Where:

T1    : Pretest

X     : Treatment (using Jigsaw technique)

T2    : Posttest

(Hatch and Farhady, 1982:20)

### **3.2. Setting of the Research**

This research took place at SMAN 1 Pesisir Tengah Krui Pesisir Barat.

### **3.3. Population and Sample**

The population of this research was the first grade students of SMAN 1 Pesisir Tengah Krui Pesisir Barat in the 2012/2013 academic year. There were ten classes of the first grade which consists of 340 students. One class (X-2) consists of 34 students was taken as sample that was given treatment (teaching reading using Jigsaw technique). The class was selected randomly using lottery since there was no stratified and priority class.

### **3.4. Data Collecting Techniques**

In collecting the data the writer used the following technique:

#### **1. Reading Test**

In collecting the data, the writer used Reading Test that consists of Pretest and Posttest. The pretest was administered in order to find out the students' reading comprehension achievement before treatment. The posttest was administered at the end of treatments in order to find out the results of students' reading comprehension achievement after the nine-time treatments.

#### **2. Questionnaire**

The questionnaire distributed on the last meeting of teaching learning reading comprehension by using jigsaw technique to the students. The purpose of the questionnaire was administered in order to investigate what problems were faced by the students in learning reading comprehension using Jigsaw technique. The contents of the questionnaire were about students' learning problem and opinions about learning reading comprehension through jigsaw technique.

### **3.5. Research Procedures**

In collecting the data, the writer carried out the following procedures which can be described as follows:

#### **1. Determining the research problems**

The problem of the research intended to find out whether Jigsaw technique can increase students' reading comprehension achievement.

## **2. Determining the population and sample**

The population of this research was the first grade of SMA Negeri 1 Pesisir Tengah Krui Pesisir Barat. The sample of this research was one class which is X-2.

## **3. Selecting and determining the materials**

The materials were based on the School Based Curriculum (KTSP) 2006 for the first year students. As had been discussed in Chapter 2, this research focused on narrative text.

## **4. Administering Try-Out Test**

The try-out test was administered in X-10. Students were given reading test with 40 items of multiple choices in 90 minutes.

## **5. Administering Pre-Test**

Pre-test was administered to reveal the students' basic reading comprehension before treatments. The test was administered in 60 minutes with 25 items of multiple choices reading test.

## **6. Conducting the Treatments**

The treatments were classroom activities which applied Jigsaw technique. The students were taught three times by the researcher and the students also were given structured and unstructured instructions.

## **7. Administering Post-Test**

Post-test was given at the end of treatments in order to find out the increase in students' reading comprehension achievement. The test was administered in 60 minutes with 25 items of multiple choices reading test.

## 8. Administering the questionnaire

The questionnaire was administered in order to investigate what problems were faced by the students in learning reading comprehension using Jigsaw technique. The questionnaire consists of 20 items.

## 9. Analyzing the result of the Test

All the data were gathered by the average score (mean) of reading test and questionnaire were analyzed to draw the conclusion.

### 3.6. Scoring System of Reading Test

In scoring students' result of the test, the writer used Percentage Score. The ideal highest score was 100. The score of pretest and posttest were calculated by using formula as follow:

$$PS = \frac{R}{N} \times 100$$

Where:

PS : Percentage Score  
 R : the total of right answer  
 N : total item

(Henning, 1987)

### 3.7. Try Out of Research Instrument

A good test should meet four criteria: a good validity, reliability, level of difficulty and discrimination power. Therefore, the try out of the test was carried to achieve the objectives. The results of which was elaborated in the following sections:

## **1. Validity**

*Validity* refers to the extent to which the test measures what is intended to measure. This means that it relates directly to the purpose of the test (Shohamy, 1985:74). There are four types of validity, namely face validity, content validity, construct validity, and empirical validity or criterion-related validity. To measure whether the test has a good validity, the writer used content validity and construct validity. Face validity concerns with the lay out of the test while the criterion-related validity is concerned with measuring the success in the future, as in replacement test (Hatch and Farhady, 1982:251). So these two validities were considered to be less needed. Therefore, the two types of validity was used in this research as follows:

### **A. 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 adequacy of the sample and simply on the appearance of the test (Hatch and Farhady, 1982:251). It was intended to know whether the test was a good reflection of what had been taught and of the knowledge which the teacher wanted the students to know, the writer compared the test with table of specification.

The procedure for determining content validity was to compare the test content with the universe of content supposedly being measured. The content being measured was students' reading comprehension i.e. determining main idea, finding the detail information, reference, inference, and understanding vocabulary.

Furthermore, the writer compared the test items with a table of specification. The test was based on 2006 English curriculum, and the syllabus of first years SMA students and represent of the materials that had been taught by the teacher. The content of the test was presented in the table of specification:

**Table 1. Table of Specification**

No	Skills of Reading	Item Number	Percentage of item
1	Identify the main idea	2,9,16,23,26,28,37.	17.5%
2	Specific information	1,3,4,5,11,12,17,19,22,24,29,30,36,38.	35%
3	Inference	10,13,34,40.	10%
4	Reference	6,7,14,15,18,25,27.	17.5%
5	Vocabulary	8,20,21,31,32,33,35,39.	20%
	<b>Total</b>	40 items	<b>100%</b>

## **B. Construct Validity**

*Construct validity* is concerned with whether the test is actually in line with the theory of what reading comprehension means (Hatch and Farhady, 1982).

Construct validity refers to the validity of inferences that observations or measurement tools actually represent or measure the construct being investigated.

The measurement tool seeks operation of the concept, typically measuring several observable phenomena that are expected to reflect the underlying psychological concept. There are several approaches to evaluating construct validity, one method is the known-groups technique, which involves administering the measurement instrument to groups expected to differ due to known characteristics.

To make sure the test reflects the theory in reading comprehension, the writer examined whether the test questions actually reflect the means of reading comprehension or not.

## 2. Reliability

Reliability is how consistent the results are when the experiment is repeated a number of times under same methodological conditions, then the instrument is said to be reliable. Shohamy (1985:70) states that *reliability* refers to the extent to which the test is consistent in its score, and it gives an indication of how accurate the test score. The test was determined by using Pearson Product Moment which measured the correlation coefficient of the reliability between odd and even number (reliability of half test) in the following formula:

$$r_l = \frac{\sum XY}{\sqrt{[\sum X^2][\sum Y^2]}}$$

Where:

- $r_l$  : coefficient of reliability between the first half and the second half items
- X : total numbers of odd numbers items
- Y : total numbers of even numbers items
- $X^2$  : square of X
- $Y^2$  : square of Y

(Lado in Hughes, 1991: 3)

To know the coefficient correlation of whole items, the writer used *Spearman Brown's Prophecy Formula* (Hatch and Farhady, 1982: 247). The formula was as follow:

$$r_k = \frac{2r_l}{1 + r_l}$$

Where:

- $r_k$  : the reliability of the test
- $r_l$  : coefficient of reliability between the first half and the second half items (Hatch and Farhady, 1982: 247)

The criterion of reliability is:

- 0.90 – 1.00 : high
- 0.50 – 0.89 : moderate
- 0.0 – 0.49 : low



### 3. Level of Difficulty

*Difficulty level* relates to how easy or difficult the item is from the point of view of the students who take the test. It is important since the items, which are too easy (that students get right) can tell us nothing about differences within the test population. To see the level difficulty, the writer used the formula as follow:

$$LD = \frac{U + L}{N}$$

Where:

LD : level of difficulty

U : the proportion of upper group students who answer correctly

L : the proportion of lower group students who answer correctly

N : total number of students

The criteria were:

< 0.30 = difficult

0.30-0.70 = average

>0.70 = easy

(Shohamy, 1985:79)

### 4. Discrimination Power

This Discrimination Power refers to the extent to which the item differentiates between high and low levels students on the test. A good item according to this criterion is one that good students do well on and bad students fail. To see the discrimination index, the writer used the following formula:

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

Where:

DP : discrimination power

U : the proportion of upper group students who answer correctly

L : the proportion of lower group students who answer correctly

N : total number of students

(Shohamy, 1985:81)

The criteria were:

0.00 – 0.20 = poor

0.21 – 0.40 = satisfactory

0.41 – 0.70 = good

0.71 – 1.00 = excellent

Negative = bad items (should be omitted)

(Heaton, 1975:182)

## 5. Result of Try Out

Try-out test was administered in X-10 on Monday, May 13<sup>th</sup> 2013. The number of the try-out test was 40 items that the time allocation was 90 minutes. Those items were in the form of multiple choices, which contained four options of answer for each question (A, B, C, and D). After analyzing the data, the researcher got that 25 items were good while 15 items were bad and should be dropped.

To know the result of reliability of the try-out test, the researcher used *Pearson Product Moment*. The result showed that the reliability of the test was 0.94 (see appendix 4). It could be inferred that the test had high level of reliability, in the range 0.60-0.79 by referring to the criteria of the reliability proposed by Hatch and Farhady (1982).

From the computation of level of difficulty in the try-out test, the researcher got an easy items in the try-out test which is higher than 0.70 (item number 1), 8 difficult items which is less than 0.30 (22, 23, 25, 31, 34, 35, 36, and 37), and 31 average items which is in the range of 0.30-0.70 (2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12,

13, 14, 15, 16, 17, 18, 19, 20, 21, 24, 26, 27, 28, 29, 30, 32, 33, 38, 39, and 40) (see appendix 5).

In the data of discrimination of power in the try out test, the researcher got 4 items (21, 23, 31, and 35) which had negative value in discrimination, 9 items (3, 7, 14, 22, 28, 34, 36, 37, and 40) were poor which had less than 0.20 index, and 24 items (1, 2, 4, 5, 6, 8, 9, 10, 11, 13, 15, 16, 17, 18, 19, 24, 25, 26, 27, 30, 32, 33, 38, and 39) were satisfactory and 3 items were good (12, 20, and 29).

Based on the text analysis, it was finally decided that 25 items were good and the rest, 15 items were bad and should be dropped because they did not fulfill the criteria of the level difficulty and discrimination power. The researcher only administered 25 items that were satisfactory to be used in pretest and posttest.

### **3.8. Data Analysis**

The data was analyzed in order to determine whether the students' reading comprehension achievement was increased or not. The writer examined the students' score by doing the following steps:

1. Scoring the pretest and posttest.
2. Tabulating the results of the tests and calculating the scores of the pretest and posttest.
3. Interpreting the result of the data analysis.

### **3.9. Hypothesis Testing**

The hypothesis was used to prove whether the hypothesis proposed in this research was accepted or not. The hypothesis of this research was there is any increase of students' reading comprehension achievement after being taught by Jigsaw technique.

The hypothesis was analyzed by using *Repeated measures T-Test* with Statistically Package for Social Science (SPSS) version 17.0. The level of significance was 0.05, and the probability of error in the hypotheses was 5%.

### **3.10. Research Schedule**

This research was conducted based on sequenced schedule in order to make this research runs well. Before the research was carried out, pre-research was done on Monday, February 25<sup>th</sup>, 2013. This pre-research was conducted in order to investigate the students' problems in reading comprehension and whether the students' reading comprehension achievement had exceeded minimum completeness criteria of English subject in SMAN 1 Pesisir Tengah Krui Pesisir Barat or not. Then, try out test was administered on Monday, May 13<sup>th</sup>, 2013 in X-10 as try out class to determine the content and construct validity of the text, also the level difficulty and the discrimination power of its. On Wednesday, May 15<sup>th</sup>, 2013 the pre test was carried out in X-2 in order to know the students' achievement of reading comprehension before giving treatments. For all treatment, X-2 class was taken as the experimental class. The first meeting was on Thursday, May 16<sup>th</sup> 2013; the second meeting was on Saturday, May 18<sup>th</sup> 2013, and the third meeting was on Monday, May 20<sup>th</sup> 2013. After the treatments had

been administered, the post test was given in that class on Wednesday, May 22<sup>nd</sup> 2013 in order to know the gain of the students' reading comprehension achievement of narrative text after being taught using Jigsaw technique. The last, the questionnaire was delivered for the students in X-2 in order to find out the students' problems in reading comprehension. the schedule of the research can be seen in the following table:

**Table 2. Research Schedule in Conducting Research at SMAN 1 Pesisir Tengah Krui Pesisir Barat.**

No	Date	Activities
1	Monday, February 25 <sup>th</sup> 2013	Pre-Research
2	Monday, May 13 <sup>th</sup> 2013	Try out test in X <sub>10</sub>
3	Wednesday, May 15 <sup>th</sup> 2013	Pretest in X <sub>2</sub>
4	Thursday, May 16 <sup>th</sup> 2013	First Meeting in X <sub>2</sub>
5	Saturday, May 18 <sup>th</sup> 2013	Second Meeting in X <sub>2</sub>
6	Monday, May 20 <sup>th</sup> 2013	Third Meeting in X <sub>2</sub>
7	Wednesday, May 22 <sup>nd</sup> 2013	Posttest in X <sub>2</sub>
8	Thursday, May 23 <sup>rd</sup> 2013	Questionnaire