CHAPTER III
RESEARCH METHODOLOGY

This chapter discusses all related aspects employed as the methodology of the research. As a point of departure, Section 3.1 provides information explaining the use of convergent parallel mixed methods as research design based on the purposes of the research, since they underlie the overall decision for designing the research, choosing research site, outlining data collections and samples, and also constructing data analysis technique. Section 3.2 presents the participants of the research. Section 3.3 explains the research site and rationales behind the decision for collecting data and samples employed in this research. Section 3.4 informs the instruments used in the research. Section 3.5 shows the procedures in conducting the research. Section 3.6 discusses the data analysis techniques used in the research. As a closing, Section 3.6 states the ethical approval.

3.1. Research Design

As indicated in Section 1.2, this research attempted to answer three research questions. The first research question is how the Socratic questioning method is implemented in teaching speaking course. The second research question is the effectiveness of the Socratic questioning method on students' speaking skill and critical thinking. The third research question is the teacher and the students' perception on the implementation of the Socratic questioning method in speaking class.

This research employed convergent parallel mixed methods as a research design. In this research, the researcher's objectives in selecting mixed methods research are in line with what Greene (2007), Bergman (2008), Teddlie and Tashakkori (2009), Creswell and Plano (2011), and Caruth (2013) as revealed in mixed method research, especially mixed methods research in education field. Firstly, the combination or the integration of quantitative and qualitative will be the best possible approach to answer the research problems. Secondly, mixed methods

can help the researcher to get a clear and deep understanding of the research problems being addressed. Thirdly, mixed methods allow the researcher to get greater certainty in inferences, statements or conclusion which formulate research findings. Lastly, mixed methods will produce more reliable research.

In this research, the researcher decided to use parallel, convergent mixed methods because the researcher wants to converge or merge both quantitative data and qualitative data to provide a complete understanding of research questions.
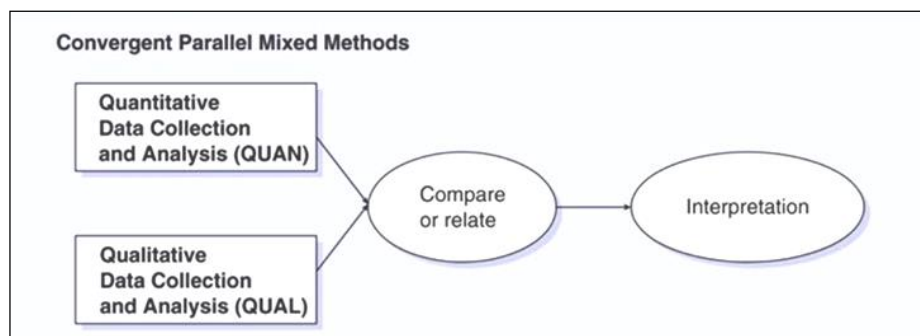

Figure 3.1 Process of Convergent Parallel Mixed Methods (Creswell, 2014)

3.2. Research Participants

Research participants are human subjects or people who participate in research as targets of tests, observation, and interview to provide research data to answer research questions on a specific topic (Coleman, 2005). In this research, the participants are one teacher and thirty-eight students in the third semester of English department of teacher training and education faculty in a state university in Tarakan, North Kalimantan.

3.3. Population and Sample

The quality of research depends on not only the appropriate research method and research instruments used but also a strategy in research sampling (Cohen, Manion, & Morrison, 2000). Factors such as accessibility, time, and expanse influence the collection of data from the whole population and sample are then used as representative of the total population. There are many sampling strategies such as simple random sampling, systematic sampling, stratified sampling, cluster sampling, stage sampling, multiphase sampling, convenience sampling, quota

sampling, dimensional sampling, snowball sampling, and purposive sampling. In this research, the researcher used purposive sampling based on judgments and typicality of the researcher's research. The sample is chosen for a specific purpose to report curricular and pedagogic consideration. Population in this research is English department students of teacher training and education faculty of one state University in Tarakan, North Kalimantan. A sample of this research is one class of third-semester students (38 students) and one teacher of English department of teacher training and education faculty of one state University in Tarakan, North Kalimantan. There were three reasons why the researcher chose the research participants (1) it is related to the availability of a speaking course, hence the researcher focused on stimulating students' speaking and critical thinking in a speaking course; (2) the teacher and the students have not experienced the Socratic questioning method in teaching and learning process; and (3) the accessibility in collecting the data due to the researcher's familiarity with the situation in the research site.

Figure 3.2 Research site

3.4. Research Instruments

Research instruments are what the researcher used to collect data to answer research questions both quantitatively and qualitatively (Wilkinson & Birmingham, 2003). In this research, as previously mentioned that the design of this research is

convergent parallel mix methods, hence this research employed quantitative data and qualitative data.

3.4.1. Quantitative Data Collection

In quantitative data collection, this research focused on data pre-test, mid-test and post-test as the assessment of students' speaking skill and critical thinking to see the stimulation of the Socratic questioning method in the speaking course. The stimulation of this method was identified from the progress of students' performance in pre-test, mid-test and post-test. The assessment was in the form of dialogic test. Both speaking skill and critical thinking skill were assessed by using six types of Socratic questions. The first type of Socratic questions is conceptual clarification, which covers the questions that make the students think more about what exactly they are thinking and asking about the topic. The students have to prove the concepts behind their arguments by using the fundamental questions. The students think deeper through telling more. The second type of Socratic questions is probing assumptions, which covers the questions that make the students think about their presuppositions and unquestioned beliefs. The third type of Socratic questions is probing rationale, reasons, and evidence, which covers the questions that make the students dig into their reasoning on the rationale of their arguments. The fourth type of Socratic questions is viewpoints and perspectives, which covers the questions that show that students' arguments in stating their particular position. The fifth type of Socratic questions is probing implications and consequences, which covers the questions that make the students think about whether the issue makes sense and desirable based on the arguments they gave. The sixth type of Socratic questions is questions about the questions, which covers the questions that make the students reflect about the whole dialogue and conversation and turn back to the questions itself. (See Appendix 1)

3.4.1.1 The Assessment Procedures

As previously mentioned that the test was one of the instruments in collecting the data, which were collected before, during and after the implementation of the Socratic questioning method. The test was in the form of

dialogic speaking test to assess students' speaking skill and critical thinking. The followings are the assessment procedures.

1. The Selection of topics for pre-test, mid-test, and post-test.

The selection of topics for pre-test, mid-test, and post-test was done at the same time when the students selected the topics for weekly meeting. The researcher and the teacher proposed eighteen topics based on the consideration of students' background knowledge and experience, students' range of vocabulary, and the recent issues that could stimulate students' speaking skill and critical thinking. The students had chosen gadget and social media as their pre-test topic, hoax attack as their mid-test topic, and HIV, AIDS, and free sex as their post-test topic. (See Appendix 2)

2. The Material selection for pre-test, mid-test, and post-test.

The researcher and the teacher provided the materials for pre-test, mid-test, and post-test in the form of online newspaper, online journal articles, e-books, and YouTube videos. They shared the links of materials in WhatsApp group and allowed the students to browse the materials by themselves. The students were asked to focus on the six types of Socratic questions in preparing the materials for pre-test, mid-test, and post-test (conceptual clarification, probing assumptions, probing rationales, reasons, and evidences, viewpoints and perspectives, implications and consequences, and also questions about the questions).

3. The Selection of the six types of Socratic questions for pre-test, mid-test, and post-test.

In pre-test, mid-test, and post-test, each student got six questions from the six types of Socratic questions. The first question was about conceptual clarification question. The second question was about probing assumption. The third question was about probing rationale, reason, and evidence. The fourth question was about viewpoint and perspective. The fifth question was about implication and consequence. The last question was about question about the question.(See Appendix 3).

4. The use of scoring rubrics in assessing students' speaking skill and critical thinking.

The researcher used scoring rubric speaking that was adopted from Delaware City School (2016) and scoring rubric critical thinking that was adopted from Stevens and Levi (2005). The items of speaking scoring rubric covers students' fluency, word pronunciation, speaking accent, students' vocabularies, grammar in use, and speaking details. Scoring rubric of critical thinking does not only cover students' accuracy in interpreting statements, graphics, questions, and evidence, but also students' analysis, arguments, and perspectives. It is based on reasoning skill, ethical judgment, and justification of procedures and results. (See Appendix 4).

5. *The conversion of scoring rubric result into score.*

After conducting the assessment, the researcher and the teacher converted the scoring rubric result for both speaking skill and critical thinking from pre-test, mid-test, and post-test into score to be analyzed statistically by using SPSS application. (See Appendix 5).

6. *The announcement of grades to the students.*

The researcher and the teacher announced the students' score of their pre-test, mid-test, and post-test. The result of students' speaking skill and critical thinking was shared transparently based on their achievement level in speaking skill categories and critical thinking level.

3.4.2. Qualitative Data Collection

In qualitative data collection, this research focused on data observation and interview. In observation, the researchers acted as non- participant observer, which means that the researchers did not participate and interfere with the process of teaching and learning. Some aspects observed were students' speaking frequency, Socratic question frequency, Socratic circle speaking pattern, and students' reflective practice. In this research, the researcher observed the on-going process of the Socratic circle speaking, saw the progress of students' speaking and critical thinking. The researchers recorded the activities in the classroom. The researcher used an open observation form, Socratic circle speaking form, and Socratic question checklist (See Appendix 6). In the interview session, there were three sessions of the interview, which focused on the teacher and the students. The first interview session was done after first meeting introducing the course, syllabus, and the used

of Socratic Method, which was about seeking the basic information of the teacher and the students. The second interview was done after the mid-semester test, which was about the teacher and the students' feedback on the use of the Socratic Method in speaking class. The third interview session was done after final semester test, which was about the lecturer and the students' perceptions on the running process of Socratic circle speaking (See Appendix 7).

3.5. Research Procedures

Since this research belongs to convergent parallel mixed methods, it has some research procedures. Firstly, the researcher identified the research problems. Secondly, the researcher clarified the purpose of mixed research. Thirdly, the researcher selected a research methodology (mixed methods). Fourthly, the researcher collected the data (quantitative data and qualitative data). Fifthly, the researcher analyzed the data separately. Sixthly, the researcher interpreted the data. Eightly, the researcher did legitimation. Lastly, the researcher did the conclusion drawing/final report. The following figure shows the procedures of this research.
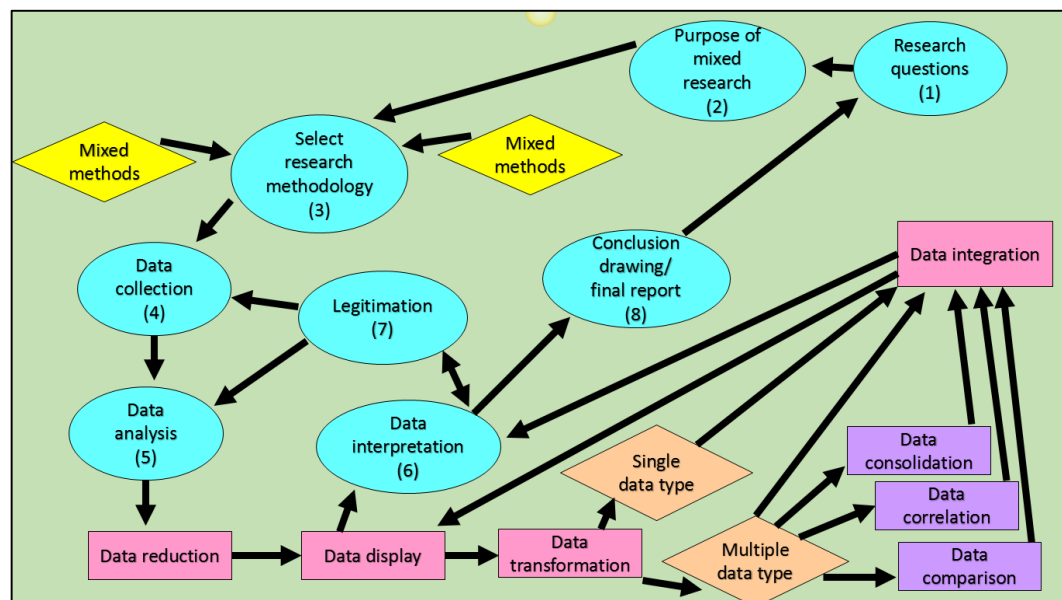

Figure 3.3 Mixed methods research procedures (Johnson & Onwuegbuzie, 2004)

3.6. Data Analysis

In convergent parallel mixed methods, quantitative and qualitative data are separately analyzed before bringing the data together. There are three ways to merge the data: (1) side-by-side comparison, (2) data transformation, and (3) a joint display of data. In a side-by-side comparison, the researcher first reports the quantitative statistical results and then discusses the qualitative results which confirm or disconfirm the quantitative findings, and then the researcher compares the findings through discussion and presenting one set of quantitative finding and followed by qualitative findings. In data transformation, the researcher changes qualitative themes or codes into quantitative variables and combines the two databases where the researcher takes the themes or codes and counts them (and possibly group them) to form quantitative measures. In a joint display of data, the researcher merges the two forms of data in a graph or table (it can take many different forms). The data might be a table that arrays the themes or codes on the horizontal axis and a categorical variable on the vertical axis. The data might be a key question table or concepts on the vertical axis and then two columns on the horizontal axis indicating both quantitative and qualitative responses and results to the concept, and merges them in a single visual (Creswell, 2014).

3.6.1. Quantitative Data Analysis

Quantitative data analysis is a process of describing quantitative data (survey or experiment research) through statistical calculation. It can be used to describe survey result, measure pretest-posttest in the experiment, and hypotheses examination (Creswell, 2014). Parametric and non-parametric statistics can be used in analyzing quantitative data. Parametric statistics are designed to represent large population where the parameters of abilities are known, while non-parametric statistics makes few or no assumption about population distribution and working on nominal and ordinal data from small samples without making any assumption on the normality of distribution (Cohen et al., 2000). In this research, the data were not normally distributed through the normality test because of small samples and the use of nominal/ordinal data. The data is considered not qualified in testing parametric statistic, especially Paired samples t-test. Therefore, it is necessary for

the action that must be done by the researcher so that the research data collected could still be tested or analyzed by using nonparametric statistic method. In this case, the researcher used the Wilcoxon sign rank test as part of the nonparametric statistic to analyze the effectiveness of the Socratic questioning method to stimulate students' speaking and critical thinking.

3.6.1.1. Wilcoxon sign rank test

The Wilcoxon test is often used as an alternative to the paired samples t-test (Sheskin, 2007). The use of the Wilcoxon test is not wrong, because if the research data is not normally distributed (through normality test), the research data collected could still be tested or analyzed.

In addition to paired samples t-test, here Wilcoxon test is also used to determine whether there is an average difference between two paired samples. The research data used in this test should ideally be ordinal or interval-scale data. Wilcoxon test or also called Wilcoxon signed rank test is part of non-parametric statistics method. Since it is part of nonparametric statistics, the Wilcoxon test does not require normally distributed research data. Thus it can be said that the use of the Wilcoxon test instead of paired samples t-test when the research data is not normally distributed is the most appropriate step.

Wilcoxon Hypothesis Test

In the hypothesis test, the second test output used is the "statistical test" output. Before going to the analysis of the output results, the first thing that needs to be known is the primary decision making used in the Wilcoxon test as a guideline.

Basic decision making in the Wilcoxon test:

1. If the value of Asymp. Sig. (2-tailed) is smaller than <0.05 then Ha is accepted.
2. Conversely, if the value of Asymp. Sig. (2-tailed) is higher than> 0.05 then Ha is rejected.

3.6.2. Qualitative Data Analysis

Qualitative data analysis is a process of describing phenomena, classifying, and seeing how concepts are interconnected. Its progress is from the initial description through the process of breaking down data, and seeing the connection to a new account based on data reconceptualization (Dey, 1993).

3.6.2.1. Observation data analysis

Observation data gives researcher opportunity to gather real situation data to understand the context, open-ended and inductive, see things that might be unconsciously missed, discover beyond perception-based data, and access personal knowledge (Cohen et al., 2000).

There are three methods in analyzing observation data (Flick, 2014): observation uses description analysis, inductive analysis, and constructionist analysis. Description analysis focuses on describing the setting, provides a social context of what people say in the field, and finds the implication in the act of observing and recording where the description of setting gives empirical documentation (pictures and patterns). The inductive analysis focuses on an analysis where the specific finding is made general to logically and empirically represent actual and objective result (grounded theory); the observation is consistent or not with the theory. The constructionist analysis focuses on contextually highlighting particular and meaningful process, based on the realistic description of the running process in the field which concerns on how participant creates social interaction. In doing observation, the researcher used these three methods of analysis to get a complete understanding of the stages and running process of the Socratic Method in speaking class.

3.6.2.2. Interview data analysis

Coding and scoring are often used in analyzing interview data (Cohen et al., 2000). Qualitative data analysis is more reflective, reactive interaction, and the researcher can contextualize data from the interpretation of social encounter. There are four steps in analyzing the interview transcript in this research. The first step is generating meaning from natural units. The second step is ordering, categorizing,

and classifying units of meaning. The third step is structuring the narrative to describe the content of the interview. The last step is interpreting data.

The researcher also adopted the procedures proposed by Miles and Huberman (1994) in generating meaning from the interview transcript. First, the researcher did frequency counting such as ideas, words, pieces of data, and themes. Second, the researcher noted the patterns and themes. Third, the researcher saw plausibility. Fourth, the researcher clustered the data. Fifth, the researcher made the metaphor. Sixth, the researcher contrasted or compared. Seventh, the researcher elaborated the arguments by splitting data. Eighth, the researcher clarified the critical concept. Ninth, the researcher divided the data into a smaller number. Tenth, the researcher linked the identification between variables. Eleventh, the researcher tried to find intervening variables. Twelfth, the researcher built a logical chain of proof/evidence. Last, the researcher made theoretical/conceptual coherence.

3.7. Ethical Approval

All procedures performed in this research that involved human participants were by the ethical standards of the institutional and national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards (World Medical Association, 2013).