

CHAPTER III

RESEARCH METHOD

The description of the methodology of the research will be presented in this chapter. Research methodology is an important part in conducting a study. It is needed to be described because it contains the way of general logic and theoretical perspective for a research project. This chapter presents the research design, subject of the study, data collection, data analysis used in the research.

3.1 Research Design

Based on Best (1981), research design is the systematic and objective analysis and recording of controlled observations that may lead to the development of generalizations, principles, or theories, resulting in predictions and possibly ultimate control of events. Several kinds of design are there in the research, such as; fundamental, applied research, action research, assessment, evaluation, and descriptive research. There are two kinds of descriptive research; they are descriptive qualitative and descriptive quantitative research design. In this study researcher will use a descriptive quantitative research because variable cognitive style and reading comprehension in this study will be calculated into number then examine it.

In the descriptive research there are several kinds of study that can be adopted. They are case study, survey, developmental study, follow up study, discourse analysis, content analysis, assessment, curriculum and material development (developing study), and correlational study.

A correlational study will be applied in this research. Correlation is area of statistics which is concerned with the study of systematic relationships between two (or more) variables (Butler, 1985: 137). There will be two variables in this study, cognitive style and reading comprehension ability. The independent variable is cognitive style (X) and dependent variable of the research is reading comprehension ability (Y). Researcher will investigate the relationship of these two variables, whether there is any significant correlation between them or not.

3.2 Sample of the Study

In this study, researcher will apply cluster sampling. Based on Ary (1990) cluster sampling is the way to collect the sample by random of the group/ class to get whether the class that is representative as the sample or not. In this current research, researcher will take students of English Education Department who enrolled as under graduated students of University of Muhammadiyah Gresik in the fourth semester as the subject of the study. The reason researcher selects fourth semester students because the researcher wants to explore the EFL learners' cognitive style and reading comprehension in the advance level in English course. The subjects of the study ever got reading class especially for reading for scientific and extensive reading. There are two classes in the fourth semester, A class and B class. Researcher chooses B class as representative of the fourth semester as sample. Researcher assumed A class and B class have same level in the English course, and they got same material as well.

3.3 Data Collection

Data collection is collecting specific information about students' academic or behavioral performance in the teaching learning process. Collecting data is assistance to the researcher to find the data in the field of study which examined. In this study researcher use some instruments to collect the data. Furthermore, researcher will explain the procedure of collecting data in this study. The instruments and procedure of data collection used in this research are set as follows:

3.3.1 Instrument

Instrument is one of tools in the research to collect the data. There are several instrument can be used in the research, such as test, questionnaire, observation, interview, documentation, attitude scale, field note and so on. A good instrument must me standard and valid. This research uses a Group Embedded Figures Test (GEFT) and TOEFL test. Group Embedded Figures Test (GEFT) is used to measure students' cognitive style, whether they are included to field dependent or field independent group. Researcher has found some types of instruments to measure cognitive style, but researcher found that GEFT is the appropriate one to the goal of this current study. The goal of this study is to find out the cognitive style of the learners, by using GEFT we can know whether the leaner included to the dimension of field dependent or field independent. Based on Blanton (2004) GEFT is the most widely accepted test of measurement for the cognitive styles of field-dependence and

field-independence. TOEFL test is used to get score of students' comprehension ability. In this research, a paper based TOEFL will be tested to the students

3.3.1.1 Group Embedded Figures Test (GEFT)

Group Embedded Figures Test (GEFT) is an instrument to measure cognitive style of the students by using complex figures. This instrument first developed by Witkin, Oltman, and Raskin in 1971. Group Embedded Figures Test is used to measure participants' Field Independence/Field Dependence cognitive style.

There are three sections of the GEFT which contains increasingly complex geometric figure with the first practice section containing seven figures. Meanwhile the second and the third sections are each containing nine figures. The participants of the study are requested to locate and trace a simple form embedded within the complex figure. The participants have to trace as many of the simple forms as they can within a limited time given. For the practice section they will be given two minutes to do and they will be given limit time of five minutes for each of the second and third sections. The score for each number in the GEFT is 1(one) for the correct tracing of simple form. Total correct score of the GEFT is 18 combined from second and third sections which total number of the simple forms which are traced correctly. The test score of the GEFT is ranging from 0 to 18. Based on Kheirzadeh (2011) the criterion of dichotomization of the participants into either FD or FI was 11. The score above 11 were included to FI students and below it were FD students.

Witkin et al. reported a Spearman-Brown reliability coefficient of 0.82 for the GEFT (Salmani-Nodousan, 2007). Panek, Funk, and Nelson (1980) in the Salmani-Nodousan (2007) also reanalyzed data from an earlier investigation to determine the reliability and validity of the GEFT. From their investigation they found that GEFT had adequate split-half reliability. Panek et al. also noticed that estimated of internal consistency and construct validity for the GEFT were adequate and satisfactory.

Here is a simple form which we have labeled "X":



This simple form, named "X", is hidden within the more complex figure below:

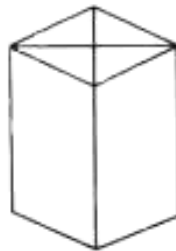


Figure 3.1 The example of GEFT

3.3.1.2 TOEFL Test

The second instrument used in the research is TOEFL Test. TOEFL or Test of English as A Foreign Language is used to measure students' language ability in English especially for foreign language subject. In this study researcher use paper-based TOEFL test to get score of students' reading comprehension. Researcher will

take the test from several resources that are, Cliff, Barron, Longman, McGraw-hill and combine it. There will be 50 items of questions of the test that should be done within 55 minutes. All of the items are in form of multiple choices containing with a long passage followed by ten questions related to the passage. There are 9 types of questions in this test. The score for each correct answer is 1, total score for correct answer is 50.

No	Type of question	Item	Sources			
			Cliff	Barron	Longman	McGraw-Hill
1	Theme/ topic	20			20	
2	Main idea	10, 14, 21	10	21		
3	Fact/ Detailed information	1, 3, 6, 7, 9, 11, 16, 17, 18, 24, 26, 28, 29, 30, 35, 38, 42, 44, 45, 48	1, 3, 6, 7, 9, 42, 44, 45, 48	24, 26, 28, 29, 30	11, 12, 17, 19	35, 38
4	Title	49	49			
5	Reference	2, 5, 23, 36	2, 5	23	14	36
6	List-type (NOT/EXCEPT)	4, 31, 32, 50	4, 50	31	13	32,
7	Inference	20, 33, 39, 47	47			33, 39
8	Vocabulary	8, 13, 15, 19, 22, 25, 34, 37, 41, 43, 46	8, 43, 46	22, 25	15, 16, 18	34, 37, 41
9	Rhetoric	40				40

Table 3.1 Reading comprehension list of items

3.3.2 Procedure

There are some procedures of the collecting data in this study. The first steps, researcher prepared the instruments of the research. The instrument are GEFT and TOEFL test, before instruments are tested to the subject of the research, researcher will check the validity and reliability of the instruments.

After the preparation finished, researcher will do second steps, testing the instrument to the subject of the study. In this phase, the GEFT will be administered in one session within one meeting of the class. Another session of TOEFL reading comprehension will be given to the same students who took the GEFT. The researcher will be present in each session and administered both test under standard condition.

The next steps, researcher will collecting all data of the items of the GEFT and TOEFL reading comprehension then calculate it. The participants will be divided into field-dependent and field-independent groups according to the scores acquired in the GEFT. The last, scores will be imported to SPSS for statistical analysis and conduct a comparison between two variables of cognitive style and reading comprehension ability. Then correlation between variables will be estimated.

3.4 Data Analysis

For analyzing data, researcher must be considered first to the variables exist in this research. In this case, the variables are cognitive style and reading comprehension of EFL students. The variable of cognitive style will get from GEFT

(Group Embedded Figures Test), while reading comprehension ability will be measure from the TOEFL reading comprehension test. Henceforth, for analyzing the data researcher will use SPSS 15.0 software. For the steps of data analysis researcher defines three steps which described as follow.

3.4.1 Normality Test

When all the data needed was completed, the first step that should be done by the researcher is checking the normality of the data of two variables, cognitive style and reading comprehension. Normality test is the one of requirement as the procedure in this study. Shapiro-Wilk and Lilliefors (Kolmogorov Smirnov) test will be applied to know the normality distribution of the data which used in the research.

The result of the normality test can be used to determine the next step of the data analysis. When the result shows that the data comes from normal distribution, the researcher will use parametric test to determine the coefficient of the correlation, in this circumstance is Pearson Product Moment test. Meanwhile, if the result of normality test shows the data does not come from normal distribution, a non-parametric test should be applied in this study, that is Spearman Rank.

3.4.2 Coefficient of Correlation

After getting the result of the normality test, researcher will analyze whether there is correlation between two variables or not by determining the coefficient of correlation. The variable of cognitive style refers to independent variable (X) and

reading comprehension ability refers to dependent variable (Y). For the correlational analysis both variables, researcher use Pearson Product Moment Coefficient.

Pearson Product Moment Coefficient can be used to measure correlation between cognitive styles and reading comprehension ability. Pearson correlation coefficient is appropriate to variables of the ratio or interval type and it is also assumes that each set of scores is normally distribute. The coefficient of correlation expressed by the notation r which indicates the strength or weakness the relationship of two variables. The interpretation for calculating correlation coefficients are the value of +1 is obtained for perfect positive correlation, a value of -1 for perfect negative correlation, and a value of zero for no correlation at all (Butler, 1985: 141).

The formula of Pearson Product Moment Coefficient:

$$r = \frac{n(\Sigma xy) - (\Sigma x)(\Sigma y)}{\sqrt{[n\Sigma x^2 - (\Sigma x)^2][n\Sigma y^2 - (\Sigma y)^2]}}$$

Where:

r = Pearson r correlation coefficient

N = number of pairs of observation

Σxy = sum of the products of paired scores

Σx = sum of x scores

Σy = sum of y scores

Σx^2 = sum of squared x scores

Σy^2 = sum of squared y scores

3.4.3 Hypothesis Testing

After consider the coefficient of correlation, the next researcher will analyze whether there is significant correlation of the variables or not by using hypothesis testing. Hypothesis testing is needed to determine statistical correlation of the current study. So, null hypothesis need to be drawn in this step. The hypothesis of this study can be formulated as follows:

H_0 : there is no significant relationship between cognitive style and EFL learner reading comprehension ability.

H_1 : there is no significant relationship between cognitive style and EFL learner reading comprehension ability.

After formulated the hypothesis, the next step is comparing the r value of Pearson's Product Moment calculation from the output of the SPSS to the level of significance for testing the hypothesis. The significant level of this study or α (alpha) is at 5% level (0,05). After the scores are computed in SPSS, then see the Pearson's r output and interpret the output that if sig. (2-tailed) $> \alpha$ (0,05), the researcher should accept the H_0 , but if sig. (2-tailed) $< \alpha$ (0,05) so the researcher can reject H_0 , it means H_1 is accepted. The interpretation r value based on Muijs (2004: 145) defines as follows:

r value	Interpretation
$< 0, +/-1$	Weak
$< 0, +/-3$	Modest
$< 0, +/-5$	Moderate

$< 0, +/- 8$	Strong
$\geq +/- 0,8$	Very strong

Table 3.2 The interpretation r value