III. RESEARCH METHOD

This chapter describes the design of the research, population and sample, and how to collect the data from the subject of the research. This chapter also describes research procedure, scoring system, analysis research instrument, how to analyze data, and hypothesis testing.

3.1 Research Design

This research was investigated in order to find out a difference of students' reading comprehension achievement before and after being taught through STAD technique and to investigate the students' activities in teaching learning process using STAD technique. In conducting this research, the researcher used *one group pretest posttest design* (Hatch and Farhady, 1982:20). Pretest and posttest were administered to see whether STAD technique can be used to increase students' reading comprehension achievement.

This research used one class. The class had both pretest and posttest and three times treatment. The design can be illustrated as follows:

$$T1 \quad X \quad T2$$

Where:

T1 : Pretest

X   : Treatment (using STAD technique)

T2 : Posttest

(Hatch and Farhady, 1982:20)

The pre-test was administrated before the treatment implemented, to see the students' basic reading comprehension. Then, the class was given the treatment of teaching reading comprehension through STAD technique. The post-test was administrated afterward, to analyze the difference of students' reading comprehension achievement before and after being taught through STAD technique.

Besides that, the researcher also checked the students' activities in teaching learning process by using observation sheet. The observation was done by two English teachers of SMP N 1 Kibang, Lampung Timur.

3.2 Population and Sample

The population of this research was the second year students of SMP N 1 Kibang Lampung Timur in the academic period of 2011/1012. There are six classes of the second year which consists of 35-37 students each class. One class (VIII A) was taken as sample that was given treatment (teaching reading using STAD technique). The class was selected randomly using lottery since there is no stratified and priority class. So that all the second year classes got the same chance to be the sample in order to avoid subjectivity and to guarantee that every class had the same opportunity.

3.3 Data Collecting Technique

In collecting the data the researcher used the following technique:

1. Pre Test

   After getting the result of try out test, the researcher gave the pretest. The

   pretest was administered in order to find out the students' reading

   comprehension achievement before treatment.

2. Post Test

   Posttest was administered at the end of treatments in order to find out the

   results of students' reading comprehension achievement after the three-time

   treatments.

3. Observation

   The observation was conducted to investigate the students' activities in

   teaching learning process using STAD technique. The observation sheet was

   used to find out the students' attention to the teacher's explanation, the

   students' response to the teacher instruction and question, and also students'

   group activity. Raters were used in collecting the data to ensure the reliability

   of the observation and to avoid the subjective of the research. The raters were

   two English teachers of SMP N 1 Kibang, who observed the class during

   teaching learning process.

3.4 Research Procedures

In collecting the data, the researcher carried out the following procedures which

can be described as follows:

1. Determining the population and sample

The population of this research was the second year students of SMP Negeri 1 Kibang Lampung Timur. The sample of this research was one class which was VIII A.

2. Selecting and determining the materials

The materials were based on the School Based Curriculum (KTSP) 2006 for the second year students. They were taken from the students' textbook, *"Scaffolding grade VIII", "Look Ahead 2" and "English in Focus"* and internet. As has been discussed in Chapter 1, this research focused on narrative text.

3. Administering Try-Out Test

The try-out test was administered in VIII B. Students were given reading texts with 40 items of multiple choices in 80 minutes.

4. Administering Pre-Test

Pre-test was administered to reveal the students' basic reading comprehension before treatments. The test was administered in 45 minutes with 20 items of multiple choices reading test.

5. Conducting the Treatments

The treatments were classroom activities which applied STAD technique. The students were taught three times by the researcher. During the treatment, the observers helped to observe the students' activities in the teaching learning process.

6. Administering Post-Test

   Post-test was given at the end of treatments in order to find out the significant increase in students' reading comprehension achievement. The test was administered in 45 minutes with 20 items of multiple choices reading test.

7. Analyzing the result of the Test

   The data was analyzed by comparing the average score (mean) of the pretest and posttest to know whether there is a difference of students' reading comprehension achievement before and after being taught through STAD technique. Then, the observation sheets from both observers were analyzed to investigate teaching learning process by counting the percentage of students' activities.

3.5 Scoring System

In scoring system students' result of the test, the researcher used percentage correct of Lyman's formula. The score of pretest and posttest were calculated by using formula as follow:

$$X\%c = 100 \cdot \frac{R}{T}$$

Where:

X%c : percentage of correct score

R : number of the right answer

T : total number of items on test

(Lyman, 1971: 95)

After administering the test and giving an individual score, researcher gave a point to each group which can be carried out the following procedures:

1. Giving an individual point

   According to Slavin (Trianto, 2007: 55), to account the improvement of individual score can be done as follow:

   Table 2. Improvement of Individual Score Calculation

No.	Score	The Improvement Score
1.	More than 10 points < standard score	0 point
2.	10 - 1 point < standard score	10 points
3.	0 – 10 points > standard score	20 points
4.	More than 10 points > standard score	30 points
5.	Maximal score	30 points

2. Accumulating the group score

   The group's score could be accumulated with counting all improvement individual score and divide it with total members of the group. Based on those average score, we could get the group score as follow:

   Table 3. Improvement of Group Score Calculation

No.	Average Score	Qualification
1.	$0 \leq N \leq 5$	-
2.	$6 \leq N \leq 15$	Good Team
3.	$16 \leq N \leq 20$	Great Team
4.	$21 \leq N \leq 30$	Super Team

3.6 Analysis Research Instrument

A good test should meet four criteria: a good validity, reliability, level of difficulty and discrimination power.

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 researcher used content validity and construct validity. Face validity only 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 are considered to be less needed. Therefore, the two types of validity used in this research as follows:

1. Content Validity

   Content validity is the extent to which the test measures a representative sample of the subject matter content. The focus of the content validity is adequacy of the sample and not simply on the appearance of the test (Hatch and Farhady, 1982:251).

2. Construct Validity

   Construct validity is concerned with whether the test is actually in line with the theory of what it means to know the language (shohamy, 1985: 74).

In this research, the researcher formulates table of specification, so every test items can be matched with the goal and the materials have been taught. The table of specification is an instrument that helps the test constructor plans the test. The content of the test items is presented in the table of specification below that based on the theory of reading (Milan, 1995) and curriculum:

Table 4. Table of specification of Data Collecting Instrument

No.	Objective		Percentage	Try Out Number
1.	Comprehension	Determining the main idea	20 %	2, 7, 9, 17, 21, 25, 36, 37
2.		The supporting detail	37.5 %	3, 5, 8, 18, 19, 20, 22, 24, 26, 27, 28, 30, 31, 33, 38
3.	Inferences	Inferences	20 %	6, 10, 12, 23, 29, 32, 34, 40
4.	Critical Thinking	Feature of the text	22.5 %	1, 4, 11, 13, 14, 15, 16, 35, 39
Total			100%	40

2. Reliability

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 researcher used split-half method to estimate the reliability of the test, since the formula is simple. It is because (1) it avoids troublesome correlation and (2) in addition to the number of item in the test, it involves only the test, mean and standard deviation, both of which are normally calculated anyhow as a matter of routine. To measure the coefficient of the reliability the first and second half group, the researcher used 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 researcher used *Spearman Brown's Prophecy Formula* (Hatch and Farhady, 1982: 247). The formula is as follows:

$$rk = \frac{2rl}{1 + rl}$$

Where:

rk   : the reliability of the test

rl   : 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 researcher 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 are:

< 0.30   = difficult

0.30-0.70   = average

>0.70   = easy

(Shohamy, 1985:79)

4. Discrimination Power

This index 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:

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

(Shohamy, 1985:81)

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

The criteria are:

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

2. If the value is negative, it means that more low students then high level students get the item correct.

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

(Shohamy, 1985:82)

3.7 Data Analysis

The data was analyzed in order to determine whether the students' reading comprehension achievement was increased or not. The researcher 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. Drawing conclusion from the tabulated results of the pretest and posttest which statistically analyzed using *Repeated Measure T-Test* computed through SPSS version 16.0.

Furthermore, in analyzing the data from the observation of students' learning activities, the researcher counted the number of activities done by the students and then calculated the percentage of the students' activities.

The formula is as follows:

$$\% A = \frac{A \; x \; 100\%}{n}$$

Where :

%A   : percentage of students 'activities

A   : number of students' activities observed

n   : number of students in the class

<div align="right">Arikunto (2006:7)</div>

The indicator of the students' activities is more than 75%. If more than 75% students are actively involved in teaching learning activities, it means that the teaching learning process can be categorized as a good level (Arikunto, 2006:7).

3.8 Hypothesis Testing

The hypothesis was analyzed by using *Repeated Measure t-test* in order to know the level of significance of the treatment effect. By seeing the probability level (p) which is shown by two tail significance as the value of significance, we can draw the conclusion (Setiyadi, 2006: 172). H_1 is approved if $p < \alpha$. The research used level of significance i.e. 0.05, and the probability of error in the hypothesis is 5%.

Therefore, the hypothesis which could be cited is as follows:

H_1 : There is a difference of students' reading comprehension achievement before and after being taught through STAD technique.

H_0 : There is no difference of students' reading comprehension achievement before and after being taught through STAD technique.

Besides that, to investigate the students' activities in teaching learning process using STAD technique, the researcher analyzed the observation data and concluded the result after the observation sheets completed by the observers.