

CHAPTER III

RESEARCH METHODOLOGY

This chapter presents the procedure in conducting the study. This chapter includes the elaboration of statement of problem, research site and participants, research design, research procedures, data collection, data analysis and concluding remarks. Research design is divided into two important parts which are data collection and data analysis. Data collection includes the steps taken in collecting data. Data analysis is an elaboration of the collected data which are analyzed to get the findings.

1.1 Statements of Problems

This study aims to identify the difficulties of mathematical texts written in English for Indonesian primary school students' based on teachers' perspective in one private course in Bandung. This research is considered appropriate toward recent phenomenon in Indonesia. There are many International schools developed in Indonesia, where some of the students are Indonesian who uses English as the foreign language. In addition, this study also investigates how the teachers overcome their primary school students' difficulties. Therefore, this study is conducted to answer the problem formulated in the following question.

1. Based on teachers' and students' opinions, what difficulties do the students find in comprehending mathematical word problems written in English?
2. What are the teachers' strategies to help the students in comprehending the mathematical word problems written in English?

1.2 Research Site and Participants

The research is conducted in Sakamoto, a private Mathematic course in Bandung. The private course has 97 active students who are primary one to six from different public schools and international schools in Bandung. There are lots of students who come from different schools with different characteristics.

There are some reasons in choosing the institution. First, the writer tried to investigate English proficiency of Indonesian students which might have the difficulties in Mathematics since Indonesian use English as a foreign language. This problem could only be found in international schools or international institution where English is used to deliver the subject. Thus, the writer decided to conduct the study in a Mathematic private course, because there are many students of international schools in Bandung enrolled the course in the institution. Second, the writer has worked her freelance job for three semesters in the institution, and the owner of the institution extended a warm welcome and agreed if the writer conducted the study in her institution.

The participants were 3 teachers and 10 students of the Mathematics private course. The teacher participants have been teaching mathematic by using English for the students who use English. Two of the teachers were graduated from English department, and the other teacher was graduated from communication department. They have been teaching Mathematics for years to the primary school students. So, the teachers as the participants would know well that the English proficiency of the students wil influence their achievement in Mathematics.

The private course provided two kinds of teaching modules which were differentiated by the languages use, Bahasa Indonesia module and English module. In this research, the researcher only focused on the students who used English module in the private course. Mostly, the students who used the English module are the students in International schools in Bandung, and they also used English when studying Mathematic in the classroom.

The student participants were 10 students, ranging from Grades 3 to 6. The ranging grades were chosen because the older students have a better understanding than the younger to answer the questionnaire of this study. The site and participants were accessible for the researcher to conduct the study, because the researcher is familiar to the teachers and the students, and the site of an institution is near to the researcher's living place in Bandung.

1.3 Research Design

This study used a qualitative research design as the research methodology which reveal of someone's beliefs, point of view, or attitude of past events that influence to present condition (Best, 1970, cited in Cohen et.al, 2007). The research design was appropriate for the researcher,

since the study is about revealing the teachers' and also the students' opinions toward the difficulties that can be found when the students have mathematical word problems written in English. The method has helped the researcher to explore rich, collect, examine, and analyze the data using interpretative analysis to investigate what was the difficulty of the students in comprehending mathematical word problems written in English (Heigham & Crocker, 2009; Creswell, 2012; O'Reilly et al., 2013).

The study was conducted in a case study design which presents the phenomenon with its context and provide a detailed description of a defined individual or entity, for example student, teacher, school, institution (Freebody, 2003; Yin, 2003, cited in Duff, 2008; Mackey & Gass, 2005; Merriam in Heigham & Crocker, 2009). The writer used the case study in order to earn a good understanding about the participants' perspective of a phenomenon since the aim of the case study is to retain to the holistic and meaningful characteristics of real-life events (Gall et.al 2003, cited in Duff, 2008; Yin, 2003).

The researcher could conduct the study with a small number of participants since qualitative was employed in this study since the research site is a private course where there were fewer students than schools. The researcher has interviewed three teachers and ten students as the representatives of the phenomenon that occurred in the Mathematics private course (Mackey & Gass, 2005). The method was suited to the research since it could help to understand the meanings and experiences of the children as the flexibility of the qualitative method (O'Reilly et al., 2013).

1.4 Research Procedures

The procedures of this study were conducted by several steps that can be described as follows:

1. The researcher began to administer interview to the teachers.
2. The researcher conducted a questionnaire (part 1) to the students.
3. The researcher conducted the questionnaire (part 2) to the students.
4. The researcher analyzed the data from questionnaires and interview qualitatively.
5. The researcher concluded the findings and finishes the research.

1.5 Data collection

The data were collected in one of Mathematic private course in Bandung. The participants were 10 students by ranging grades 3 to 6, and 3 teachers. The data used in this study were related to English proficiency of primary school students influenced the students' achievement in Mathematics. The data collection of the study was conducted in two steps. The researcher conducted interviews with the teachers, then questionnaire to the students in order to gain a depth data.

1.5.1 Interview

The interview used open ended questions to the three teachers of the private course as the participants of the study in order to investigate whether English proficiency of the students influenced their achievement in Mathematics, and discover the strategy of the teachers to help the students in understanding mathematical word problems written in English. The aim of selecting the teachers as the participants was to gain deep information and understanding toward the difficulties of the students in comprehending mathematical word problems written in English. The open-ended interview enabled the researcher to compare the responses from the interviewees (Paton, 1998 cited in Cohen et.al 2007).

The steps for interviewing the participants in this research were proposed by Creswell, such as: 1. Select interviewees based on the purposeful sampling; 2. Record the entire interview, including the questions which are asked by the researcher; 3. Write the main idea from interviewees' responses; 4. Stick with the questions, but keep maintaining the flow of the interview (Creswell, 2008). The questions for interview were elaborated in appendices session.

The interview was done to three teachers who taught mathematical word problems to the students who used English module in the class. The interview was conducted in Bahasa Indonesia to attain the comfort zone and avoid misunderstanding between the researcher's interpretations to the teachers' answers. The interview's question consisted of 13 questions related to the students' difficulties and the teachers' strategies in comprehending the mathematical word problems written in English. The interview session was recorded, and then the researcher transcribed it to achieve detail information. The transcription of the interview session was attached in appendix session.

The data from interview was used as a tool for validation to the main data being analyzed – teachers’ opinion towards the students’ difficulties and the strategies that they used in the class to help the students comprehend the word problems (Creswell, 2012).

1.5.2 Questionnaires

The questionnaire was used to gain the information of the students as the source. According to Wilson and McLean (1994, cited in Cohen et. al, 2007), the questionnaire is a useful instrument to collect the information, and it was widely used for the research by providing the questions and answers structured without the researcher presence. The aim of this technique was to find out students’ opinion about what difficulties that they found in comprehending mathematical word problems written in English.

According to Sugiyono (2009), Likert scale is used to measure someone’s or groups’ attitudes and their perceptions related to social phenomenon. This research applied close-ended likert scale in order to find out the students’ opinion toward the difficulties of the students in comprehending mathematical word problems written in English.

The questionnaire was done to ten students of the Private course who used English module in the classroom, ranging from Grades 3 to 6. The questionnaire was conducted in two days in order to have sufficient participants number for the study. The researcher provided two kinds of questionnaires which are differentiated by the language (Bahasa Indonesia and English) to attain the comfort zone for the students. The questionnaire contained ten questions related to the students’ difficulties in comprehending the mathematical word problems written in English. The questionnaire was conducted by the students who were answering each statement to choose one of the range numbers which is suitable with their perception. Result of the questionnaire was calculated in percentage in order to be presented as the data in chapter four as the students’ opinion.

1.6 Data analysis

The data analysis in this study was divided into two categories: analysis of the interview, and the analysis of questionnaire. The data were described comprehensively and elaborated descriptively as the characteristic of the case study (Airasian, et.al, 2006). The data analysis technique will be elaborated below.

1.6.1 The Analysis of the Interview

The result of interview session was elaborated descriptively based on the answer of participants. There are several steps used in analyzing the data of the interview session, such as: transcribing, and/or reviewing data, and analyzing all interview data. The transcribing was conducted in order to interpret the data easily (Boyce and Neale, 2006).

The data of interview session were transcribed as the first data process to help the researcher gather the information. Then, the second step was categorized the data depends on the research questions provided. The data of interview session were attached in a research paper, but the identity of information was confidential. The analysis of data from interview is presented in Chapter 4.

1.6.2 The Analysis of the Questionnaires

The researcher employed close-ended questionnaire in the form of Likert scale. The participants of students had same questionnaire to be answered. There were four ranges of Likert scale to investigate about the students' perception. The students' responses were covered by four different categories which have different scores for each.

Table 3.1
Categories of the responses

Categories	Strongly agree	Agree	Disagree	Strongly disagree
Scores	4	3	2	1

Then, the data used percentile formula and it was interpreted based on the frequency of students' answer. The percentile formula according to Hatch and Farhady (1982), was formulated below:

$$P = 100 \times F/N$$

P = Percentile

F = Frequency

N = Respondent

The analysis of the questionnaire would answer the first research question of this study about the students' opinion toward their difficulties in comprehending the mathematical word problem written in English. The data of the questionnaire session were attached in appendix, but the identity of the participants was confidential. The analysis of data from the questionnaire is presented in Chapter 4.

1.7 Concluding Remarks

This chapter has elaborated the statements of problems, the research site and participants, the research design, the research procedures, the data collection, the data analysis and interpretation. The next chapter will discuss about the findings and the discussions of the study.