

CHAPTER III

RESEARCH METHOD

A. Research Design

This research is a mixed-research, because it mixes or combines qualitative and quantitative research methods (Johnson and Onwuegbuzie, 2004:17). The method is used to identify and describe the learning styles of the students of EED UMK. The variables of this research are learning styles, gender, and subject preference. The learning styles of the students will be described with reference to Solomon- Felder Learning Style Model.

B. Data Collecting

1. Instrument of Data Collecting

To identify the learning styles of the students, we use a self-scoring web-based instrument called *Solomon-Felder Index of Learning Styles Questionnaire*, which was developed by Barbara A. Soloman and Richard M. Felder of North Carolina State University as the instrument of the research. This self-reporting questionnaire is provided online at <http://www.engr.ncsu.edu/learningstyles/ilsweb.html>. This learning style inventory is a 44-question instrument to assess preferences on the four dimensions of the Felder-Silverman model. With the permission of the author, the questionnaire is translated into Indonesian (Felder, 2013a)

ILS Questionnaire is used as the instrument of this research because the reliability of it has been tested and proved to be good. The correlation coefficients

for all scales of the instrument ranged between 0.7 and 0.9 and significant at α .05 or better (Felder and Spurlin, 2005: 110). The discriminant and construct validity of the instrument were also proved to be good (Felder and Spurlin, 2005: 110). Therefore, ILS is a suitable instrument for assessing learning styles.

To ease the process of identification of the learning styles and due to the limitation of the computer and the internet access, we gave the students the Indonesian written version of the questionnaire first. The students had to answer the 44 questions in a separate answer sheet, in which they also had to give the data about their gender and subject preference. After that, we uploaded/submitted the students' answers to the questionnaire to the site which provides the questionnaire one by one and immediately got the results.

Some examples of the printed results of the questionnaire and both the original and the Indonesian versions of the questionnaire are provided in the appendix.

2. Respondents

The subjects of this research are the active students of EED UMK of the even semester in academic year 2012/2013. The respondents were randomly selected from each semester by using simple random sampling techniques, i.e. using lottery. The detail number of the respondents is presented in Table 3.1.

Table 3.1 Respondents of the Research

Semester	Number of Student	Number of Respondent
II	174	48
IV	272	65
VI	237	52
VIII (and above)	309	43
Total	992	208

3. Data

The data of this research are:

- a. the responses of the students to the questionnaire which are used to identify their learning styles.
- b. the gender of the students.
- c. the subject preference of the students.

Therefore, the level of measurement of the data is nominal/category.

C. Data Analysis

Analysis of the responses of the students to the questionnaire to identify the learning style of each student was done as the following.

1. Automatically by the program of the site as soon as the responses from the respondents are submitted online. The submission was done by the researchers.
2. The results of step 1 are scores of each respondent for each learning styles dimensions (active – reflective, sensing – intuitive, visual – verbal, and global – sequential) which are put in scales. The meanings of the scores in the scales are as follow.
 - a. Score 1 – 3 on a scale indicates that the individual is well balanced on the two dimensions of that scale.
 - b. Score 5 – 7 indicates a moderate preference for one dimension of the scale and he will learn more easily in a teaching environment which favors that dimension.
 - c. Score 9 – 11 indicates a very strong preference for one dimension of

the scale and he may have real difficulty learning in an environment which does not support that preference.

3. Putting each respondent's preferences in the respective learning styles dimensions and categories (See Appendix 2).
4. Counting the frequency of each respondent's learning styles dimension and category (making the frequency distribution) to describe the general profile of the learning styles of the students.
5. Sorting the learning styles (dimension and category) based on gender variable to describe the profile of the learning styles of the students based on gender.
6. Conducting Chi-square test of independence to test the dependency relationship between learning styles and gender variables.
7. Sorting the learning styles (dimension and category) based on subject preference to describe the profile of the learning styles of the students based on subject preference.
8. Conducting Chi-square test of independence to test the dependency relationship between learning styles and subject preference variables.

The formula to do the Chi-square test of independence is:

$$X^2 = \sum \left[\frac{(f_o - f_e)^2}{f_e} \right]$$

Where:

X^2 = the value of Chi-square.

f_o = the observed frequency in each cell.

f_e = the expected frequency in each cell.