

CHAPTER III

RESEARCH METHODOLOGY

This chapter presents elaboration of the methodology conducted in the study. It covers research design, research site and participant, data collection, and data analysis. Research design focuses on the method employed in this study including its principles and characteristics. Research site and participant presents the place where the study takes place and the participants involved. Data collection emphasizes data types and data collection technique. In the last, data analysis elaborates the tool and procedure of analyzing the data.

3. 1. Research Design

The purposes of this research are to investigate how the teacher of junior high school implement scientific approach of the 2013 Curriculum in English learning-teaching (ELT) and to reveal the difficulties faced by the teacher in the implementation. To meet the purposes of the study, the research employed descriptive qualitative research design since it places stress on describing detail of what goes on in particular events or situations or activities rather than comparing the effects of a particular treatment (Burns, 1995, p. 12; Creswell, 1994, 2012; Fraenkel, Wallen, & Hyun, 2012, p. 426).

Qualitative research has characteristics which are considered appropriate for this study. Firstly, qualitative research, described by Burns (1995), allows a deep and intensive investigation of a particular phenomenon in specific situation and setting to retain the holistic and meaningful characteristics of real life events. In addition, qualitative research is concerned with process as well as product, and with how things occurs (Fraenkel, Wallen, & Hyun, 2012). It is in line with the purpose of this research in which the study was aimed to get an in-depth and holistic understanding of how teacher implements scientific approach in English language-teaching and to find out the difficulties faced by teacher during the process.

Secondly, Bogdan and Biklen (2007, as cited in Fraenkel, Wallen, & Hyun, 2012) describe natural setting is the direct source of data, and the researcher is the

key instrument in qualitative research. In this study, the researcher, observed the teachers teaching in the classroom and videotaped what happened as things naturally occurred without any effort to manipulate or control the activities, then it was analyzed and interpreted by the researcher.

Thirdly, qualitative researcher tends to collect data at the site where participants experience the issue or problem under study (Creswell, 2012). Data collection in this study was done by the researcher at the site in which the teacher as participant implemented scientific approach in their English learning-teaching activities, while the researcher was observing and recording the process to be then analyzed.

Lastly, the characteristic of qualitative research in which the researcher is the key instrument is appropriately employed in this study. The researcher in this study used methodological triangulation which means the researcher collected data through observing activities and behaviours in the classroom during implementation of scientific approach in English learning-teaching, analyzing documents of lesson plans, and interviewing the teacher. Methodological triangulation was employed as an effort to improve reliability and validity of the data and findings (Alwasilah, 2008; Alwasilah & Alwasilah, 2007, p. 150; Burns, 1995; Creswell, 1994 & 2012; Maleang, 2007, p. 330; Silverman, 2005; Sugiyono, 2013, p. 241).

In accordance with the research design and research questions related to analyzing teaching practice, **classroom discourse analysis** is employed as the main approach to investigate the stages of scientific approach and to seek what happen in every stage rigorously. The significant reason for using classroom discourse analysis in this study is its level of accuracy in describing classroom activities which can reveal the intricacy meaning hidden behind teaching-learning practice (Suherdi, 2010: 9). The classroom discourse analysis approach chosen in this study is systemiotic approach, using **Pedagogical Microscope** as the tool to analyze the elements of teaching learning process. The purpose is to measure the quality of learning and teaching process. As stated by Suherdi (2009), classroom discourse analysis, specifically Pedagogical Microscope is considered to be an ideal

instrument to give a holistic and in-depth understanding of what actually happens in classroom and how the teacher implements scientific approach in teaching English. It can be seen through the elements of teaching-learning process such as teacher-students interaction, and students' contributions (students' learning behaviour and students' language characteristic) appear in every stage (Suherdi, 2009, p. 12).

3. 2. Site and participants of the study

This research was conducted in one public junior high school in West Bandung. The place was chosen because of several reasons. Firstly, due to its practicality, the place is nearby researcher's place, so it allowed the researcher to get access there easily. Secondly, due to its accessibility, the schools authorities allowed the researcher to conduct the research and the researcher has well link to the English teachers of school. In addition, junior high school teachers of grade eight hopefully could implement scientific approach, as required by the 2013 Curriculum, in order to be successful stakeholders of the new curriculum. Accordingly, it is essential for junior high school teachers to practice implementing scientific approach in their English learning teaching.

The participants of the research were one teacher and 38 students. The teacher teaches English in a public junior high school in Bandung and the students are students in one class where the teacher teaches. The sampling technique used was purposeful sampling in which the researcher intentionally chose the participants to learn and understand the phenomenon that happened in the actual classroom setting.

The naturalness of the setting was also sought to fit the characteristics of the natural setting. To develop in-depth understanding of the study, the teacher was considered relevant to the design of study, since the teacher is a national instructor of the 2013 curriculum. The teacher has been using the 2013 curriculum and implementing scientific approach in her teaching-learning activities. It is expected that the teacher's teaching practice can be a proper model of implementing scientific approach in teaching English. The class, where the teacher taught, consists of 38 students. The teaching processes also were not manipulated. The research timetable was adjusted to the schedule of the teacher's overall planning. It

is also purposed to conform to one of the characteristics of qualitative research of being natural (Fraenkel, Wallen, & Hyun, 2012).

3. 3. Data Collection Technique

The data required in this research was procured from methodological triangulation in which classroom observation, written documents analysis, and interview were employed as the main data collection techniques in this study. Methodological triangulation is the effort of using various data collection methods in purpose of getting various data from the same subjects to strengthen the validity of a research and to increase its internal validity (Alwasilah & Alwasilah, 2007, p. 150; Alwasilah, 2008; Fraenkel, Wallen, & Hyun, 2012, p. 517; Maleang, 2007, p. 331; Silverman, 2005; Sugiyono, 2013, p. 241). Thus, the use of classroom observation, written document analysis and interview in this study is to establish the validity of the data.

3. 3. 1. Classroom Observation

Classroom observation was conducted to get the actual behaviour and process happened and to gain a comprehensive picture and general description of the teachers' steps in implementing scientific approach in the classroom. Classroom observations were conducted from 2nd to 12th November 2015. It was conducted firstly in November, observing the teaching activities of delivering one material (*Materi Pokok*) completely. The detail was presented in the table as follows:

Table 3.1 Classroom Observations

Teaching Practice
<ul style="list-style-type: none"> • Monday, 2nd November 2015 • Thursday, 5th November 2015 • Monday, 9th November 2015 • Thursday, 12th November 2015

During this classroom observation, observation sheet and videotaping were employed as the main techniques of collecting data in observation. Observation

sheet focuses on teacher's steps in implementing scientific approach in teaching activity. The data procured was elaborated to get necessary information related to the process of implementing scientific approach. The observation framework to document the teachers' steps can be seen as follow:

Table 3.2 Classroom Observation Sheet

Teacher's Activity/Action	Students' Behaviour/Reaction	Comment

(Adapted from Alwasilah, 2015, p.129)

In this study, the researcher played role as non-participant observer which means, the researcher was an 'outsider' who visited the site, videotaped and recorded notes without being involved in the activities of participants (Burns, 1995; Creswell, 2012; Darmadi, 2011; Fraenkel, Wallen, & Hyun, 2012; Nunan, 1992; Silverman, 2005).

3. 3. 2. Document Analysis

The document analyzed is the lesson plan, specifically the learning activities and its *Kompetensi Dasar* and *Kompetensi Inti* stated in teacher' lesson plan of one material. The analysis was focused on the portrait of scientific approach planned in English learning-teaching activities, including the lesson materials given to the students.

3. 3. 3. Interview

Interview is necessary to reveal how scientific approach is perceived by teachers and to seek the depth of teachers' perception and difficulties faced towards scientific approach in the 2013 Curriculum. It was conducted since they cannot be obtained through observation (Sugiyono, 2013). It was administered in the last day of the research. Since guidance or pilot questions were prepared related to teachers'

opinion towards scientific approach in the 2013 Curriculum, the interview employed was a semi-structured interview. Sugiyono states (2013) that semi-structured interview is included into in-depth interview which is purposed to reveal the interviewee's responses and ideas through the questions prepared and alternative responses that might appear in the interview. The interview was recorded to be then transcribed.

3. 4. Data Analysis

According to the data collection techniques, the data analysis in this research was divided into three stages. The first was data analysis of classroom observation. The second was data from interview. The last was data from lesson plan.

The first was data from observation obtained through field-note and videotape of the classroom activities. The description of the observation, in which the scientific approach was implemented, was gained from researcher's field-note (see Appendix). Another data of classroom observation is from the transcription of videotaped observation. The transcription of videotaped classroom observation was analyzed using Pedagogical Microscope instrument (Suhardi, 2009) to investigate the practice of scientific approach in teaching English to portray how scientific approach was implemented in ELT and what happened in each stage.

The second was data analysis of the interview transcript. Recorded interview was also transcribed, interpreted and concluded to seek difficulties faced by the teachers in implementing scientific approach in the 2013 Curriculum. Besides, the data from classroom observation was also used to corroborate the interview result.

Lastly, the teachers' lesson plans of one material were analyzed in term of its component and compatibility with scientific approach principles, specifically its learning activity. Thus, those data were then analyzed by descriptive qualitative data analysis.

3. 4. 1. Classroom observation

Data analysis began when the observation was started since the research is a qualitative research (Basrowi and Suwandi, 2008 as cited in Sugiyono, 2013). It was an on-going activity throughout the whole investigation. The data obtained

through classroom observation is used to investigate the stages of scientific approach implemented by the teachers. It was used after video recording to make sure that every activity and instruction in the classroom observed are clear.

The video recordings then were analyzed using **analysis procedure of Pedagogical Microscope** to answer the question of how scientific approach is implemented in teaching English. This is also aimed to reveal the quality of learning of scientific approach conducted by the teacher and what happened in every stage of scientific approach seen through classroom discourse analysis. Those also can show what difficulties were encountered by the teacher in implementing scientific approach to teach English. How scientific approach is implemented and what are the difficulties encountered by the teacher are then elaborated through these aspects.

3. 4. 2. Interview

Interview was conducted after the classroom teaching process finished. Interview used in the research was semi-structured interview. The type of interview was included into in-depth interviews which the purpose of this research is to get issue more openly in which the participant who are invited to interview was asked about their opinion and ideas (Sugiyono, 2010). Teacher's opinion was aimed to add some additional information related to the second question of this research, the difficulties faced by the teacher in implementing scientific approach. The interview consists of six questions which are specifically organized on the following guideline:

Table. 3.3 Interview's Questions

Kind of questions	Number of the questions
Teachers' background	1
Teachers' opinion about scientific approach. and its implementation	2-4

Teachers' experiences in implementing scientific approach	5-6
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3. 4. 3. Document Analysis

The content of lesson plan will be analyzed through scientific principles and its components. The data obtained from teachers' documents were analyzed in term of their content. The content of the scientific approach based lesson plan were analyzed to find out whether the aspects in lesson plan has met the criteria of scientific approach's principles. The lesson plans will be analyzed whether the aspects in lesson plans have represented scientific approach or not. Each aspect, such as indicator, objectives and learning activities are corroborated to the concept of scientific approach and the practice conducted by the teacher.

3. 5. Classroom Discourse Analysis as tool to Investigate Teaching-Learning Process

Discourse has been viewed in different perspective. Suherdi (2009a, p.39-p.40) defines discourse as one of the three strata on the language plane that is formed from set of cohesive and coherent sentences that forms meaning and defines discourse analysis as analysis of reference, lexical cohesion, conjunction, and conversational structure. Discourse can be in forms of spoken and written, monologue and dialogue, transactional and interactional forms (Samsuri, as cited in Suherdi, 2009b, p. 19). Classroom discourse refers to spoken interaction or dialogue in teaching-learning process or simply classroom interaction (Suherdi, 2009, p. 5). Classroom discourse analysis is the examinations of natural conversation or spontaneous talk which takes place naturally in classroom setting. It is said that "...the major part of educational process is "conversation" between teacher and students." Suherdi (2010, p. 8).

Classroom discourse analysis is important for language education. Since conversation or classroom dialogue is the major part of teaching educational process, studying classroom discourse analysis is a key to understand education in action (Suherdi, 2010, p. 9). Through classroom discourse analysis, the value of teacher-

students interaction pattern, learning content and every classroom event will be easily identified and interpreted. Thus, the significant reason of using classroom discourse analysis in this study is because its level of accuracy in describing classroom activities which can reveal the intricacy meaning hidden behind teaching-learning practice (Suherdi, 2010, p. 9).

3.5.1. Pedagogical Microscope

Pedagogical microscope is an instrument of classroom discourse analysis developed by Suherdi (2009) adapted from Berry (1981, as cited in Suherdi, 2009, p. 59) to analyze teaching-learning process. The use of pedagogical microscope is similar to a microscope in which elements compounded a teaching-learning process are zoomed out to get a clearer pictures of the teaching-learning process. Suherdi (2009, p. 12; 2010, p. 123, p. 177, p. 216) explains that elements of teaching-learning process such as teacher-students' interactions, and students' contribution from students' language characteristics and students' learning behaviours denote the quality of the teaching-learning process.

3.5.2. Analysis Procedure

In this study, it applied some steps in analyzing teaching-learning process using pedagogical microscope as suggested by Suherdi (2009, p. 53):

1. Videotape the teaching-learning process

All of the practices of implementing scientific approach by the participant in delivering one material were videotaped, started from the opening classroom activity to the closing classroom activity.

2. Record the seat-position of the students

After videotaping the teaching-learning process, the video then was watched to note the students' seat position in every meeting. It is important to recognize the students participated in every meeting.

3. Transcribe the video

The video of the teaching practice was transcribed into file type. The verbal and non-verbal behaviour of teacher and students were noted down.

4. Segment the verbal and nonverbal behaviours based on the interactant

The transcribed data were then segmented based on the interactants.

5. Identify stage of scientific approach

Since this study focus on investigating the implementation of scientific approach in English language-teaching, the transcripts then were classified based on scientific approach, such as Observing, Questioning, Experimenting, Associating and Communicating. This is purposed to corroborate the practice and the lesson plan made by the teacher and to give the detail what teacher and students did in every stage.

6. Identify the moves

Identifying moves is aimed to identify types of exchanges to picture the teacher-students' interaction. One exchange may consist some moves.

The codes and categories of exchanges and their moves based on the pedagogical microscope instrument are depicted in the following table:

**Table 3.4 The categories of exchanges in Pedagogical Microscope
(From Suherdi, 2009: 59 adapted from Berry, 1981)**

Category of exchange	No	Suherdi's Code	Meaning
Knowledge exchange	1	JL	Teacher gives explanation/student answers the teacher actual question
	2	TB	Teacher gives actual question
	3	TU	Teacher gives display question
	4	KaJ	Teacher/student comments on JL
	5	KaK	Teacher/student comments on KaJ
Action Exchange	6	TA	Teacher gives action example/student does an action based on teacher's instruction
	7	MA	Teacher asks students to do a non-scored action/student does action based on teacher's instruction/student asks teacher to give example of an action
	8	SA	Teacher asks students to do non-verbal action to be scored
	9	KaA	Teacher/student comments on TA
	10	KaKa	Comments on action comment
Skill exchange	11	TK	Teacher gives example of language communication/student does language communication based on teacher's request or voluntarily
	12	MK	Teacher asks student to do no-scored language

		communication/student asks teacher to give an example of language communication
13	SK	Teacher asks student to perform language skills
14	KaTK	Teacher/student comments on TK
15	KaKtK	Comments on comment on KaTK

According to Suherdi (2010, pp. 81-83) there are nine exchange categories of teacher-students interaction patterns based on pedagogical microscope characteristics. They are:

1. JL-initiated exchanges

If JL is initiated by teacher, it implies that the teacher gives direct information without giving opportunity for the students serve the role as having information. It means that the teacher roles as the source of information/knowledge about the material learned. If JL is initiated by the students, it implies that the students voluntarily giving information/knowledge contribution in the teaching-learning process.

2. TU-initiated exchanges

If TU is initiated by teacher, it implies that the teacher checks students' knowledge about the information going to be delivered by the teacher. The teacher gives opportunity to the students to show their knowledge about the material learned. TU is not commonly initiated by the students except they are in practicing question-answer activity.

3. TB-initiated exchanges

If TB is initiated by teacher, it implies that the teacher gives genuine question to the students to ask students' learning experience and students' prior knowledge. If TB is initiated by the students, it implies that the students ask the teacher about the material.

4. TA-initiated exchanges

If TA is initiated by teacher or the students, it implies that the teacher or the students do a non-scored action, such as checking the projector, arranging the seat, and other non-scored action.

5. MA-initiated exchanges

If MA initiated by the teacher, it implies that the teacher asks the students to do a non-scored action, such as asking the students to come forward, and asking to write on the board.

6. SA-initiated exchanges

If SA is initiated by teacher, it implies that the teacher asks the students to do non-verbal action to be scored.

7. TK-initiated exchanges

If TK is initiated by teacher, it implies that the teacher gives example of performing language skills. If TK is initiated by the students, it implies that some students who have higher English proficiency perform language skills voluntarily or being asked by the teacher.

8. SK-initiated exchanges

If SK is initiated by teacher, it implies that the teacher asks students to perform language skills. It is not common to be initiated by students in teaching-learning process.

9. MK-initiated exchanges

If MK is initiated by the students, it implies that the students perform language skill voluntarily to be scored by the teacher. It is not common to be initiated by teacher in teaching-learning process.

Teacher-students' interaction is closely related to teacher's and students' roles in the teaching learning process (Suherdi, 2010, p.77-p.83). Through looking at the pattern of teacher-students interaction it can be seen whether the teacher roles as the source of information which the pattern will show teacher giving information (JL) only, or others roles. In addition, from the intensity of teacher-students' interaction it also can be seen whether the

process of teaching-learning process is students-centered learning or teacher-centered learning.

7. Identify students' language characteristic

Every students' verbal contribution was categorized based on its lecal complexity such as syllable (syl), word (W), phrase (Ph), Sentence (St), Paragrap/Text (text).

8. Identify Students' learning behaviour

All of students' contributions in form of verbal and non-verbal were categorized based on students' learning behaviours categorization as represented in Bloom's Taxonomy. Bloom's Taxonomy is used in assessing the learning outcomes and in portraying detail of students' contribution in each stage. It covers cognitive behaviour (knowledge), affective behaviour (action or attitude) and psychomotor behaviour (skill). The following is Bloom's Taxonomy categorizations:

Table 3.5 Bloom's Taxonomy categorizations (adapted from Suherdi (2009))

Domain	Level	Definition	Activity/verb
Knowledge (cognitive-process domain)	C1	Students remember or recognize information specific they have before.	Cite, label, list, mention, tell, or recall, write, state
	C2	Students grasp the meaning, essential information and interpret, comprehend the information using their own understanding.	Define, explain, interpret, and discuss, describe, generalize, the paraphrase, summarize
	C3	Students use information to relate and apply it to a new situation with minimal instructor input.	Apply, solve, use, construct, complete, compute, establish, manipulate, make,
	C4	Students require high thinking level to break down the information, discriminate,	Analyze, distinguish, examine, compare, contrast, investigate, categorize, correlate

		organize, and identify the relation of part of the information and make conclusion.	
	C5	Students creatively apply knowledge and demonstrate the ability of compiling information to integrate concepts or construct an overall theory	Assemble, create, invent, compose, plan, design, formulate, generate, hypothesize, modify, synthesize
	C6	Students judge or evaluate information based upon standards and criteria, values and opinions.	Judge, select, choose, decide, justify, debate, verify, evaluate, recommend, support, critique, appraise, diagnose, rank, conclude
Skill (Psychomotor-process domain)	P1	Students translate sensory input into physical task or activity to replicate and imitate a fundamental skill or task taught.	Hear, observe, listen, imitate, mimic, copy, follow, repeat, show
	P2	Students perform skill or task by recognizing standards or important criteria.	Try, make, adapt, adjust, change, correct, develop, manipulate, modify, practice, alter
	P3	Students organize their performance harmonically.	Build, organize, compose, construct, create, design, originate, produce
	P4	Students apply the skill to real life situation.	Demonstrate, exhibit, teach, train
Attitude or action (affective-process domain)	A1	Students become aware of attitude, behaviour, or value that are the stimuli given to them	Observe, accept, attend, pay attention, follow, ask, recognize, present, show, comply
	A2	Students exhibit reaction or	Discuss, adapt, choose,

		change as a result of exposure of stimuli such a behaviour, attitude or value.	differentiate, value, propose, agree
A3	Students recognize value and not only giving reaction to what they receive.	Suggest, confront, initiate, acknowledge,	
A4	Students determine a new value or behaviour as a priority	Integrate, defend, revise, harmonize, contemplate	
A5	Students integrate consistent behaviour as a naturalized value and it becomes the part of their character.	Characterize, defend, embody, habituate, internalize, produce	

The table below is the illustration of the whole set of identifying after data transcription from videotaped classroom observation was coded into some categories based on pedagogic microscope categorization and scientific approach stages proposed by the 2013 Curriculum (Kemendikbud, 2013):

Table 3.6 Illustration of coding system using pedagogical microscope categorization regarding the steps of scientific approach implemented by the teacher

No.	Mv	LE	LB	Part	Data	SA
245	SK			T	Okay, I think it's time for you to present your group's work. Ya, come on, regard Haikal, please stand up and read your group's work.	Communicating : Presenting their works by the representative of each group. There was classroom discussion where the teacher and the students evaluated the works together. The teacher gave feedback to the works.
246	TA			S30	(standing up)	
247	MA			T	Please listen to him, the third group. If you have any question, please ask them (pointing at the third group)	
	TA	W		S30	Yes.	
248	MK	Text	C5, A2		(reading) Roaster is a tame animal. It has two legs. It eats rice. It lives in the cage. It can fight.	
	cf			T	It?	
	clrfy	Ph	C1	S30	can fight	
	cf			T	can?	
	rclrfy	W	C1	S30	fight.	
	clrfy			T	It can fight!	

249	TB					Any question for them?
	ro				Ss	...
	rph				T	Ada pertanyaan?
	ro				Ss	...
250	TB				T	Ya, my question is, do you like fighting like roaster?
	ro				S30	...
	rp				T	do you like fighting like the roaster?
	JL		W	C1	S30	No.
251	TB				T	Why?
	JL		Ph	C1	S30	because it's dosa.
	KaJ				Ss	(laughing)
	KaK				T	Ya, okay, good. It is dosa.

No refers to number of exchange; **Mv** refers to kind of moves; **LE** to kinds of students' linguistics elements; **LB** refers to students' learning behaviours; **Part** refers to participant; **Data** refers to the utterance or the activity and **SA** refers to the stages of scientific approach.

9. Interpret the data

The pattern of teacher-students' interaction and students' contribution in forms of students' language characteristics and students' learning behaviours as elements of teaching-learning process were interpreted to know the quality of teaching-learning process conducted by the teacher. Those elements were interpreted in every stage of scientific approach.

3. 6. Data Validity

The data gained from the three instruments were compared in order to avoid unclear answer from the participant that probably emerged. The researcher in this study used methodological triangulation which means the reseracher collected data through observing activities and behaviours in the classroom during the implementation of scientific approach in English learning-teaching, analyzing documents of lesson plans, and interviewing the teachers. Methodological triangulation was employed as an effort to improve reliability and validity of the data and findings (Alwasilah, 2008; Alwasilah & Alwasilah, 2007, p. 150; Burns, 1995; Creswell, 1994 & 2012; Maleang, 2007, p. 330; Silverman, 2005; Sugiyono, 2013, p. 241).

3. 7. Concluding Remark

This chapter has presented the methodological aspects of the study. It has also discussed research design, research site and participants, data collection technique, and data analysis technique of this study. After explaining the related methodological aspects of the study, the next chapter is going to discuss and analyze the data obtained from the research data collection techniques.