

Chapter Three

Research Methodology

This chapter provides information about research methodology of this study. Kothari (2004) defined research methodology as a systematic way to solve a problem of a study. Research methodology underlies various scopes of important points, some of which are: the applicable technique to attain the objective of the study; the subject of the study who are involved in the study and from whom the data will be gathered; and the way researcher gains and analyzes the data in order to reach the objective of the study. Therefore, in order to outline those points, this chapter is written to present: research design, population and sampling, instrumentation, and data analysis.

Research Design

Kothari (2004) defined research design as the conceptual structure of how research being conducted. This structure serves as a guideline of a study and controls the factors affecting the validity of the result. This structure also defines how the researcher collects, measures, and analyzes the data. The nature of the research problem and question will specify what research design to be used in a study (Creswell, 2012).

As for this study, survey design is used. According to Cresswell (2012), survey design is a type of research design under the scope of quantitative research that enables the researcher to identify a sample in a specific population to collect information to describe what the entire group does or thinks. The application of

survey research for this study is based on the aim of this study to find numerical data about a group tendency toward the trend of OMT tool use.

Population and sample

Research population. The main goal of the survey is to collect data that represent the nature of a population. Population is a group of individuals that possesses similar certain characteristic which differentiates the group from another group (Creswell, 2012). The population of this study is students of English Education Department of UMY batch 2016, the first-year college students. There were total 121 students within the population. There are some reasons in choosing batch 2016 students as the subject of this study. The first reason is that batch 2016 students have more active classes than other batches that they come to the campus more often. It consequently makes it easier for the researcher to collect the data. The second reason is that batch 2016 students are first-year college students who come from different background in their high school with different level of English proficiency. Since they are new to an intensive English learning, they are more likely to face difficulties in coping with learning activities in EED of UMY that they need an assistant to help them in this regard. Therefore, the chance of OMT tool usage among them is high. Since the objectives of this study are to examine the practical use of OMT tool as well as the benefit of using it, the data from subject who use OMT tool more frequently will be more reflective to attain those objective.

Research sample. Cresswell (2012) asserted that in order to generalize a characteristic of a group of individual, it is not necessarily to examine the entire population. Instead, the researcher only need to derive the data from numbers of

individual within that group. Those individuals who represent their group are called as sample.

This study employed random sampling, in which every individual within the population has an equal chance to be the sample (Kumar, 2011). The sample size of this study was defined based on the table of sample size for random sampling provided by Cohen et al. (2011). The minimum sample size for the population of 121 individuals and the confidence level of 95% is 92 sample. From the data gathering process, the researcher managed to involve 103 respondents to become the sample of this study which means that this study met the minimum amount of the required sample size.

Instrumentation

To gather the data, there is a need of using a specific set of instrument. Data collecting instrument is a tool to measure, observe, and record the data which involves specific questions and response possibilities for the study (Creswell, 2012). In this study, questionnaire is used as the instrument for data gathering. Kumar (2011) defined questionnaire as a set of questions which is interpreted and answered by the respondent.

This study adapted and modified the questionnaire of a study conducted by Clifford et al. in 2013. Not all of the questionnaire' item were used in this study. There were some modifications done in order to suit the context and the objective of this study. First, there were some questions omission, especially the questions which are addressed to study the perception of the instructor towards the use of OMT tool. Second, the selected questions were adjusted to fit the context of the

study. Third, the questions were modified into statements in order to make the data analysis process easier, and were translated into Indonesian language to ease participants' understanding. Fifth, some items were added to the questionnaire based on the literature review of this study as the references in order to gather more comprehensive data.

Part	Items	Objective
1	S1, S2a, S2b, S2c, S2d, S3a, S3b, S3c, S3d, S4a, S4b, S4c, S4d, S5a, S5b, S5c, S5d, S6, S7, S8a, S8b, S8c, S8d, S9	Examining the use of OMT tool by students in their learning
2	S1, S2, S3, S4, S5, S6, S7, S8, S9, S10	Investigating the benefits that students obtain in using OMT tool

This study's questionnaire consists of one initial questions and two main parts of the questionnaire. The initial questions ask about the particular OMT tool they usually use.

In the first part of the questionnaire, there are 9 main statements detailed in 24 statements. Hence, there are total 24 items in the first part of the questionnaire. The items in this part are related to the practical use of OMT tool by students and are addressed to answer the first research question of this study. The respondents

respond to the statements by giving a circle on one of the 4 scales. The scales include “never,” “rarely,” “usually,” and “often,” and each is represented by numbers (1 = never, 2 = rarely, 3 = usually, and 4 = often).

The second part of the questionnaire consists of 10 statements. This part of the questionnaire is addressed to answer the second research question related to the benefit that respondents obtain in using OMT. The respondents respond to the statements by giving circle on one of the 4 scales. The scales include “strongly disagree,” “disagree,” “agree,” and “strongly agree.” In line with the first part of the questionnaire, the scales are also represented by numbers ranging from 1 to 4 (1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree).

Instrument validity. This questionnaire used content validity that deals with the representativeness of the questionnaire on the subject being studied (Cohen, Manion, & Morrison, 2011). This questionnaire needs to be representative and cover the topic under investigation. Therefore, there is a need to validate the questionnaire and in this research case, the validity of the questionnaire was measured by having expert judgements. Each questionnaire item's validity was rated by three experts who were the lecturers of EED of UMY. They were asked to give score based on the rating scale ranging from 1 = not relevant, 2 = less relevant, 3 = quite relevant, and 4 = very relevant. The ratings were later calculated by using Aiken formula suggested by Retnawati (2015). The formula is:

$$V = \frac{\sum s}{n(c - 1)}$$

Where:

V = validity score

s = score from each expert minus the lowest score of the category

c = numbers of categories

n = numbers of experts

The item' validity is considered high if the calculated score is higher than 0.8, average if the score is in between 0.4 – 0.8, and low if the score is lower than 0.4. based on the rating scale from the experts, all of the items of this questionnaire were valid. The overall validity score was 0.94, which indicated that this questionnaire was highly valid with the result of each item ranging from 0.78 – 1.00 (see appendix 3 for the detail).

Table 2								
<i>Aiken index for questionnaire</i>								
Items	Expert 1	Expert 2	Expert 3	s1	s2	s3	$\sum s$	V
Part 1 - Part 2	130	126	136	96	92	102	290	0.94

Instrument reliability. An instrument is reliable when it is “carried out on a similar group of respondents and in a similar context, then similar result will be found.” (Cohen et al., 2011, p. 199). In other words, reliability measures instruments' consistency. SPSS version 17 (statistical analysis software) was used to measure the reliability of the questionnaire of this study. The reliability of the instrument can be categorized based on its Cronbach alpha (alpha coefficient

value). Those categories as proposed by Cohen et al. (2011) are provided in Table 3 below.

Table 3	
<i>Reliability categories</i>	
Cronbach' alpha	Categories
>0.90	Very highly reliable
0.80 – 0.90	Highly reliable
0.70 – 0.79	Reliable
0.60 – 0.69	Marginally/minimally reliable
<0.60	Unacceptably low reliability

The result of the analysis showed that the overall Cronbach alpha value for the questionnaire was 0.906 and is categorized as “very highly reliable” (see appendix 4 for the detail).

Table 4	
<i>Reliability Statistics</i>	
Cronbach's Alpha	N of Items
.906	34

Data Collection Process

The data collection process was performed on the 8th of May 2017. The researcher directly administered the questionnaire sheets in three classrooms of 2016 batch students consecutively. The questionnaire were distributed in the

middle of the lesson with the permission from the lecturers who were teaching the class at that time. From the data collection activity, there were 103 respondents out of total population of 121 students who responded to the questionnaires.

Data Analysis

The collected data was analyzed and presented in descriptive statistics method. Descriptive statistics presents the overall information including frequencies, dispersal (standard deviation), and central tendency (means, modes, and medians) (Cohen et al., 2011). The steps conducted in the data analysis process of this study were done with the help of computer programs, namely Microsoft Excel and IBM SPSS (Special Package for Social Science).

The data analysis of this study involved the mean value of each items which were classified based on the categories of frequency and benefit scale to infer the general information of the respondents' responses. The categories of the frequency and attitude scale were made by using the formula of Supranto (2000). The formula is as follow.

$$C = \frac{X_n - X_1}{K}$$

Where:

C = the range prediction (class width, class size, class length)

K = the number of class

X_n = the maximum score of variable

X_1 = the minimum score of variable

Frequency scale. The number of class (K) in the scale is 3 including “low frequency”, “moderate frequency”, and “high frequency”. With the maximum score of variable (X_n) is 4, and the minimum score of variable variable (X_1) is 1, the calculation for the range prediction (C) of the frequency scale is as follow:

$$C = \frac{4 - 1}{3} = 1$$

From the calculation, the range prediction (category) for frequency scale is 1. The category starts from the lowest category, 1.00 – 2.00, to the highest category, 3.01 – 4.00. The categories can be seen in the following table.

Table 5	
<i>Frequency scale</i>	
1.00 – 2.00	Low frequency
2.01 – 3.01	Moderate frequency
3.02 – 4.00	High frequency

Frequency scale is used to examine the frequency of OMT use by students in certain purposes. The data are inferred based on each item’ mean value to see in what category it belongs to. If the mean value of an item belong to low frequency category, it can be inferred that students “rarely” use OMT for the purpose related to the item. If the mean value of an item belong to moderate frequency category, it can be inferred that students “sometimes” use OMT for the purpose related to the item. If the mean value of an item belong to high frequency category, it can be inferred that students “often” use OMT for the purpose related to the item.

Benefit scale. The number of class (K) in the scale is 3 including “low beneficial,” “moderately beneficial,” and “highly beneficial”. With the maximum score of variable (X_n) is 4, and the minimum score of variable variable (X_1) is 1, the calculation for the range prediction (C) of the frequency scale is as follow:

The calculation for the benefit category is as follow:

$$C = \frac{4 - 1}{3} = 1$$

From the calculation, the range prediction (category) for frequency scale is 1. The category starts from the lowest category, 1.00 – 2.00 to the highest category, 3.02 – 4.00. The categories can be seen in the following table.

Table 6	
<i>Benefit scale</i>	
1.00 – 2.00	Low beneficial
2.01 – 3.01	Moderately beneficial
3.02 – 4.00	Highly beneficial

Benefit scale is used to examine students’ view toward some benefit of OMT. The data are inferred based on each item’ mean value to see in what category it belongs to. If the mean value of an item belong to low beneficial category, it can be inferred that students perceive that the benefit related to the item is “less useful.” If the mean value of an item belong to moderate beneficial category, it can be inferred that students perceive that the benefit related to the item is “useful.” If the mean value of an item belong to high beneficial category, it can be inferred that students percieve that the benefit related to the item is “very useful.”