

CHAPTER III

METHODOLOGY

On this section, several points related to the methodology of the research will be elaborated. It covers research site and participant, design, data collection technique, instrumentation, procedure, and data analysis. All of sections are provided in order to serve the objectives of study, particularly to answer the overarching research questions.

3.1 Sites and Participants

The site of this study was one of the senior high schools in Bandar Lampung. It is important that the selection of site and participants is not taken for granted, but decided on purpose to provide appropriate data embracing the research problems under examination (Creswell, 2007). Therefore, there are three reasonable considerations in selecting the site and participant: current school curriculum, practicality, and the ease of getting access.

Firstly, the site has been piloting 2013 English curriculum in Bandar Lampung. In reference to Minister of Education and Culture Regulation No. 160/2014, the school has been appointed to proceed with the implementation of the 2013 Curriculum. Therefore, it serves the context in which the present study is administered. Secondly, the reason this school was chosen as the site of the research is due to its location which is reachable so that it supports the practicality and feasibility of the research. At last, on the basis of mutual trust that has been established since the researcher had been an alumna and teacher's assistant in the site, it was assumed that the researcher can get access to the participants. The necessity of getting access is considered important point since it could support the researcher to get the expected data required in this study (Heigham & Croker, 2009).

Given that the permission of conducting the research is granted, the researcher selected the participants that fit to the focus of the present study. The potential participant was an English teacher who was already trained during the pilot project of the 2013 Curriculum. She has been administering the teaching

learning process since the 2013 curriculum was initiated. Thus, the learning process being observed serves as the data required to answer the research questions of this study. Besides, eleventh grade students were chosen as the group of participant being observed since they have been taught under the 2013 Curriculum for three semesters. Their respond towards the implementation of scientific method may be meaningful insight for challenge and benefit of the integration of scientific method in EFL classroom. In other words, eleventh grade level are considered potential source of data in order to serve the objective of the study.

3.2 Design

Since this research only focuses on particular instance of educational practice which is associated with the implementation of scientific method in a classroom practice, the single case study was employed as the design of the research (Nunan & Bailey, 2009; Hood, 2009; Mackey & Gass, 2005). Therefore, the principles of qualitative approach that puts forward naturalistic and interpretive ways of understanding the phenomena was really taken into account. The portrait of single classroom activity was required in order to get teacher's effort in applying scientific method to English classroom practice as well as students' perception towards it. This study required multiple data collection techniques in order to enhance the credibility of the findings.

3.3 Data Collecting Techniques

Given that the purpose of the study is to gain a comprehensive description of the implementation of scientific method in a classroom practice as well as teacher's interpretation of scientific-based learning and students' perception towards the learning process, the researcher employed several data collecting techniques presented as follows.

3.3.1 Classroom Observation

Since this study requires the natural process of classroom practice, observation was regarded as the best technique in gaining the picture of teacher's effort in applying scientific method (Nunan & Bailey, 2009). In this case, unstructured observation was administered for every two periods of

teaching in a week by using video recorder. During observation the researcher played observer-as-participant role (Fraenkel and Wallen, 2006; Alwasilah, 2000) where he could note the detail and descriptions of what happened in the classroom. However, the disadvantage of using video recorder while observing might be disruptive as teacher and students may act in ways that are not typical of their usual classroom behavior. Thus, in order to reduce this *observer's paradox* (Labov, 1972 cited in Nunan & Bailey, 2009), the researcher spent more time in the site so that the participants in the context become familiar with and accept the presence of researcher in the classroom. This classroom observation was conducted five times until the data collected is sufficient to answer the initial research questions. During the observation, the researcher used observation plan developed from the idea stated by Syahmadi (2013) in order to guide the researcher to classify and categorize the teacher's teaching practice.

3.3.2 Interview

To support the validity of data collection, interview was administered to the teacher. Interview is used as directive means of finding what people are thinking, feeling, and doing (Given, 2008). In other words, it is intended to know what happen to people. According to Cohen, Manion, and Morrison (2007), interviews functions to look into participants' experience and concern of situations from their own point of view. Thus, in order to gain teachers' perception towards scientific method and problems in applying scientific method that are not observable during the classroom practice, semi-structured interview (Mackey & Gass, 2005; Given, 2008)was utilized in this study.

The teacher was interviewed when she has done teaching during break time. In addition, the interview was simultaneously carried out with audiotaping. Creswell (2007) and Given (2008) mention taking audiotape while interviewing the participants has a number of benefits. First, researchers are free to think creatively while the interviews are taking place, in case making notes is needed. Second, tape-recording the interviews allows researchers to later analyze interviewees' statement thoroughly, comparing them with previous or following statements and with the interviews given to

others as well. Furthermore, recording participants' words ensures reliability of the data as the whole data are recorded. As a result, audiotaping participants' interviews make researchers more assured that they are capturing "the true essence of interviewees' intents" (Given, 2008). The questions/items for interview are basically made in relation to Curriculum 2013 and scientific method and it is developed from the guideline stated by Anjaniputra (2013).

Table 3.1 Guideline of the Interview

No	Details	Item number
1.	Identifying teacher's general perception towards the 2013 Curriculum	1, 2
2.	Identifying teacher's conceptual understanding about scientific method	3, 4, 5,6,7
3.	The problems faced by teacher during teaching learning process	7

Modified from Anjaniputra (2013)

3.3.3 Questionnaire

The questionnaire was administered to the students in order to explore their response towards the implementation of scientific method. Questionnaire is used in the present study developed based on the theory of perception stated by Kara (2009) and Weichselgartner & Sperling (1987) to cover all students' perception in the classroom. The distribution of questionnaire was done by the researcher at the end of meeting of the classroom observation.

In relation to the questionnaire form, it consists of Likert-Scale comprising 35 close-ended statements. The statements were provided in *Bahasa Indonesia* in order to help the students express their thoughts and feelings more easily. The respondents marked SS (*Sangat Setuju*) if they strongly agree; S (*Setuju*) if they agree; RR (*Ragu-Ragu*) if they hesitate; TS (*Tidak Setuju*) if they disagree; and STS (*Sangat Tidak Setuju*) if they strongly disagree. In the meantime, the questionnaire was constructed based on some considerations about the attitude towards English, the response

towards lesson content, strategies, and the impact of the teacher's application of scientific method during classroom practice. The categorization of each statement is presented in the framework of students' questionnaire modified from Anjaniputra (2012) below.

Table 3.2 Framework of Students' Questionnaire

No	Categories	Item Number	
		Positive	Negative
1.	Students' attitude towards English	1,2,3,4,6,9,10,11, 12,	5,7,8,29
2.	Students' response towards the materials given during learning process	16,17,18,19	
3	Students' response towards the process of learning English through scientific method	15,20,21,22,23,24 ,27	13,14,25,26 ,28,29
4.	Students' response towards the impact of scientific method	30,31,32,33,34,35	

Modified from Anjaniputra (2013)

3.4 Instrument of the Study

Considering the principle of qualitative research which is a naturalistic approach and interpretive ways of inquiry, researcher is regarded as the main instrument in this study. The researcher interpreted and analyzed the data based on the appropriate theoretical construct of understanding related practical case. In addition, in order to help the researcher in understanding the phenomena related to the focus of the research, the principle and the belief about 2013 English curriculum was the basis and guideline in portraying the classroom practice.

Besides, numerous research instruments such as video recorder, interview guidelines were employed in order to help the researcher gain the data necessary for the study. First, the reason of using video recorder is based on the ease of capturing classroom process. Thus, by using video the researcher would not only be able to take a note of teacher's teaching practice during real classroom process, but also video record can be played repeatedly in order to check whether all classroom activities were well noted. Interview guidelines for teachers and

students were also employed to guide the researcher in collecting the data required for the study.

3.5 Procedure of Collecting the Data

In this study, the role of the researcher is non-participant observer. It means that the researcher played as an outsider who collected the data as it is situated in natural context without talking, interrupting, and suggesting. This is considered reasonable way to serve the purpose of this study. To make it clear, the procedure of collecting the data can be illustrated in the following order: getting access, observing classroom activity, collecting related document, conducting interview, administering questioner.

After deciding to choose the research site through numeral reasons stated previously, the first step of collecting the data is getting an access to the research site by asking permission from the school principal. Given that the school would also get benefit from the proposed study, the researcher was granted access. One of the English teachers of 11th grade participated voluntarily after being informed by the principal regarding the nature and objective of the proposed study. Then, the schedule of the research was discussed with the teacher as a participant.

In the second step, Observing classroom activity was carried out. In this step, video tape recorder was utilized to observe the classroom activity. As has been stated earlier, one meeting observation is divided into five stages: observing, questioning, experimenting, associating, and communicating. On each stage, teacher's effort in applying those steps was analyzed. The duration of the recording was one time meeting which is around 80 minutes.

In the third step, the researcher collected related document in order to ensure that the practice of scientific method required by the 2013 English curriculum is also reflected in the teacher's teaching plan or the lesson plan and teacher's implementation of scientific method to classroom practice. Therefore, the documents collected may be in the form of teacher's syllabus and lesson plan.

After collecting related document, the researcher began to conducting interview with the teacher. Interview was conducted when the teacher has conducted teaching scientific method in the classroom for several times. She was expected to answer several questions related to the application of scientific

method during classroom activity and particularly problems in applying each step of scientific method.

Finally, the researcher distributed the questionnaire to students in order to explore their perception towards the implementation of scientific-based learning while they are studying English in the classroom.

All of the steps above were conducted chronologically in relation to the purposes of the study. The data then was analyzed by following certain procedures that can be seen in the next subsection.

3.6 Data Analysis

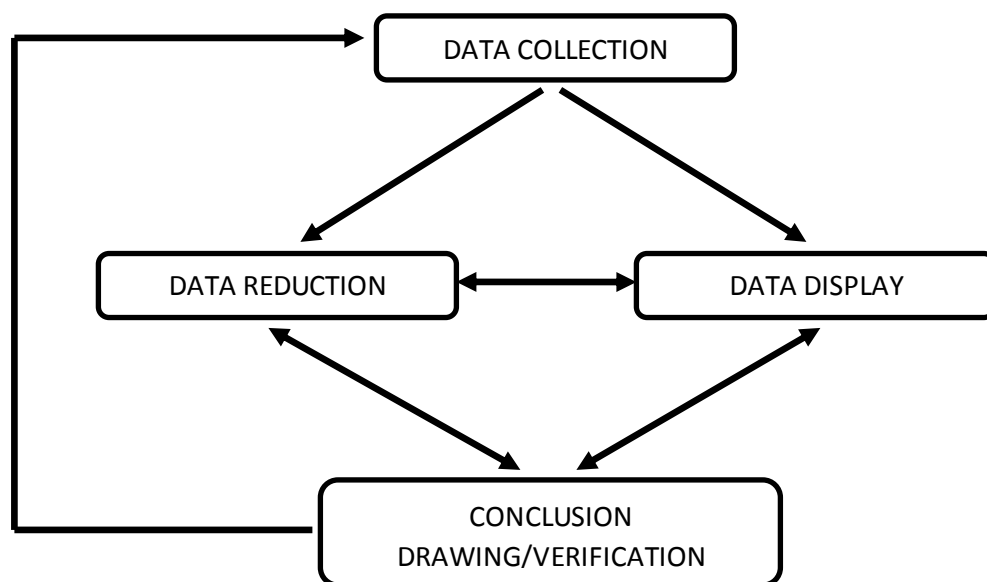
Data analysis is very important to make sense of or to give meaning to the data. It may come about simultaneously since researchers begin to undertake data collection up until the purposes of the research are pursued and completed (Denzin and Lincoln, 1998; Fraenkel and Wallen, 2006; Creswell, 2008). It implies that data analysis is interrelated to data collection and considered as an ongoing process throughout research investigation.

Having collected the data, several steps were undertaken to analyze the data gained. The steps undertaken for data analysis were divided into three main parts, which were analyzing video of classroom observation, analyzing interview data from the teacher, and analyzing questionnaire data from students. The first step to do before analyzing the data was to transcribe the data from classroom observation (observation fieldnote and observation check-list), and from interviews administered to the teacher. Then, this transcription was reviewed line by line, labeled, and categorized by the researcher assisted by another colleague with similar understanding and capability towards the case being investigated. In transcribing the data, the researcher used some abbreviations such as (T: Teacher; Ss: Students, S₁, S₂, etc.). The same procedure was applied in analyzing the data collected from interview. The data from classroom observation and interview with the teacher were then categorized into broader themes, which were intended to identify and describe the procedure of teaching English by integrating scientific method, and coding was done to make it easier to identify the strategies by labeling the strategies; “O” for observing, “Q” for questioning, “E” for experimenting, “A” for associating, “N” for networking or communicating, and

“C” for creating. In the meantime, questionnaire administered to the students was used to portray students’ perception towards scientific-based learning activity.

In addition, the lesson plan of the meeting observed was analyzed to ascertain that the teacher has also integrated scientific method in her teaching plan as it is required by professional community. The combination of multiple data collecting techniques is considered triangulation procedure to ensure the credibility of the findings. Finally, all data related to teacher’s effort in applying scientific method was cross-checked against the document released by policy maker related to 2013 English curriculum in order to reveal similarity and/or dissimilarity between findings and the requirement of teaching program stated in 2013 English curriculum.

To analyze data, Denzin and Lincoln (1998) propose an interactive model as this is an ongoing process throughout the whole investigation process, containing three subprocesses: data reduction, data display, and conclusion drawing/verification (Miles and Huberman, 1984, 1994, as cited in Denzin and Lincoln, 1998). The procedures of data analysis can be illustrated by the figure below:



Adapted from Denzin and Lincoln (1998: 181)

Figure 3.1 Interactive Model of Data Analysis

3.6.1 Data Reduction

Having gained the data from classroom observation, interviews, and questionnaire gathered, data reduction was then conducted. Data reduction functions to select the data essential and relevant to the study under investigation. In reducing the data, coding process (Creswell, 2008) was employed to go for the needed one, which, in turn, was useful in generalizing broad themes. This reduction of data was carried out based upon research questions and purpose of the research.

3.6.2 Data Display

Once the data was reduced, the next step to undertake was displaying the data. According to Denzin and Lincoln (1998), data display can be presented in the forms of “structured summaries, synopses, vignettes, network like or other diagrams, and matrices with text”. It enables researchers to give clear view of what was happening and of what to do in further analysis as well as conclusion drawing about its meanings. So, this step is on the point of interpreting the condensed data by relating them to the central theme of research questions, which generating the findings to answer research questions.

3.6.3 Conclusion Drawing and Verification

Having the data reduced and displayed, the last step was to draw and to verify conclusion. Conclusion drawing and verification involve interpretation of researchers to make sense of displayed data. Noting of patterns and themes are used in conclusion drawing as a part of coding process taken in the previous step of analysis. The findings are processed here and compared with one data to another. In this sense Denzin and Lincoln (1998) call it “Data Transformation”, where data is condensed, clustered, sorted, and linked over time (See figure 3.1: Interactive Model of Data Analysis).