III. RESEARCH DESIGN

A. Research Design

In this research, the writer used ex post facto design which concern in finding a direct relationship between the independent and dependent variables. In other words, the writer selected the population, sample, and variables in order to find a cause-and-effect relationship between the variables (Hatch and Farhady, 1982:26). Ex post facto were often used when the researcher did not have control over the selection and manipulation of the independent variables.

Throughout this research what the writer meant by ex post facto was field-independent and dependent, as independent variable, which was a characteristic that a subject possesses before a study begins. Based on the questionnaire given to the students, the writer had classified the students into two groups. Ex post facto of dependent variable was that the result of reading achievement test of students which made by the writer based on the syllabus of the SMPN 16 Bandar Lampung.

Ex post facto design that the writer used in this research was called a criterion group design. In this design, two groups of students were compared on one measure.

G1 T1

G2 T1

Where:

G1: Field Independent as an independent variable

G2: Field Dependent as an independent variable

T1: Reading Achievement as a dependent variable

B. Population and Sample

The subject of this research was the second year students of SMP Negeri 16 Bandar Lampung in academic year of 2010-2011. There was one class as the sample of this research from five classes. The students of that class had been classified into two groups that were field-independent and field-dependent.

C. Data Collecting Technique

The instrument of this research was reading test and questionnaire. There were three kinds of test that were tried out test, questionnaire and reading test.

They were as follow:

1. Try Out Test

a) This test has aim to know the validity and reliability of the test. The total items were 50 and it was allocated within 90 minutes.

b) The questionnaire totals were 40 and it was allocated within 60 minutes.

2. Questionnaire

Questionnaire had given to second year students of SMPN 16 Bandar Lampung. The purpose was to categorize the students into two groups that were field-independent and field-dependent personality.

3. Reading Test

Reading test administered to measure the students' reading comprehension ability in each group, namely field-independent and field-dependent. The test consisted of 25 items and it allocated within 80 minutes.

D. Variables

In this research, the writer organized two variables; they were dependent and independent variables. The dependent variable was the variable which the writer observed and measured to determine the effect of independent variable. On the other hand, the independent variable was the major variables which the writer hoped to investigate. It was the variable which was selected; manipulated and measured by the writer (Hatch & Farhady, 1982: 15).

From the explanation above, the writer determined the variables as follows:

1. Field-Independent students as independent variable.
2. Field-dependent students as independent variable.
3. Students' reading achievement as dependent variable.

E. Instrument of the Research

To gain the data, the writer employed two kinds of instrument. The instruments were questionnaire and the result of the test of reading achievement.

Each kind of instrument will be explained as follows:

1. Questionnaire

In order to find the data accurately in dividing the class into two groups, they were field independent students and dependent students; the writer gave questionnaire to the population. According to John W. Best (1997), a questionnaire was used when factual information was desired. Questionnaire was an instrument which was very effective to measure aspects and variables in associated with personality, psychology aspect or sociology (Setiyadi, 2006: 54). The writer had classified the students into two groups that were field independent and dependent based on questionnaire whose core expressed how act and attitude of the students against the specific even to find out their cognitive style.

Table 1. Table Specification of Questionnaire

Indicator	Statements	Total Number
1. Analytic	1, 2, 3, 4, 5, 37, 38, 39, 40.	9
2. Independent	6, 7, 8, 9.	4
3. Self Confidence	10, 11, 12, 13, 14, 22, 23, 24, 30, 31, 32, 33.	12
4. Consistency	15, 16	2
5. Less Socialize	17, 18, 19, 20, 21.	5
6. Self Control	27, 28, 29.	3
7. Competitive	34, 35.	2
8. Egoistic	25, 26, 36.	3
Total Number		40

2. The Reading Test

In this research, the writer tested the students by using some question that had made by the writer based on the syllabus in the SMPN 16 Bandar Lampung.

F. Research Procedure

The procedures in administering the research were as follow:

1. Determining the Population and Sample

The population of this research was the second year students of SMPN 16 Bandar Lampung. The sample of this research was one class for treatment class which was class VIIIA. The writer had given the students some questionnaire to separate them into two groups they were field-independent and field-dependent.

2. Administering the Try Out Test

It was conducted to measure the reliability of the test and to make sure whether the test was good or bad for students. The test was tried out to the students whose level was equal to the sample of the research. It was administered to find out the quality of the test before it was used, whether the items were good or not in validity, reliability, level of difficulty, and the discrimination power. This exam used reading text with 50 items of multiple choices in 90 minutes. The maximum score was 100 points; each correct answer had 2 points. After conducting try out the writer finds that the good question were 30 items which had good validity and reliability.

3. Administering the Questionnaire

It use for knowing the validity and reliability of the questionnaire. The total items in questionnaire were 40. The questionnaire covered field-independent and field-dependent personality.

4. Administering the Reading Test

Giving the reading test to the students for both of groups, here was field-independent and field-dependent. The test consists of 30 items and it allocated within 80 minutes.

5. Determining the Research Instrument

The instrument of this research was objective reading text of multiple choices test. This was supported by Henning (1975), who stated that to measure reading comprehension, requesting students to write short-sentence answers to written questions was less valid a procedure than multiple-choice selection (as cited in Henning, 1978: 48). Objective test used for measuring the students reading comprehension achievement from the two groups. The test consisted of 50 items of multiple choices of comprehension questions and some reading text. The question had four alternative answers for each (A, B, C and D), one was the correct answer and the rest were the distracters.

6. Analyzing the Data

The result of the reading comprehension test had been compared between field-independent and field dependent, which groups were, had a good score from that test. It had tested in order to find out whether there was a significant difference in students' reading comprehension achievement both of the two

groups. The data of the research had examined by using Independent-group T-Test. The data was statistically computed through the Statistical Package for Social Science (SPSS).

G. Data Treatment

According to Hatch and Farhady was quoted by Setiyadi (2006), using T-Test for the hypothesis testing had three underlying assumptions, they were:

1. The data was interval ratio
2. The data had been taken from random sample in population
3. The data had been distributed normally.

Therefore, the writer used the following procedures to treat the data treatment:

1. Normality Test

Normality test used to measure whether the data in try out class and experiment class was normally distributed or not (Hatch and Farhady in Setiyadi: 2006). The score of the students both groups here means field-independent and field dependent were analyze to gain the normality test. In this research, H_1 was accepted if $p>\alpha$ and the writer used of significance 0.05.

Table 2. The result of the normality testing can be seen in table below:

	Kolmogrov- Smirnov Z	
	N	Sig. (2-tailed)
Field-independent	18	0.298
Field-dependent	17	0.426

Since the significant was higher than 0.05, it could be concluded that the data was distributed normally. The significant in field-independent group was 0.298 > 0.05 and field-dependent group 0.426 > 0.05. (see Appendix 16)

H. Scoring System

The scoring system of the students work, the writer used Arikunto's formula (1982:271). The ideal highest score will be 100. The score of reading test had calculated by using the following formula:

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

Where:

S : the score of the test

R : the total of the right answer

N : the total items (Arikunto, 2005: 236)

I. Criteria of Good Test

1. Validity

Validity refers to the extent to which an instrument really measures the objective to be measured and suitable with the criteria (Hatch and Farhady, 1982: 250). A test can be considered to be valid if it can precisely measure the quality of the test. There were four types of validity: (1) content validity, (2) construct validity and (3) criterion-related validity.

To measure whether the test had a good validity, the researcher used content and construct validity since the other two were considered to be less needed. Face validity only concerns with the layout of the test. Criterion-related validity had concerned with measuring the success in the future, as in replacement test (Hatch and Farhady, 1982: 251).

b. Content Validity

According to Hatch and Farhady (1982: 251), content validity was the extent to which the test measures a representative sample of the subject matter content. Good test was the test which was appropriate with the material had been taught and the material had developed from the educational goal. The test instrument had designed to measure reading comprehension ability in line with educational goal stated on syllabus for second grade of junior high school students.

In this research, the content of the test items was presented in the table of specification below:

Table 3. Table Specification of Data Collecting Instrument

No.	Reading Skills	Item Number	Percentage of Items
1.	Determining Main Idea	2, 8, 15, 23	13%
2.	Finding Specific Information	3, 6, 11, 17, 21	17%
3.	Determining concept of text (generic structure / language features)	4, 9, 19, 21, 25	17 %
4.	Finding Reference	5, 7, 18, 22, 27, 30	20%
5.	Finding Inference	1, 12, 16, 24, 29	17%
6.	Understanding Vocabulary	10, 14, 20, 26, 28	16%
TOTAL		30	100%

c. Construct Validity

Construct validity concerns with whether the text was actually in line with the theory of what it meant to know the language. (Shohamy, 1985: 74).

d. Criterion-related validity

Criterion-related validity was defined as the extent to which test performance is related to some other valued measure of performance.

2. Reliability

Reliability refers to the extent to which a test produced consistent result when administered under similar condition (Hatch and Farhady, 1982: 244). In addition, Hatch and Farhady (1982: 246) also state that, there were three basic methods of estimating reliability: (1) test-retest, (2) parallel test, and (3) internal consistency methods.

The first, test-retest was administered in order to determine the stability of the test results. Reliability was obtained by administering a form test to the same students and computing the correlation between the two administrations. The second, parallel test was administered in order to determine the correlation between two

alternate or parallel forms of tests, and called as a coefficient of equivalence. The tests has equivalent in length, difficulty, time limits, format and all other such aspects. The third, internal consistency method was administered in order to estimate reliability from a single administration of a single test. There were three basic methods for calculating reliability from an examination of internal consistency of the test: split-half method, Kuder-Richardson Formula 20, and Kuder-Richardson Formula 21 (Hatch and Farhady, 1982: 246)

Split-half method used by the writer to estimate the reliability of the test to make sure that test appropriate for testing or not. To use the split-half method, the researcher classified the test items into two similar parts, i.e. odd and even numbered. By splitting the test into two equal parts, it was made as if the whole tests had been taken twice. The correlation between those two parts encountered the reliability of half test by using Pearson Product Moment (Henning, 1987: 60). After writer had obtained the reliability of half test, the writer then used Spearmen Brown's Prophecy Formula (Hatch and Farhady, 1982: 246) to determine the reliability of the whole test.

To measure the correlation coefficient of the reliability between odd and even number (reliability of half test), the writer used Pearson Product Moment (Henning, 1987: 60) in the following formula:

$$r_{xy} = \frac{N\sum xy - \left(\sum x\right)\left(\sum y\right)}{\sqrt{\left[N\sum x^2 - \left(\sum x\right)^2\right]\left[N\sum y^2 - \left(\sum y\right)^2\right]}}$$

Where:

r_{xy} : the correlation coefficient of reliability between odd and even

N : the number of students who take part in the test

x : the total numbers of odd number items

y : the total numbers of even number items

x^2 : the square of x

y^2 : the square of y

$\sum x$: the total score of odd number items

$\sum y$: the total score of even number items

(Henning, 1987: 60)

After getting the reliability of half test, the writer then used Spearman Brown's Prophecy formula (Hatch and Farhady, 1982: 246) to determine the reliability of the whole test as follows:

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

Where:

r_k : the reliability of the whole test

r_{xy} : the reliability of half test

(Hatch and Farhady, 1982: 247)

The criteria of reliability are:

0.90 – 1.00 : High

0.50 – 0.89 : Moderate

– 0.49 : Low

a. Level of difficulty

In order to see the level of difficulty, the writer used the following formula:

$$LD = \frac{R}{N}$$

Where:

LD : level of difficulty

R : the number of students who answer correctly

N : the total number of students following the test

The criteria are:

<0.30 = difficult

0.30 – 0.70= average

>0.70 = easy

(Shohamy, 1985: 79)

b. Discrimination Power

The discrimination power used to discriminate between weak and strong examinees in the ability being tested. The students of try out class were divided into two groups, upper and lower students. The upper students mean the students who answer the questions correctly were more than the lower students who answer the questions correctly (upper students' score > lower students' score). To determine the discrimination power, the writer used the following formula:

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

Where:

DP : discrimination power

U : the proportion of the upper group who answer correctly

L : the proportion of the lower group who answer correctly

N : the total number of the students

The criteria:

a. If the value was positive, it meant that more high level students get correct answer than low students.
b. If the value was negative, it means that more low level students get correct answer than the high level students (it can be said that the test item was bad item, should be omitted).
c. If the value was zero, it meant that there was no discrimination.
d. In general, the higher the discrimination index will be the better. In classroom situation most items should be higher than 0.20 indexes.

(Shohamy, 1985:82)

In accordance with Shohamy (1985: 82), there were some criteria of discrimination power of an item. An item was excellent if the discrimination index ranges from 0.71 to 1.00. A good item ranges from 0.41 to 0.70. A satisfactory item ranges from 0.21 to 0.40. An item was poor if the discrimination index ranges from 0.00 to 0.20, and an item was bad if the discrimination index was negative.

J. Hypothesis Testing

1. H_0 : There is no significant difference of students' reading comprehension between field-independent and filed-dependent personality.

   H_1 : There is a significant difference of students' reading comprehension between field-independent and filed-dependent personality.