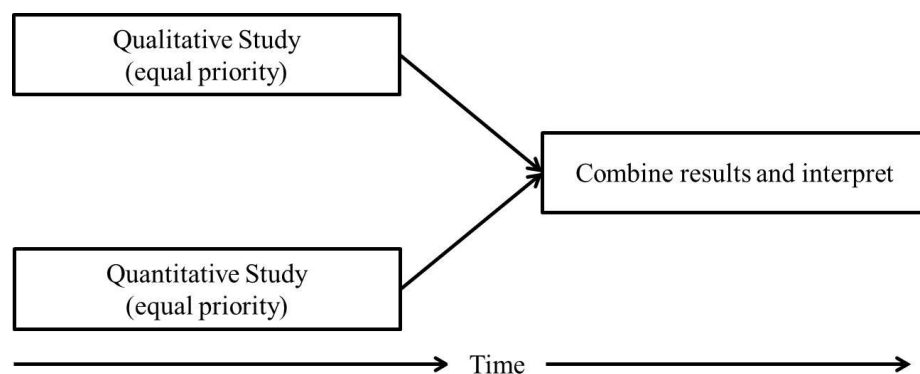


## CHAPTER III METHODOLOGY

The third chapter depicts how this study is conducted in order to find out the answers to the research questions. This part deals with some methodologies employed in this study that consists of the research design, the data collection technique (including research population, sample, sampling technique, and research site), and the data analysis.

### 3.1 Research Design

Aiming at answering the research question generated in this study, the researcher utilizes a mixed method with the triangulation design (see Picture. 3.1), which collect the data both quantitatively and qualitatively as it is trying to investigate how effective the inquiry-based teaching method is implemented in EFL learning to enhance students' critical thinking skills. The quantitative and qualitative data are used to study the same phenomenon to determine the two converge upon a single understanding of the research problem being investigated (Fraenkel, Wallen, and Hyun, 2012:561). Meanwhile, in collecting the data, the quantitative and qualitative methods are given the same priority and simultaneously in this study.



Picture 3.1  
Triangulation Research Design  
Fraenkel, Wallen, and Hyun (2012:561)

## **3.2 Data Collection Procedures**

### **3.2.1 Research Site and Population**

In every study, the researcher needs to determine the population that can be selected as a research participant. Meanwhile, the population in this present study is 7<sup>th</sup>-grade students of one of junior high school in Bandung.

The basic consideration in determining the junior high school students is the government regulation (i.e. PERMENDIKBUD No. 20/2016) in which requires the standard competence of graduate students (even elementary level) should be able to think critically. But unfortunately, in general, Indonesia government begins to assert English language learning from junior high school level. Thus, this level of school is selected.

### **3.2.2 Sample and Sampling Technique**

In this mixed method research, the cluster random sampling technique is utilized by the researcher in selecting the research sample. The sample selecting begins by applying the cluster random sampling by selecting one class from 12 classes randomly through the lottery.

### **3.2.3 Data Collection Technique**

In gaining the data, the researcher collects several data related to the students' critical thinking skill progress in before, while, and after the inquiry-based teaching implemented in the classroom. Therefore, this study utilizes several techniques in gathering the data needed, through reading test and classroom observation.

#### **1. Test**

In this study, the researcher conducts two kinds of test, namely pretest and posttest, which is conducted before and after the inquiry-based teaching implemented. This test is intended to get students' score and see how much inquiry-based teaching can affect students' critical thinking skill.

The test is in the form of reading test which consists many questions referring to the core components of critical thinking skill adapted from Facione (see Table 3.1). Then, the students' work is assessed by using critical thinking

scoring rubric. The scoring rubric itself is adopted from Facione and Facione (1994) called Holistic Critical Thinking Scoring Rubric.

Table 3.1  
Pretest and Posttest Questions Guideline  
Adapted from Facione (2015)

Variable	Indicator	Subskill
Facione (2015) highlights that at least there is six components being at the very core of critical thinking skills quoting from the national panel of experts, these are:	1. Interpretation	a. Categorize b. Decode c. Clarify meaning significance
	2. Analysis	a. Examine ideas b. Identify c. Identify reasons arguments and claims
	3. Inference	a. Query evidence b. Conjecture c. Draw logically alternatives valid or justified conclusion
	4. Evaluation	a. Assess credibility of claims b. Assess quality of the arguments that were made using inductive or deductive reasoning

5. Explanation	a. State results
	b. Justify procedures
	c. Present arguments
6. Self-regulation	a. Self-monitor
	b. Self-correct

## 2. Observation

The classroom observation is utilized to observe the students' critical thinking skill progress during the implementation of inquiry-based teaching implemented. This kind of observation is used to see the phenomenon in a natural setting regarding the inquiry-based teaching implementation as well as students' participation in the learning activity. In the observation session, the researcher used observation sheet to know the improvement of critical thinking disposition of the students in the learning process. Meanwhile, the indicators of critical thinking disposition that is observed by the researcher are adapted from Reichenbach. The observation sheet can be seen as follows:

Table 3.2  
The Improvement of Critical Thinking Disposition in Students' Learning Process

<b>Inquiry-Based Teaching Cycle</b>	<b>Critical Thinking Disposition Frequency</b>				
	<b>Curiosity</b>	<b>Relevancy</b>	<b>Open-mindedness</b>	<b>Rationality</b>	<b>Implementation</b>
Phase I Asking					
Phase II Investigating					
Phase III Creating					

Phase IV Discussing					
Phase V Reflecting					

This kind of observation shows many facts related to the students' critical thinking improvement through inquiry-based teaching implementation in the classroom. Meanwhile, this kind of observation is chosen in order to know how frequent the critical thinking disposition appears in the process of learning.

The above critical thinking disposition categories are derived from critical thinking disposition proposed by Reichenbach (2001) as follows:

Table 3.3  
The Categorization of Critical Thinking Dispositions  
Adapted from Reichenbach (2001)

Disposition Characteristic of Critical Thinkers	Category
Curious about the world, he/she tries to be well-informed	Curiosity
Creative questioner	
Frequently asks <i>why</i> , seeking reasons to defend a position	
Uses credible sources and mentions or refers to them	
Takes into account the total situation or context when he/she interprets something	Relevancy
Keeps his/her thinking relevant to the main point and avoids going off on tangents	
Looks for alternative explanations, positions, or arguments	Curiosity
Open-minded	Open- mindedness
Takes or changes a position when the evidence, grounds, or reasons are sufficient to do so	
Withholds judgment when the evidence, grounds, or reasons are insufficient	
Seeks as much precision as the subject permits	Curiosity

Realizes the limits of knowledge, and hence looks for probabilities rather than proofs	Rationality
Realizes the role of personal judgment and biases in the knowing process	
Deals in an orderly manner with the parts of a complex whole; he/she anticipates the next step in the process	Implementation
Sensitive to the feelings, level of knowledge, and degree of sophistication of other when presenting his/her findings	Rationality
Applies his/her critical thinking abilities to wide variety of subjects	Implementation

The observation is administered as long as two months with nine meetings. In the stage of observation, the researcher observes the emergence of students' critical thinking skill in the learning process through the implementation of inquiry-based teaching. Meanwhile, the observation is run in every inquiry cycle phase, which are undertaken by the teacher. It covers the phase of asking, investigating, creating, discussing, and reflecting. The detail of the observation agenda can be seen in the table below:

Table 3.4  
Classroom Observation Agenda

Day	Date	Activities/Focus	Methods
II	April 21 <sup>st</sup> , 2017	1 <sup>st</sup> meeting Chapter VI: We love what we do!	Video/Field Notes
III	April 27 <sup>th</sup> , 2017	2 <sup>nd</sup> meeting Chapter VI: Continued	Video/Field Notes
IV	April 28 <sup>th</sup> , 2017	3 <sup>rd</sup> meeting Chapter VI: Continued	Video/Field Notes
V	May 12 <sup>th</sup> , 2017	4 <sup>th</sup> meeting Chapter VII: I'm proud of Indonesia!	Video/Field Notes
VI	May 15 <sup>th</sup> , 2017	5 <sup>th</sup> meeting Chapter VII: Continued	Video/Field Notes

VII	May 18 <sup>th</sup> , 2017	6 <sup>th</sup> meeting Chapter VII: Continued	Video/Field Notes
VIII	May 19 <sup>th</sup> , 2017	7 <sup>th</sup> meeting Chapter VIII: That's what friends are supposed to do.	Video/Field Notes
IX	May 22 <sup>nd</sup> , 2017	8 <sup>th</sup> meeting Chapter VIII: Continued	Video/Field Notes
X	May 29 <sup>th</sup> , 2017	9 <sup>th</sup> meeting Chapter VIII: Continued	Video/Field Notes

### 3.2.4 Research Instrument

The instruments used in this study are critical thinking scoring rubric, observation, and documentation. Those instruments are considered to be chosen since this study focusing on how the inquiry-based teaching improve the students' critical thinking skill in learning English. The grid of instrumentations can be seen as follows:

Table 3.5  
Holistic Critical Thinking Scoring Rubric  
Adopted from Facione and Facione (1994)

<b>4</b>	Consistently does <b>all</b> or <b>almost all</b> of the following: <ul style="list-style-type: none"> <li>• Accurately interprets evidence, statements, graphics, questions, etc.</li> <li>• Identifies the salient arguments (reasons and claim) pro and con.</li> <li>• Thoughtfully analyzes and evaluates major alternative points of view.</li> <li>• Draws warranted, judicious, non-fallacious conclusions.</li> <li>• Justifies key results and procedures, explains assumptions and reasons.</li> <li>• Fair-mindedly follows where evidence and reason lead.</li> </ul>
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**3** Does **most** or **many** of the following:

- Accurately interprets evidence, statements, graphics, questions, etc.
- Identifies relevant arguments (reason and claims) pro and con.
- Offers analyses and evaluations of obvious alternative points of view.
- Draws warranted, non-fallacious conclusions.
- Justifies some results or procedures, explains reasons.
- Fair-mindedly follows where evidence and reason lead.

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**2** Does **most** or **many** of the following:

- Misinterprets evidence, statements, graphics, questions, etc.
- Fails to identify strong, relevant counter-arguments.
- Ignores or superficially evaluates obvious alternative points of views.
- Draws unwarranted or fallacious conclusions.
- Justifies few results or procedures, seldom explain reasons.
- Regardless of the evidence or reason, maintains or defends views based on self-interest or preconceptions.

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**1** Consistently does **all** or **almost all** of the following:

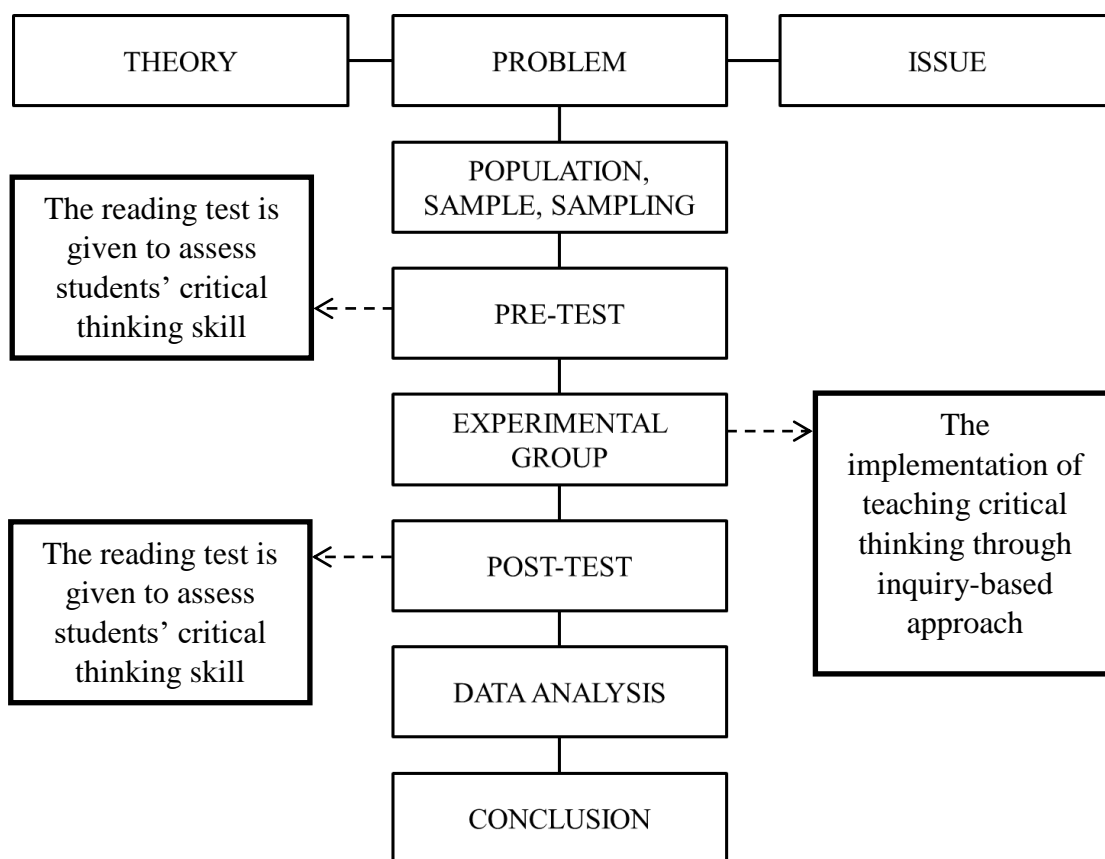
- Offers biased interpretations of evidence, statements, graphics, questions, information, or the points of view of others.
  - Fails to identify or hastily dismisses strong, relevant counter-arguments.
  - Ignores or superficially evaluates obvious alternative points of views.
  - Argues using fallacious or irrelevant reasons, and unwarranted claims.
  - Does not justify results or procedures, nor explain reasons.
  - Regardless of evidence or reasons, maintains or defends views based on self-interest or preconceptions.
-



- 
- Exhibits close-mindedness or hostility to reason.
- 

### 3.3 Research Method and Procedure

A research method is usually related to the components included in the study, such as research design, procedure, and the instrument that is utilized. The method used in this study is a combination of quantitative and qualitative method, called a mixed method. Quantitatively, the sample of this study is treated by inquiry-based learning activities. The writer depicts the research procedures as follows:



Picture 3.2  
Research Procedure

From the above depiction, it can be seen that as the guideline to complete this study, the researcher firstly generates the problem of the research based on the English language teaching issues and theories on it. After formulating the problem to be appointed, the researcher then determines the population and selects the

sample of the study. After the sample selected, the researcher gives the test, named pretest, in the form of reading test to the every sample of the research. Subsequently, the treatment is given to the sample, names experimental group, in the form of teaching critical thinking through inquiry-based approach. During the treatment given, the researcher also does the observation. After the whole treatment given, then the every research sample is tested through reading test. After the whole data needed been collected, the researcher then does some analysis until finally concluding the result of the research.

### 3.4 Research Schedule

In completing this study, the researcher designs a research schedule as a part of the attempt to make the research better scheduled, so that this research can be well-organized, run regularly, and does not waste the time. The table below is the list of agenda of this research.

Table 3.6  
List of Research Schedule

<b>Date</b>	<b>Agenda</b>	<b>Dec.</b>
March 27 <sup>th</sup> , 2017	Research Preparation	- Visit the selected school. - Ask for school principal's permission. - Discuss the research plan with the teacher of the English subject. - Select the sample of the research from the population provided.
April 6 <sup>th</sup> , 2017	Field Preview	Observe the classroom situation
April 7 <sup>th</sup> , 2017	Pilot Test	The test instrument is tested to the equal level of students before being given to the research sample.
April 13 <sup>th</sup> , 2017	Pretest	Give the test to the sample of the research

April 21 <sup>st</sup> , 2017	1 <sup>st</sup> meeting	Give the research sample treatment inserted in the teaching and learning process (Chapter VI: We love what we do!)
April 27 <sup>th</sup> , 2017	2 <sup>nd</sup> meeting	Continued
April 28 <sup>th</sup> , 2017	3 <sup>rd</sup> meeting	Continued
May 12 <sup>th</sup> , 2017	4 <sup>th</sup> meeting	Give the research sample treatment inserted in the teaching and learning process (Chapter VII: I'm proud of Indonesia!)
May 15 <sup>th</sup> , 2017	5 <sup>th</sup> meeting	Continued
May 18 <sup>th</sup> , 2017	6 <sup>th</sup> meeting	Continued
May 19 <sup>th</sup> , 22 <sup>nd</sup> , and 29 <sup>th</sup> , 2017	7 <sup>th</sup> meeting	Give the research sample treatment inserted in the teaching and learning process (Chapter VIII: That's what friends are supposed to do.)
May 22 <sup>nd</sup> , 2017	8 <sup>th</sup> meeting	Continued
May 29 <sup>th</sup> , 2017	9 <sup>th</sup> meeting	Continued
June 2 <sup>nd</sup> , 2017	Posttest	

### 3.5 Data Analysis

In this study, the researcher uses two phases of data analysis; quantitatively and qualitatively. The quantitative data gained is analyzed by using SPSS 18 through the following steps:

- 1) Administering Shapiro Wilk to test the normality of the data. Shapiro Wilk test for normality is one of three general normality tests designed to detect all departures from normality. It is comparable in power to the other two tests. The test rejects the hypothesis of normality when the p-value is less than or equal to 0.5. Failing the normality test allows a researcher to state with 95% confidence the data does not fit the normal distribution. Passing, the normality

test only allows a researcher to state no significant departure from normality was found.

- 2) Administering a Lavene's test to verify the homogeneity of the data. Lavene's test is a test used to assess the variance homogeneity which is a precondition for the parametric test such as the t-test and ANOVA. The test can be used with two or more samples. With two samples, it provides the test for ANOVA. If the significance of this test is less than 0.05, then variances are significantly different and parametric tests cannot be used.
- 3) Calculating the data gained from both pretest and posttest
- 4) Examining the hypothesis generated in this present study by using paired sample t-test.

While the observation and documentation data gained is analyzed qualitatively to collaborate and confirm the findings gathered from the quantitative result.

### **3.6 The Role of Researcher**

The researcher is a student of postgraduate, majoring English education program who concerns about English teaching method. As I believe that the teaching and learning process is not effective when the teacher implement a teaching method inappropriately. Beside of giving the material favorably, based on the students' needs, however, we do need to know how to make the students able to compete the global. It has been more than three years I, as a researcher, familiar with the inquiry approach in the learning. Starting from my interest in improving students' ability in thinking critically and then been familiarized with the various kinds of teaching methods in a lecture, like content-focused method, teacher-centered method, students-centered method, so on and so forth. In expanding students' abilities in thinking critically, however, most of the experts said that the teacher does need to accustom the students to keep their mind thinking and curious about everything. Thus, the students have to be familiarized and accustomed to the activity that might involve their thinking. As the researcher did not experience enough in teaching, it was a fortune that the researcher could have lecturers who was always giving valuable knowledges and advices on teaching and learning,

especially in English language teaching, and friends, who were also experienced in English language teaching, they gave the researcher valuable conversation of merely experience and knowledge sharing. Moreover, the researcher got the valuable information on the teaching method, especially on inquiry-based teaching method from many books.

In this study, besides of undertake of this study as a researcher, the researcher is personated as a teacher as well, in which implements the inquiry-based teaching into the students' learning process. This consideration is decided to ensure that the inquiry-based teaching is well-implemented in accordance with the lesson plan designed by the researcher. Meanwhile, practicing this role (as a teaching observer) is beneficial to the researcher as the researcher has known the basic knowledge or information of the sample characteristics and the situation of the class. Although, it is difficult to evaluate the teaching and learning process.

### **3.7 Limitation of this Study**

In this study, to get a crystal-clear depiction, there should be a limitation of the study in order to nullify the misunderstanding. Meanwhile, the limitation of this study consists of independent variable and dependent variable. Independent variable in this study is inquiry-based teaching while the dependent variable is critical thinking.

Moreover, the researcher prescribes the students of grade 7 as its population and employs one class from the population. As for determining the sample, the researcher administers cluster random sampling. In solving the research problem, the researcher utilizes a mixed method with triangulation design.

In collecting the data, the researcher administers tests and observation with using SPSS 18 for its quantitative data processing and coding for its qualitative data processing.

### **3.8 Concluding Remark**

As for the outline, this chapter is intended to map the reader on the research methodology, including the research design, research procedure, instrumentation,

and how the data collected is analyzed that been set out by the researcher to support the research in reaching the objectives of this study. The assumptions as well as the findings are stated in the sections of chapter four.