CHAPTER III

METHODOLOGY OF RESEARCH

The understanding of MI theory formulated previously is helpful in order to formulate and elaborate the research design, chose the population and sample, and determine the technique of collecting and analyzing the data. Those terms are explained as follow:

3.1 Research Design

This study uses *descriptive survey* method as suggested in Lodico et al. (2010, pp. 198-204). The MI tendency is determined by *one shot survey design*, at one point in time. The data of the survey are students’ answers, which describe their individual tendency of MI. The steps of the survey adapted from Lodico et al. (2010, pp. 201-222) are as follows:

- **Identify a Study Topic**
- **Conduct a Review of the**
- **Develop Research questions**
- **Develop the survey**
- **Select the participant**
- **Pilot the survey**
- **Administer the survey**
- **Analyze and interpret the survey results**

- **Problem found at School**

- **MI INVENTORY**

Adapted from Armstrong (2009, p.35); Armstrong (2005, p.25); Prasetyo (2009, pp. 44&47); Kirby and McDonald (2009, p.42); Smith in Hoerr et. al (2010, p.200)

- **Random selection from population**
- **Pilot test of the survey**
- **Modification to survey**
3.2 Population and Sample

3.2.1 Population

This study takes place at SMA N 1 Paguyaman as the follow-up of my preliminary study indicating the main problem I found, that the teachers and students of this school needed to be helped on determining learning characteristic of the students.

SMA N 1 Paguyaman is a public school located at approximately 70 km from Kota Gorontalo. The students come from various villages in Kecamatan Paguyaman. Geographically, Kecamatan Paguyaman provides large area of farming field and according to parents' demographical information, farming is amounted 75% of parents’ livelihood. These absolutely make students closely connected to nature and environmental issue. The learning sources these students can get at school are: library, computer laboratory, science laboratory, art laboratory, sports field, and farming field. Other sources can be obtained from extracurricular activities such as scout, marching-band and drama club.

The population of the study was the first-grade students of SMA Negeri 1 Paguyaman, who were registered on 2011-2012 academic year. I choose the first grader in order to give the information about learning characteristic/MI tendency earlier, at the first year of school. SMA N 1 Paguyaman is selected because of the existence of basic problem of mine, was firstly found on this school. In addition to that reason, I am undergoing my teaching practice at this school means that it is possible for me to keep observing whether or not the intelligences are developed or changed over time, as Gardner claimed.
The homogeneity of the population I was concerning, is the placement of those students on the same degree of class division. I was not concerning the other demographical characteristics such as age, gender, religion, and parents’ occupation.

Based on *The Data of Students* gained from school administration, the total number of first-grade students who were listed per March 3rd, 2012 is 169 students.

### 3.2.2 Sample

On descriptive survey study, *if the population selected is fewer than 200 individuals, the entire population should be sampled.* (Lodico et al., 2006, p.146). By following the prerequisite, the number of sampled-population should be 169 students. Re-confirmation toward the total number of students that was held before survey administration revealed that four students were moved and/or dropped-out from the school, which means that the entire number of population that is sampled in this study is 165 students who are distributed to:

- **X_A:** consists of 26 students, one student was absent.
- **X_B:** consists of 27 students, one student was absent.
- **X_C:** consists of 28 students, one student was absent.
- **X_D:** consists of 27 students, one student was absent and three students were in suspension.
- **X_E:** consists of 29 students, two students were absent.
- **X_F:** consists of 28 students, one student was absent.

Thereby, the total number of respondents who filled the survey as it was administered is 155 students, that, consist of 97 Females and 58 Males.
3.3 **Data Collection**

3.3.1 *Research Instrument*

The data of the study was collected by using a *questionnaire* as the main instrument. The questionnaire (MI Inventory) was developed by following the eight intelligence checklist as the guidelines.

In order to build a practical instrument for respondents, the items are presented in Bahasa Indonesia. The questionnaire consists of 80 items, which are distributed randomly on eight main sections as described below:

**Table 3.1 The Blue-Print of The MI Inventory**

<table>
<thead>
<tr>
<th>No</th>
<th>Kinds of Intelligences</th>
<th>Items Number…</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Naturalist Intelligence</td>
<td>1, 3, 6, 10, 13, 15, 19, 23, 24, and 25</td>
<td>10 items</td>
</tr>
<tr>
<td>2.</td>
<td>Musical Rhythmic Intelligence</td>
<td>2, 4, 5, 7, 8, 9, 11, 12, 14, and 16</td>
<td>10 items</td>
</tr>
<tr>
<td>3.</td>
<td>Logical-Mathematical Intelligence</td>
<td>17, 18, 20, 21, 22, 26, 27, 31, 33, and 35</td>
<td>10 items</td>
</tr>
<tr>
<td>4.</td>
<td>Interpersonal Intelligence</td>
<td>28, 29, 30, 32, 34, 36, 37, 38, 41, and 42</td>
<td>10 items</td>
</tr>
<tr>
<td>5.</td>
<td>Bodily-Kinesthetic Intelligence</td>
<td>39, 40, 43, 45, 47, 48, 49, 51, 53, and 54</td>
<td>10 items</td>
</tr>
<tr>
<td>6.</td>
<td>Verbal-Linguistic Intelligence</td>
<td>44, 52, 55, 56, 57, 58, 61, 65, 67, and 68</td>
<td>10 items</td>
</tr>
<tr>
<td>7.</td>
<td>Intrapersonal Intelligence</td>
<td>46, 50, 59, 62, 63, 64, 66, 69, 71, and 78</td>
<td>10 items</td>
</tr>
<tr>
<td>8.</td>
<td>Visual-Spatial Intelligence</td>
<td>60, 70, 72, 73, 74, 75, 76, 77, 79, and 80</td>
<td>10 items</td>
</tr>
</tbody>
</table>
The structures of the questionnaire are following:

a. *Cover letter:* instruction/direction ensuring participants in filling the survey questionnaire. It consists of purpose of survey, confidentiality statement, statement of voluntary nature of the study, and contact information;

b. *Demographics:* detail information of participants in the study. It involves name, class, gender, and age;

c. *Direction for each section:* It helps participants how to fill the questionnaire. It involves the scales and the meaning which is used in the survey;

d. *Body of the survey:* It involves 80 items of statement related to the eight intelligences.

For the choices of the answer that is provided for each item of question, I use Likert scale suggested by Lodico et al. (2006, p. 107) that is, the degree of agreement, which consists of five choices such as *strongly disagree, disagree, slightly agree, agree, and strongly agree*, which are reformulated to be:

<table>
<thead>
<tr>
<th>Sangat tidak sesuai</th>
<th>Tidak sesuai</th>
<th>Agak sesuai</th>
<th>Sesuai</th>
<th>Sangat sesuai</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

In order to ensure whether the items are understandable and measuring what it is designed for, the questionnaire has been pilot-tested (Pre-survey) to 15 participants (first grader of high school) who are chosen randomly. The result of pilot test was being discussed to make a modification of the original survey.
3.3.2 Administration Procedure

This survey was administered by using Group Administration Format, in which the questionnaires were administered to respondents who were well-assembled together on each class. This format was chosen because of its effectiveness to reach a good response rate.

With regard to the number of selected-population who are distributed to six classes, it was important that this survey need to be administered by the administrator team consisting of three members who have passed two-days-training.

3.3.3 Survey Duration

Survey administrator spent two days to complete the administration. It was held on March 13th – 14th 2012. At the first day of administration, the survey was distributed to Class X-A, X-C, X-F, and class X-B, X-D, and X-E on the next day.

3.3.4 Response Rate

By having 155 of 165 students who returned the survey sheets, this study got 93.94% of response rate value.

3.4 Data Analysis

3.4.1 Data Preparation

This phase is of checking the terms below:

- Whether or not all respondents filled the demographic information and all the items;

- Calculating the response rate; the percentage of respondents who returned the survey.
3.4.2 Data Tabulation

Data tabulation is the phase of coding the data. Male is coded by “1” and female by “2.” Meanwhile, respondents’ name and class is coded based on Dornyei (2003, p. 98) suggestion:

“Questionnaires coming from the same group (e.g., same school or class) should be kept together and marked with a special code: for example, the first one or two digits of the questionnaire code can refer to the school, the next one to the particular class within the school, and the final numbers identify the individual learners.”

Therefore, I rule the coding by putting a number as follows:

\[
\begin{align*}
X & : \text{Code for Class/Grade } X; \\
1 - 6 & : \text{Code for class within the First Grade which consist of six classes: } XA, XB, XC, XD, XE, \text{ and } XF; \text{ and } \\
001 - 155 & : \text{Code for students/respondents organized based on students attendance list per class.}
\end{align*}
\]

Example: Vivi Praningsi Usu, is first name exists in the attendance list of student of class XA. Vivi’s data codification will be X-1-001.

The Eight intelligences are coded to be: NT, for Naturalist Intelligences; MS, for Musical Intelligences; L-M, for Logical-Mathematical Intelligence; INTER, for Interpersonal Intelligence; B-K, for Bodily-Kinesthetic Intelligence; V-L, for Verbal-Linguistic Intelligence; INTRA, for Intrapersonal Intelligence; and V-S, for Visual-Spatial Intelligence.

3.4.3 Data Entry

After coding alphabetical data into numerical form, the data gained from the questionnaire then entered to a computer file. Responses from each respondent are entered into a table of students’ response on the eight intelligence.
3.4.4 Data Cleaning

There are two steps taken here, such as: correcting impossible data; the data that is incorrectly entered and cause the value to become out of range (for example: answer “6” on Likert 1-5 scale), and correcting incorrectly entered values; in-range value which is not similar with a real response in the questionnaire because of typing error when entering the data. The only way of correcting incorrectly entered value is by re-checking the respondents’ answer on the questionnaire (Dornyei, 2003, p. 104).

3.4.5 Data Analysis

The phase divided into two parts namely Personal Data Analysis and Group Data Analysis. Personal data analysis is needed to answer the first research question about MI tendency of every single student at the first grade. Meanwhile, group data analysis is conducted in order to know the MI tendency of the group of the population that is taken in this study.

a. Personal Data Analysis

Personal data analysis presented on the table of students’ response on the eight intelligences. Here are the steps:

- Entering the response of the eight intelligence
- Percentaging
- Categorizing to MI Domain

b. Group Data Analysis

After the personal data of each respondents involving at the survey has been analyzed, it is grouped into three kinds of data analysis category namely Class-
based MI Profile, Gender-based MI Profile, and MI Profile of the whole survey response. The objective of analyzing the survey data per class is to describe the MI profile per class in detail. There will be six parts of analysis, that represent the MI tendency of students from class X-A to class X-F. The data are presented in table of MI Profile per class, then, described in terms of tendency level.

Data analysis based on gender, is to determine MI Tendency of female and male who are involved at the survey. The description will give information about differences of those in terms of tendency level.

On the other hand, the whole responses gained from respondents are analyzed as a group, in order of describing the eight intelligence and MI Domain tendency of the first-grade students of SMA Negeri 1 Paguyaman.

Here are steps for analyzing the whole survey response:

1. Arranging scores per aspect of intelligence in frequency table.
2. Calculating the average value of each f table
3. Comparing the average value with the total scores to obtain the percentages.
4. Categorizing the percentage of each aspect of intelligence into MI Domain as in the personal data.

3.4.6 Data Interpretation

This is the phase of interpreting the quantitative data in the form of scores and percentage gained from the survey to be qualitative description. The quantitative data that has been classified based on Gardner’s Eight Intelligence and McKenzie’s MI Domain, then, were interpreted by following the rule of data interpretation.
I rule the interpretation of the quantitative data of Likert scale as follows:

1 = Sangat tidak sesuai = Very Weak Tendency
2 = Tidak sesuai = Weak Tendency
3 = Agak sesuai = Sufficient Tendency
4 = Sesuai = Strong Tendency
5 = Sangat sesuai = Very Strong Tendency

The rubric of percentage arranged by multiplying the number of article per aspect of intelligence with the possible Likert Scale chosen by respondents. It means that, for instance, if the respondents answered all the item with 5, which is interpreted as very strong tendency, the total score will be 50 which means the same. Therefore, in terms of percentage of total score on the eight intelligence and MI Domain, the criteria will be as follows:

<table>
<thead>
<tr>
<th>SCORES</th>
<th>%</th>
<th>TENDENCY LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>41 – 50</td>
<td>81% – 100%</td>
<td>Very Strong</td>
</tr>
<tr>
<td>31 – 40</td>
<td>61% – 80%</td>
<td>Strong</td>
</tr>
<tr>
<td>21 – 30</td>
<td>41% – 60%</td>
<td>Sufficient</td>
</tr>
<tr>
<td>11 – 20</td>
<td>21% – 40%</td>
<td>Weak</td>
</tr>
<tr>
<td>≤ 10</td>
<td>≤ 20%</td>
<td>Very Weak</td>
</tr>
</tbody>
</table>

The results of this study are gained by following the research design, data collection technique, and data analysis technique elaborated above. The presentation, interpretation, and discussion of the results are illuminated on the following chapter.