III. RESEARCH METHOD

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 quantitative accomplished by using One Group Pretest-Posttest Design in which to investigate whether there is any significant improved in students' reading comprehension achievement through reciprocal teaching technique. Pretest and posttest were administered to investigate whether reciprocal teaching technique can be used to improve the students' reading comprehension achievement. The design of the research is describe as follows:

$$T1 \quad X \quad T2$$

Where:
T1 : Pretest
X   : Treatment (using Reciprocal Teaching Technique)
T2 : Posttest

(Hatch and Farhady, 1982:20)

Reading test was conducted whether to know the leaning result. The pretest was used to measure students' reading comprehension achievement before treatments

and posttest was used to find out the students' reading comprehension achievement after being taught by reciprocal teaching technique. After that, the means both of them pretest and posttest were compared to find out the progress before and after the treatment. Researcher gave the treatments to the students in experimental class using four strategies in reciprocal teaching technique; predicting, questioning, clarifying and summarizing. Those strategies would apply and use narrative text in order to make student more interesting with this technique.

3.2 Population and Sample

The population of this research was the third grade students of SMPN 2 Natar Lampung Selatan in the 2012/2013 academic year. There were six classes of the third grade of SMPN 2 Natar. Each class consists of 28 - 32 students. The researcher took one class as the experimental class. In this research, the researcher used random probability sampling by lottery because each class has the same opportunity to be chosen as the subject in order to avoid the subjectivity in the research (Setiyadi, 2006:39). It was applied based on that consideration that every class in the population has the same chance to be chosen and in order to avoid the subjectivity in the research. The researcher took two classes, class IX B as class experiment which consisted of 30 students and class IX C as try out class which consisted of 30 students. It was applied based on that consideration that every class in the population has the same chance to be chosen and in order to avoid the subjectivity in the research.

3.3 Data Collecting Technique

In collecting the data, the researcher used the reading tests which consist of pre-test and post-test. The result was discussed in detail in the following sections:

3.3.1 Reading Test

3.1.1.1 Pre Test

The pre-test was administered on July, 23rd, 2013 before the treatment, in order to know the competence of students in reading. The researcher used the objective test in the form of multiple choices with four options of each item. One of the options is correct answer and the rests were as distracters.

3.1.1.2 Post Test

The post-test was administered on August, 1st, 2012 after finishing the treatments. It was aimed to identify whether there was a difference between the students' achievement in reading comprehension or not after the implemention of reciprocal teaching technique.

3.3.2 Questionnaire

Questionnaire consists of a list of questions to gather data from the respondents. In this case, the respondents are second grade students of SMPN 2 Natar. The respondents are asked to answer all the questions and also they have to give their opinion why they choose their answer. Questionnaire is used to find out the students' problem in teaching reading using reciprocal teaching technique. This questionnaire consists of 10 questions including questions about reading comprehension and reciprocal teaching technique. It can be seen in this following table specification:

Table 1. Table of Specifications of Questionnaire

NO.	Aspects	Number of Items	Precentage (%)
1.	**Reading**	1, 7, 8, 9, 10	50%
2.	**Reciprocal Teaching Technique**	2, 3, 4, 5, 6	50%
	Total	**10**	**100%**

3.4 Research Procedures

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

1. Selecting and Determining the Population and Sample

The populations of this research were the third grade of SMPN 2 Natar. The researcher chose two classes of the third grade at SMPN 2 Natar, which were divided as experimental class and try out class.

2. Selecting and Determining the Materials

The materials were based on the School Based Curriculum (KTSP) 2006 for the first year students. The materials were taken from text book and internet. The researcher used one type of reading text that was narrative text.

3. Determining the Research Instrument

In this research the researcher used reading test as the instrument that consist of pre test and post test. Reading test consisted of 40 items with four alternative answers for each, they were A, B, C or D which consist of one the correct answer and the rest were the distracters.

4. Administering Pre Test

The pretest was administered from the result of try out test by preparing how many items, and what material that was given to the students before treatments. The test was multiple choices that consist of thirty items and it was conducted for fourty five minutes.

5. Conducting Treatment

The treatments were classroom activities which apply reciprocal teaching technique. The students were taught three times treatment by using narrative text include five aspects of reading through reciprocal teaching technique. During the researcher gave three times treatments to the students in experiment class, the researcher gave some topic. It were about The Parakeet King, An Ant and Chrysalist, and A Beautiful Girl and The Prince.

6. Administering Post Test

Posttest was used to evaluate the students' reading comprehension achievement after giving the treatments. The test was multiple choices that consist of thirty items and it was conducted for fourty five minutes.

7. Administering Questionnaire

Questionnaire was used to find out the students' respond in teaching reading using reciprocal teaching technique. Questionnaire was used to know the students respond in teaching reading by using reciprocal teaching technique.

8. Analyzing the result of the Test

Both of the pretest and posttest result of the class was analyzed using Repeated Measure T-Test to compare the data average score (mean) of both pretest and posttest in one sample (Hatch and Farhady, 1982:114). It was tested in order to find out whether there was an improvement of students' reading comprehension achievement after being taught through reciprocal teaching technique.

3.5 Research Schedules

In order to gain the regularity and to avoid irregularity in doing all the research procedures, the researcher made a time schedule for experimental class in one week.

Table 2. The Schedule of the Research

NO	Meeting	Type of Action
1.	July, 16th 2013	Administering Try Out
1.	July, 23rd 2013	Administering pre-test
2.	July, 24th 2013	Treatment 1
3.	July, 30th 2013	Treatment 2
4.	July, 31st 2013	Treatment 3
6.	August, 6th 2013	Administering post-test
7.	August, 7th 2013	Administering questionnaire

3.6 Scoring System of Reading Test

In this research, the researcher used Henning's formula to find out the result of the test, with formula as followed:

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

Where:
PS : percentage score

R   : the total of right answer
N   : total item   (Henning, 1987)

3.7 Try Out of Research Instrument

The test was tried out in order to determine the quality of the data collecting instrument, that were its validity, reliability, level of difficulty, and discrimination power. Validity of the test validity of the test is extent to which it measure what it is supposed to measure and nothing else (Heaton, 1975:159). To measure whether the test in this had good validity, the researcher used content and construct validity to measure that the test had a good validity.

3.7.1   Validity

Validity of the test is extent to which it measure what it is supposed to measure and nothing else (Heaton, 1975:159). Every test should be valid as the constructor can make it. The researcher use content and construct validity to measure that the test has a good validity.

3.7.1.1 Content Validity

According to Heaton (1975:160) content validity is the intended to know whether the test items are good reflection of what will be covered. The test took from the material that have been taught to the students and to know whether the test have a good content validity, the items of the test is discussed with the experts (lecture or advisor) to measure the degree of agreement.

Table 3. Specification of Reading Test

No	Skills of Reading	Item Number	Total	Percentage of item
1	Identifying the main idea	1, 2, 14, 22, 23, 30, 33, 35, 40	9	22.5%
2	Determining Causes/Effect	3, 6, 20, 28, 31, 37, 38	7	17.5%
3	Identifying a Main Character	4, 10, 15, 26, 29, 36	6	15%
4	Using Context Clues	5, 7, 9, 11, 13, 17, 18, 19, 21, 24, 27, 32, 34	13	32.5%
5	Identifying Reading Purpose	8, 12, 16, 25, 39	5	12.5%
	Total	**40 items**		**100%**

3.7.1.2 Construct Validity

Construct validity measures whether the construction had already referred to the theory, meaning that the test construction had already in line with the objective of learning (Hatch and Farhady, 1982). Construct validity concerns whether the tests are true reflection of the theory of the trait – in our case - language which is being measured. If a test has construct validity, it is capable of measuring certain specific characteristics in accordance with a theory of language behavior and learning.

To determine whether the test had a good construct validity, the test items had been adopted from educational goal stated on 2006 English curriculum, the syllabus for second year of the curriculum, the students was required to be able to master reading comprehension' skill on identifying main idea 1, determining cause/effect 2, identifying main character, using context clues 4, and indentifying reading purpose.

3.7.2   Reliability

Reliability refers to whether the test is consistent in its score and gives us an indication of how accurate the test score are. The test is 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:

$$r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$$

where:
r_{xy} : coefficient of reliability between odd and even numbers items
x : odd number
y : even number
x^2 : total score of odd number items
y^2 : total score of even number items
xy : total score of odd and even number

(Hatch and Farhady, 1982:244)

Spearman Brown's Prophecy Formula (Hatch and Farhady, 1982: 247) is used to find out the coefficient correlation of the whole items.

The formula is as follows:

$$rk = \frac{2r_{xy}}{1 + r_{xy}}$$

Where:
rk   : The reliability of the test
r_{xy} : Coefficient of reliability between the first half and the second half items

The criterion of reliability is:

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

(Hatch and Farhady, 1982: 247)

Then after that, those part were calculated by using Pearson Product Moment formula showed that the reliability of the half test (r_{xy}) was 0.90 (see Appendix 5). Then by using Spearman Brown's Prophecy Formula, it was found that the reliability of the whole items (r_k) was 0.947 (see Appendix 5). According to criteria of the test reliability, the reliability of 0.947 point belongs to high level, so it, indicated that the data collecting instrument in this research was reliable and good. Therefore, the results of the test were believed as the reflection of their reading ability which was accurate and consistent.

3.7.3 Level of Difficulty

Henning (1987:49) states that the most important characteristic of an item to be accurately is its difficulty. The researcher divided the students into two group, 50% for upper group who had the highest score and 50% for lower group who had the lowest score. 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)

The result of try out test showed that 10 out of 40 items were poor (see appendix 3). There were 2 easy items (27, 30), 17 average items (1, 2, 3, 4, 7, 8, 10, 11, 12, 14, 16, 17, 18, 20, 21, 22, 23, 24, 25, 26, 28, 29,32, 33, 34, 35, 36, 39, 40), and 8 difficult items (5, 9, 13, 15, 19, 31, 37, 38). According to the analysis above, those items should be dropped, because they did not fulfill the criteria of level of difficulty.

3.7.4 Discrimination Power

Discrimination power is used to know the ability of the item to differentiate between the students who had high ability and those who had low ability. Seeing the discrimination index, the researcher 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 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.

Based on the try out test there were 30 good items (1,2, 3, 4, 8, 10, 11, 12, 14, 16, 17, 18, 20, 21, 22, 23, 24, 25, 26, 28, 29, 32, 33, 34, 35, 36, 40), and 10 poor items (5, 9, 13, 15, 19, 27, 30, 31, 37, 38). It was finally decided that 20 items were good and the rest, 10 items were bad and should dropped because they did not fulfill the criteria of the level of difficulty, discrimination power and also validity of the test.

It could be concluded that, the researcher used 30 questions with different item number in pretest and posttest. The specification was shown in the following table:

Table 4. The Specification of Pretest and Posttest

No	Skill of Reading	Item Number in pretest	Item Number in Posttest	Total Question in Each Test	Percentage (%)
1.	Identifying Main Idea	1, 2, 11, 17, 18, 25, 27, 30	3, 4, 11, 15, 19, 20, 29, 30	8	26.7%
2.	Determining Causes/Effects	3, 5, 16, 22	2, 21, 23, 26	4	13.2%
3.	Identifying Main Character	4, 8, 21, 23, 28	7, 8, 16, 22, 27	5	16.7%
4.	Using Context Clues	6, 9, 13, 14, 15, 19, 24, 26	1, 5, 9, 13, 14, 18, 24, 28	8	26.7%
5.	Identifying Reading Purpose	7, 10, 12, 20, 29	6, 10, 12, 17, 25	5	16.7%
Total				**30**	**100%**

3.7.5   Normality Test

This test was used to measure whether the data in two classes were normally distribution or not. The data were tested by One-sample Kolmogorov-Smirnov Formula (SPSS 17.00).

Hypothesis for the normality test were as follows:

H_0 = the data is distributed normally

H_1 = the data is not distributed normally

The criteria are as follows:

H_0 is accepted if significant value exceeds level of significance at 0.05, meanwhile,

H_0 is rejected if significant value does not exceed level of significance at 0.05.

3.8 Data Analysis

Analyzing data was very important part of the research process. These patterns helped a researcher to identify findings from the study. By analyzing the data throughout the collection period, the researcher was able to begin and interpret what was occurred in classroom and the truth of students' activities and the effects of reciprocal teaching technique are implemented. After the researcher collected the data from reading test, the researcher was scoring the test.

In analyzing the data, the researcher was scoring pretest and posttest and drawing conclusion into the tabulated result of the pretest and posttest using statistical

computerization i.e. *Repeated Measure T-Test of Statistical Package for Social Science (SPSS) 17.00 for windows* to test whether progress of students' gain was significant or not, in which the significant was determine by $p < 0.05$ (Hatch and Farhady, 1982: 114).

3.9 Hypothesis Testing

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

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

The hypothesis was analyzed by using *Matched T-Test* with *Statistical Package for Social Science (SPSS) version 17.00*. The level of significant is 0.05, and the probability of error in the hypothesis is 5%.

The criteria for accepting the hypothesis are as follows:

1. H_0 is accepted if the t-table is higher than t-ratio.

    It means that there is no significant difference on students' reading comprehension achievement before and after giving pre questioning, specifically in terms of literal, interpretative and critical comprehension.

2. H_0 is rejected if the t-table is lower than t-ratio.

    It means that there is significant difference on students' reading comprehension achievement before and after giving pre questioning, specifically in terms of literal, interpretative and critical comprehension.