III. RESEARCH METHOD

This chapter discusses research design, population and sample, data collecting technique, variables, try out of the research instrument, research procedures, data analysis, scoring system and hypothesis testing.

3.1 Research Design

The writer used a quantitative method because it is functional for providing factors connected with second language development. Setiyadi (2006:5) cites that quantitative design aims to investigate a theory that has been existed and the researcher should look for the data in order to support or reject it. It is also chosen because the problem that will be solved is actual (existing on the facts) and it occurs in recent time.

The research design of the research is Ex Post Facto which concern in finding a direct relationship between the independent and dependent variables. Ex post fact in this research is called a criterion group design that two groups of students will be compared on one measure.

The design is formulated as follow :

G1   T1

G2   T1

Where :

G1 : Field independet as an independent variable

G2 : Field dependent as an independent variable

T1 : Reading achievement as dependent variable

3.2 Setting of the Research

This quantitative research focused on cognitive styles in language learning. This cognitive learning is devided into two types, they are : field independence and field dependence. The material used for this research is reading narrative text. The data of students cognitive style was gained from quesstionnaire and the reading comprehension achievement data was gained from reading narrative text.

3.3 Population and Sample

The population of this research was all the second grade students at SMAN 1 Ambarawa in the academic year of 2012/2013 consisting of 34 to 35 students in each class. There were seven classes available at the second grade, and the researcher took one class as the try out class; it was XI IPA 3 and one class as the experimental class; it was XI IPA 1. Both of classes were chosen randomly through lottery drawing. The experimental class was classified into two groups namely, field-independent and field-dependent.

3.4 Data Collecting Technique

In collecting the data, researcher used the following techniques:

1. Questionnaire, it is a set of question and statement to be answered by the students to categorize them into two groups that were field-independent and dependent students. There will be 30 items in this questionnaire.

   Table 1. Table of Specification of Questionnaire :

Indikator	Statement	Total Number
Independence/Dependence	1, 2, 3, 4, 10	5
Competitiveness	5, 6, 7, 9, 12	5
Self-confidence	8, 11, 13, 14, 15	5
Socialization	17, 18, 21, 22, 28	5
Emphatic Value	16, 19, 20, 29, 30	5
Perceptive	23, 24, 25, 26, 27	5
Total Number		30

2. Reading comprehension test, this test will be consisted of 40 items of multiple choice for 60 minutes.

   Table 2. Table of Specification of Reading Try Out Test

No.	Reading Skills	Items Number	Percentage of Item
1.	Identifying Supporting Text Sentence 3	3, 11, 12, 16, 24, 33	15 %
2.	Identifying Topic Sentence	5, 6, 23, 37, 30, 39	15 %
3.	Identifying Main Idea 2	1, 4, 14, 18, 25, 29	15 %
4.	Making Reference	9, 10, 21, 25, 27, 38	15 %
5.	Making Inference – Visual Clues	7, 15, 19, 20, 22, 26, 34, 36	20 %
6.	Analysing Visual & Context Clues	2, 8, 13, 17, 28, 31, 32, 40	20 %
Total		40 items	100%

3.5 Variables

In this research, the writer will determine three variables :

    a) Field independet as an independent variable

    b) Field dependent as an independent variable

    c) Reading achievement as dependent variable

3.6 Try out of the Research Instrument

The try out test was done to prove whether the test had good quality or not. The test was said to have a good quality if it had a good validity, reliability, level of difficulty and discrimination power.

3.6.1 Reading comprehension reading test

Individual assessment task provides limited representation of reading comprehension; however, many reading researchers continue to use only task to measure comprehension. In this research, the researcher uses multiple-choice items in assessing the students' reading comprehension.

3.6.1.1 Validity of the reading test

Validity refers to the extent to which the result of the procedure serve the uses for which they were intended (Hatch & Farhady, 1982:250). The validity of the test will be seen from the content validity. The content validity emphasizes on the equivalent between the material has been given and the items tested. Simply, the items in the test must represent the material that has been taught. While construct

validity is concerned with whether the test is actually in line with the theory of what it means to know the language (Shomamy, 1985:74). To measure whether the test had a good validity, the researcher will use content and contruct validity.

3.6.1.2 Reliability of the reading test

Reliability refers to the extent to which the test is consistent in its score and gives us an indication of how accurate the test score are (Hatch and Farhady, 1982:244). The test will be determined by using Pearson Product Moment which measures the correlation coefficient of the reliability between odd and even number (reliability of half test) in the following formula:

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

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 : square of x

y^2 : square of y

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

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

(Hatch and Farhady, 1982:199)

After getting the reliability of half test, the researcher will use Spearman Brown to determine the reliability of the whole tests, as follows:

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

where:

r_k : the reliability of the whole tests

r_{xy} : the reliability of half test

(Hatch and Farhady, 1982:247)

The criteria of reliability are as follows:

0.90 – 1.00   : high

0.50 – 0.89   : moderate

0.00 – 0.49   : low

3.6.1.3 Level of difficulty

Level of difficulty is calculated by using the following formula:

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

Notes:

LD   : the level of difficulty

R   : the number of the students who answer correctly

N   : the total of the students in the higher and lower group

(Heaton, 1975:182)

The criteria of the difficulty level are :

< 0.30   = difficult

 0.30- 0.70   = average

> 0.70   = easy

3.6.1.4 Discrimination Power of the Test

Discrimination power refers to "the extent to which the item differenciates between high and low level students on that test. Discrimination power is calculated by using the following formula:

$$D = \frac{U - L}{^1/_2\, N}$$

Notes:

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 the students

(Shohamy, 1985:82)

The criteria of discrimination power are:

0.00 – 0.20   : Poor

0.21 – 0.40   : Satisfactory

0.41 – 0.70   : Good

0.70 – 1.00   : Excellent

- (negative)   : Bad items (should be omitted)

3.6.2 Questionnaiers

The writer classified field-independent aspect in three points, there are independent, competitive, self confident. In field-dependent also classified in three point, there are socialized, emphatic and perceptive.

3.6.2.1 Validity of the Questionnaires

In order to filled validity of the questionnaires, the researcher discussed the questionnaires with the other researcher as another rater and the English teacher of SMAN 1 Ambarawa.

3.6.2.2 Reliability of the Questionnaires

Questionnaires were scored based on Likert scale, the score ranges 1 to 4. To measure the consistency of items of the questionnaires the researcher used Cronbach Alpha. The alpha ranges between 0 and 1. The higher the alpha, the more reliable the questionnaire will be (Setiyadi, 2006:167). Therefore, before the questionnaire was given to the sample class, the writer would find the reliability of the questionnaires to the students in try-out class.

$$r_{11=}\left(\frac{n}{(n-1)}\right)\left(\frac{1-\sum \sigma_i^2}{\sigma_i^2}\right)$$

Explanation:

r_{11} = Reliability

n   = The number of items

$\sum \sigma_i^2$ = Total variance of all items

σ_i^2 = The total of variance

To find the variance, the researcher uses the formula as follow:

$$\sigma^2 = \frac{\sum X^2 - \frac{(\sum X)^2}{N}}{N}$$

Explanation:

σ^2 = Variants

$\sum X^2$ = The number of date quadrate

$(\sum X)^2$ = The number of date being quadrate

N   = The number of data

And for knowing the classification of reliability are as follows:

a. Between 0,800 to 1,00 = Very high reliability

b. Between 0,600 to 0,800 = High reliability

c. Between 0,400 to 0,600 = Moderate reliability

d. Between 0,200 to 0,400 = Low reliability

e. Between 0,00 to 0,200 = Very low reliability

The researcher analyzed the reliability to know whether or not the questionnaire was reliable. The questionnaire was considered reliable if it has good level of reliability. A reliable measure is one that provides consistent and stable indication of the characteristic. To measure the reliability of the questionnaire, the researcher used alpha formula after she has found the variance of all items.

3.7 Research Procedure

The researcher used the following procedure in order to collect the data:

1. Determining the research problem.

   The first step of this research was determined the problem. The writer was determined what kind of problems appear in the classes.

2. Determining the population and selecting the samples

   The population of this research will be the second grade students of SMA N 1 Ambarawa in the academic year 2012/2013 that consist of 7 class. The sample of this research is one class choosing randomly.

3. Administering the try out of reading comprehension and questionnaires

   This is to find out the quality of the test before it was used, wheter the items were good or not validity, reliability, level of difficulty and the discrimination power. The researcher will first try out the instrument on another class in the same grade before the reading test is admunistered. The total items of the reading comprehension try out test will be 40 and it will be allocated within 60 minutes. The total items of questionairre try out will be 30 item.

4. Administering the questionnaires

   The content of this questionnaire cover field-independent and field-independent. There will be 30 items of questionnaires.

5. Administering the reading test

   In this test, the students will be asked to do multiple choice test consist of 30 items of narrative reading comprehension questions.

6. Analysing the data

   In order to find out whether there is significant difference in students reading comprehension achievement of both groups, the data will be statistically computed through the Statistical Package for Social Science (SPSS).

3.8 Data Analysis

According to Hatch and Farhady quoted by Setiyadi (2006), the hypothesis testing has three underlying assumption using T-Test :

1. The data was interval ratio

2. The data had been taken from random sample in population

3. The data had been distributed normally.

1. Normality test

Normality test is used to measure the data was normally distributed or not. The score of the students of both groups, field independent and field dependent, was analyzed to gain the normality test. In this research, H_1 is accepted if $p > \alpha$ and the writer used of significance 0.05.

3.9 Scoring System

In scoring the students' result of the test, the writer will use Lyman's formula (1971:95).

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

(Lyman, 1971:95)

Where :

X$_{\%c}$ =percentage of correct score

R   = number of right answers

T   = total number of the items on test

3.10 Hypothesis Testing

H$_0$:   There is no significant difference of students reading comprehension between field-independent and field-dependent personality.

H$_1$:   There is significant difference of students reading comprehension between field-independent and field-dependent personality.

(Hatch and farhady, 1982: 111)

The criteria :

1. If t-table is lower than T-ratio : H_1 is accepted there is significant different of students reading comprehension between field-independent and field-dependent personality.

2. If the t-table is higher than T-ratio : H_0 is accepted there is no significant different of student reading comprehension between field-independent and field-dependent personality.