

CHAPTER III

METHODOLOGY OF RESEARCH

A. Design of Research

This research was a research design qualitative methods: a multi-case research (*John W. Creswell, 2009, 2014*). It conducted a triangulation multiple-case research that included two cases (first case in Laos and the other case in Indonesia). *Fraenkel, Jack, Wallen, Norman E. & Hyun, Helen, (2012)* assert “the results of multi-case research are often considered more compelling, and they are more likely to lend themselves to valid generalization”. Besides, the multiple-case could strengthen the understanding of the research questions (*Gay, Mills, Geoffrey & Airasian, Peter, (2012)*).

A multi-case research method was used this research because this type of research would contribute to a general and in-depth understanding of the similarities and the differences between two contexts (*John W. Creswell, 2009*). Also, it allowed the research to in order to gain information about compare of mathematics education between in Laos and Indonesia on mathematics teaching-learning in all grade and all level (pre-school to upper secondary school) in different area. Furthermore, *Stake (2006)* confirms that a multi-case research provides group method to investigate group of multiple participants. Moreover, to use a multi-case research allows the researcher to explore the phenomenon in more than one setting that makes the study stronger than a single case research (*Stake, 2006; Yin, 2003, 2009*). Besides, in this research, a multi-case research consisted of two intrinsic cases. *Stake (2006)* defines and intrinsic case research as a particular individual or situation of research.

As result, this research focused on the case compare of mathematics education between in Laos and Indonesia on mathematics teaching-learning in lower secondary school. It involved two secondary schools as one case from Laos and other case from Indonesia.

B. Location, Population and Samples

1. Location

In this research were two schools in Laos and Indonesia. One school in Laos as first case and one school in Indonesia as the other case were research. In order to select the school, convenient sampling was employed.

- 1) In Laos, due to Veunkham Secondary School, Saythany District, Vientiane Capital, Lao PDR. Because, this school is the researcher's hometown.
- 2) In Indonesia, due to Lower Secondary School State 9 (Sekolah Menengah Pertama Negeri 9: SMP N 9), Jl. Semar No. 5 Tle. (022) 6014886 Bandung 40172. Website: www.smpn9bandung.sch.id
Email: smpnsembilanbandung@gmail.com

2. Population and Samples

The popular and sample in this research were all grade in lower secondary school mathematics teaching-learning in Laos and Indonesia in academic year 2016-2017.

There were two parts in a qualitative phase of data collection i.e. observation and interview as a qualitative phase. The select of sample in Laos and Indonesia was the same protocols.

For sample of student's, choose 6 samples from popular in Lower Secondary School in Laos and Indonesia. So, 6 samples as: 3 samples were male and 3 samples were female. And sample of teacher's, choosing all teacher teach mathematics in the schools.

C. Instruments of Research

There were two parts in this research. So, this research had observation part and interview part.

1. Observation

In observation part, there come to school joints in class on school time mathematics class. Observation in Laos and Indonesia difference system, because

Laos's public school structure conforms to a 5-4-3 pattern, that is, five years of primary, four years of lower secondary, and three years of upper secondary studies. And Indonesia's public school structure conforms to a 6-3-3 pattern, that is, six years of primary, three years of lower secondary, and three years of upper secondary studies. In this observation, observer was observed teaching-learning on classes in lower secondary school in Laos and Indonesia, too.

2. Interview

In interview part, there were two groups. In this research were student's group and teacher's group in lower secondary school in Laos and Indonesia. Sample of student's, choose 6 persons' per grades in lower secondary school, for sample 6 persons' had 3 persons' as male and 3 persons' as female. In grade were shared 3 levels as: high level, medium level and low level. So, high level was 2 persons' as: male and female, medium level was 2 person's as: male and female and high level was 2 persons' as: male and female. For sample of teacher, choose all teacher teach mathematics.

D. Data Collection

In each case (Laos and Indonesia), the data were parallel collected in the second semester of the academic year 2016-2017. Observation and interview were conducted to collect qualitative data from classes, teachers and students. The following are the procedures in details: to collect the qualitative in Laos and Indonesia, interviews were conducted to get data from teachers and students group interviews were carried out to collect the data.

1. Qualitative Data Collection in Laos

To collect the data in Laos, the researcher followed the procedures below.

- 1) The researcher made an appointment with the teachers and students group to collect data.
- 2) The time spent for observation was approximately 40 minutes per time.

- 3) The time spent for interview was approximately 10-20 minutes per group per time (one group had 5-6 persons or one grade in lower secondary school).
- 4) The observer explained the samples the objective of the research before starting the observation (used Lao language).
- 5) The interviewer explained the samples the objective of the research before starting the interview (used Lao language).
- 6) The observations and interviews were recorded using a camera video and photo by mobile phone. The files were sent to the researcher to transcribe into written form and then translate into English. Then, the data related to the research question were analyzed and interpreted.

2. Qualitative Data Collection in Indonesia

To collect the data in Indonesia, the researcher followed the procedures below.

- 1) The researcher made an appointment with the teachers and students group to collect data.
- 2) The time spent for observation was approximately 40 minutes per time.
- 3) The time spent for interview was approximately 10-20 minutes per group per time (one group had 5-6 persons or one grade in lower secondary school).
- 4) The observer explained the samples the objective of the research before starting the observation (used Indonesia language).
- 5) The interviewer explained the samples the objective of the research before starting the interview (used Indonesia language).
- 6) The observations and interviews were recorded using a camera video and photo by mobile phone. The files were sent to the researcher to transcribe into written form and then translate into English. Then, the data related to the research question were analyzed and interpreted.

E. Data Analysis

There were two phase in the data analysis: Phase 1) qualitative data analyzed and phase 2) cross-case analyzed. The research analyzed and interpreted each case (Laos's case and Indonesia case). It interpreted the results across the first case and identified the differences and similarities the mathematics education between in Laos and Indonesia. Below are the data analyzed procedures in details.

1. Phase Qualitative Data Analyzed

In each case (Laos case and Indonesia case), the researcher employed content analysis to analyzed data from observation and interview (from teachers and students group).

Regarding the content analysis, the observation and interviews were recorded into digital file. Then, they were transcribed into written form and translated the native languages into English. There were transcriptions for teachers and also transcriptions for students (interview group) from each case. The researcher read the transcriptions for several times and developed themes of the answer. Finally, the research described each theme and summarized the data when they shared the same responses among samples. If there were different responses, the researcher described them separately.

2. Phase Across-Case Analyzed

After separately analyzing the qualitative data of each case, the cross-case analysis was used to analyze the Laos case and Indonesia case in order to address whether the finding from each case report a broader pattern of conclusions (Yin, 2003). The replication logic or convergence and divergence of the result addressed the interpretation of the finding across the case in multi-case research (Yin, 2003; Fraenkel, Jack, Wallen, Norman E. & Hyun, Helen, 2012). In this case, a theoretical replication illuminated this process because the analysis took into consideration the predicted finding based on theory, but also included the variations or opposing results (Yin, 2003).