CHAPTER III
METHODOLOGY

This chapter presents the methodology used in the present study. It elaborates the research design, the research site and participants, the data collection procedures, the data analysis and the conclusion of this chapter.

3.1. Research design

The present study employed a qualitative research design. This particular design is considered to be appropriate for the present study for at least three reasons. The first is by considering the function of a qualitative design, which is for "…exploring and understanding the meaning of individuals or group ascribe to a social and human problem" (Cresswell, 2009). In this case, the present study seeks to explore and understand critical thinking aspects reflected in students' Discussion texts as well as how the students' writing process contribute to students' critical thinking in students' opinion. The second is by considering the collected data for answering the research questions. The nature of the data collected, which is in textual forms, requires the research design to be qualitative (see Dornyei, 2005). The third is to do with the analysis. The analysis carried out to present the answers for the questions posed in the present study is interpretive which mirrors the product of the researcher's subjective interpretation of the data, which is grounded in empirical evidence captured in the data. This is the nature of data analysis in qualitative method (Hatch, 2002; Dornyei, 2005).

3.2. Research Site and Participants

The present study involved nine English Education students in a university in Kuningan, West Java, Indonesia. University level was selected since university education is a socio-cultural phenomenon in which research about critical thinking is necessary to be developed (McLean, 2006). The students participated in this study attended a 2-credit-hour-writing course called "Writing 4" in their fourth semester

when they were assigned to write Discussion texts by their lecturer. More detailed elaboration on the writing program where the students were involved with is presented in Appendix 1.

The students in the present study were selected using purposive sampling on the basis of their achievement in their writing class, consisting of three high achievers, three medium achievers, and three low achievers (see Fraenkel and Wallen, 2006). The level of students' achievements were obtained on the basis of their writing score and consulted to the students' writing lecturer to make sure that each student represents his/her achievement category (see Appendix 4).

3.3. Data collection Procedure

The data collection procedure was conducted in three steps using two different data collection instruments, namely document analysis and interview. The first step was to find out the level of students' achievement to differentiate among high, medium, and low achievers. This was done by analyzing document of students' writing score and a consultation with the students' writing lecturer to confirm the students' writing score.
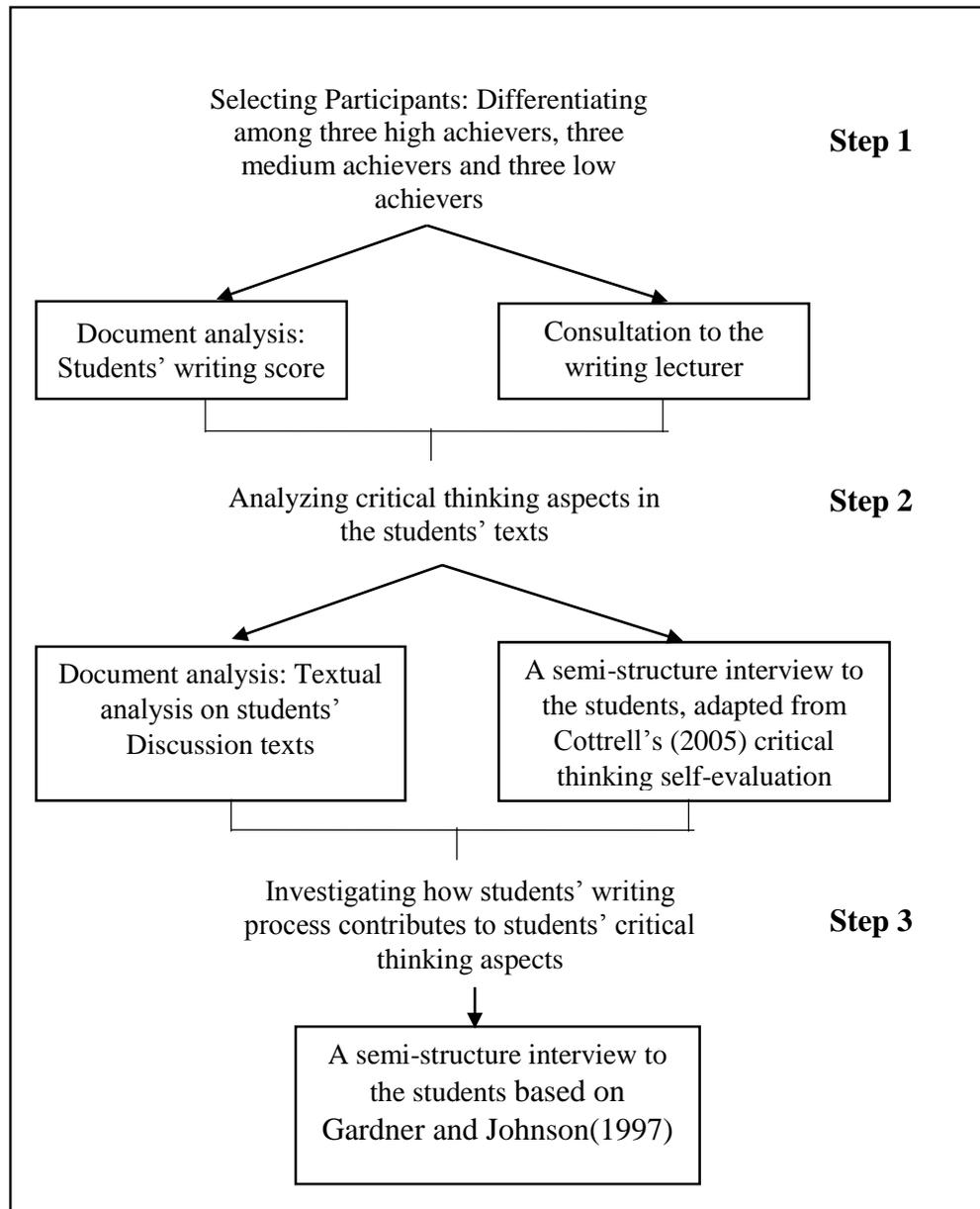
The second step was to answer the first research question, which was to analyze critical thinking aspects in the students' Discussion texts. On the basis of the information gathered in the first step, students' Discussion texts were collected. In addition, a semi-structured interview was also conducted to gather the data as a self-evaluation for critical writing done by the students. A semi-structured interview, as Dornyei (2011) explains, enables the researcher to explore issues and follow interesting developments from the interviewee because although the researcher comes with guiding questions, he or she is able to ask more detailed information to elaborate the issues in exploratory manner. Hence this kind of interview was potential to enrich the collected data in the present study. The interview was adapted from a tool for critical self-evaluation in writing devised by Cottrell (2005). This adaptation was done so that all question items cover critical thinking aspects covered in this study. Because of

practicality and clarity consideration, the interview was conducted in Bahasa Indonesia.

A pilot study to two students out of the actual participants was conducted before conducting the interview to the actual participants. This was to try out the interview guiding questions so that they were understandable by the participants. A pilot study is the antecedent work before the real study is done (Huang, 2009). One of its purposes is to reduce lack of clarity (Taylor and Wallace, 2007). After the pilot study, revision of the question items covering wording and question order was done on the basis of the pilot study results and feedbacks from the participants.

These data collections which cover analysis of the students' text and interview, were to build validity of the data. A strategy to promote validity is to triangulate different data sources by examining evidence from the sources and using it to build a coherent justification (Creswell, 2009). Hence the data from the interview was to confirm and enrich the data from the textual analysis.

The third step was to answer the second research question, which was to find out how writing process contributed to the students' critical thinking aspects in students' opinion. A semi-structured interview was conducted to all selected students. The interview to the students was selected as the data collection instrument since it helps to understand the participants' thinking of what they think they do (Fraenkel and Wallen, 2006). In addition, it is difficult to observe students' opinion on how writing process contributed to the students' critical thinking aspects. Therefore the best way to understand unobservable phenomenon is through questioning (see Chamot, 2004). This interview was devised based on Gardner and Johnson's (1997) theory of writing process. Because of practicality and clarity consideration, the interview was conducted in Bahasa Indonesia. It was all recorded by a voice recorder and transcribed to make the analysis easier and more accurate. The data collection procedure was summarized in the following figure.

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│                                                               │
│        Selecting Participants: Differentiating                │
│         among three high achievers, three          Step 1    │
│            medium achievers and three low                     │
│                    achievers                                  │
│                                                               │
│      ┌──────────────────────┐   ┌──────────────────────┐     │
│      │  Document analysis:   │   │  Consultation to the │     │
│      │ Students' writing score│   │   writing lecturer   │     │
│      └──────────────────────┘   └──────────────────────┘     │
│                                                               │
│         Analyzing critical thinking aspects in     Step 2    │
│                 the students' texts                           │
│                                                               │
│    ┌──────────────────────┐   ┌──────────────────────┐       │
│    │ Document analysis: Textual│ A semi-structure interview to│
│    │  analysis on students'│   │  the students, adapted from  │
│    │   Discussion texts    │   │   Cottrell's (2005) critical │
│    │                       │   │  thinking self-evaluation    │
│    └──────────────────────┘   └──────────────────────┘       │
│                                                               │
│        Investigating how students' writing                    │
│      process contributes to students' critical    Step 3     │
│                 thinking aspects                              │
│                                                               │
│          ┌──────────────────────────────┐                    │
│          │  A semi-structure interview to│                   │
│          │    the students based on      │                   │
│          │  Gardner and Johnson(1997)    │                   │
│          └──────────────────────────────┘                    │
│                                                               │
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Figure 3.1 The Data Collection Procedure

3.4. Data analysis

To obtain the answers to the research questions, a textual analysis and an analysis to the data from the interview were conducted. The first, the textual analysis to the students' texts was conducted. This was to analyze the critical thinking aspects

reflected in the students' Discussion text. The analysis was done by developing appropriate categories to illuminate what is being investigated (Fraenkel and Wallen, 2006). In the context of the present study, the analysis was done according to the categorization of critical thinking aspects which cover critical thinking elements suggested by Emilia (2005) and others relevant to this study as well as critical thinking dispositions proposed by Ennis (1996) and others relevant to this study, which have been elaborated in Chapter Two. To make the analysis easier a rubric summarizing the way to analyze critical thinking aspects was made on the basis of the theory in Chapter Two (see Appendix 2). The presentation of the textual analysis was adapted from Chaffee (2002), the example is as follows.

	CT Element	CT Disposition
Is it better to marry when you are young or prefer to wait until you are older to marry?		Attempt to (be)
When we are talking about marriage, everyone has their opinion about it. Some people choose to marry when they are young, and the others choose to marry when they are older. Based on Judicial hearings Marriage Act (Sidang Uji Materi UU perkawinan) 1974, the minimum marriage age limit is 15-16 years for women and 19 years for men,	**Issue** The first paragraph contains preview of issue **Fact** "based on"	**Relevant** reference it, they, we, and their **Well informed** Using law as a source to define young and older marriage **Precise** limiting minimum age for marriage.

Figure 3.2 Data Presentation of Textual Analysis

The second, the collected data from the interview conducted was analyzed by adapting the steps of analyzing qualitative data by Lodico *et al.* (2004). The first was to prepare and organize the data in which the interview recordings from the nine participants were transcribed. The second was to review and explore the data. This was done by reading through all the transcribed interview investigating the possible critical thinking aspects investigated as well as the students' writing process that the participants have gone through. The third was to code the data into categories. Lodico *et al.* (2004) define coding as "…the process of identifying different segments of the data that describe related phenomena and labeling these parts using broad category names." The collected data were categorized on the basis critical thinking aspects used

in the present study (Ennis, 1996; Emilia, 2005; and other relevant to the present study – see Chapter Two) and the students' writing process by Gardner and Johnson (1997). In this stage, the data were put in the following table, which was modified from Connor and Gibson (1998). Below is the sample of interview data which was analyzed and translated into English.

Table 3.1 Coding Interview Data

Interviewer/ Student	Question / Responses	Codes
I	What did you do before writing?	WS. Prewrting; brainstorming and mind mapping
S1	Before writing a Discussion text I made a plan using *brainstorming* and then *mind mapping,* and yeah I started writing.	
I	What did you do in brainstorming and in mind mapping?	WS. Brainstorming: choosing ideas
S1	In *brainstorming,* there is *a selection of ideas* which are related to the topic….	
I	How did you do it?	CT element: argument (economic aspects)
S1	In marriage, firstly I saw it from *economic aspects*….	

The last part was to report and interpret the analyzed data. The analyzed data were reported in Chapter Four. This report includes the analyzed texts which were presented based on Chaffee (2002) (see Figure 3.2) as well as the interview scripts taken from the interview conducted to the students. These interview scripts, which were provided in Chapter Four, were translated into English for the purpose of clarity and practicality. Then the data were interpreted. Lincoln and Guba (1985) in Lodico *et al.* (2004: 313) explain that interpreting qualitative data involves "…making sense of the "lessons learned" by looking for their larger meaning". Interpretation in the present study was done by relating the findings to previous studies and to relevant theories explained in Chapter Two.

3.5. Conclusion

This chapter has presented a detailed description on the methodology used in the present study. It has elaborated the research design, the research site and participants,

the data collection procedures and the data analysis. The findings and discussion of this study will be presented in the next chapter.