CHAPTER III

METHODOLOGY

Chapter three provides the methodology which was used in conducting the research. This chapter has six parts, such as research design, research site and participants, research instrument, data collection procedures, data analysis, and concluding remarks.

3.1 Research Design

A qualitative research design in the form of a case study was adopted to analyze the EFL teacher's metacognitive regulation in designing HOTs-based questions, particularly the implementation of the EFL teacher's metacognitive regulation, the challenges faced by the EFL teacher, and the impacts of the teacher's metacognitive regulation in designing the questions on the students. This qualitative research was selected due to the researcher's desire to improve the context's understanding where the research participants address a specific issue (Creswell, 2007).

Specifically, a case study was selected to reveal the comprehensive description of the EFL teacher's metacognitive regulation phenomenon in designing HOTs-based questions. As Hamied (2017) emphasized, a case study can be defined as the social phenomena found in an individual, group, community, society, or another context of social life. The data are collected and arranged in terms of the case. In addition to this, the case study can also be an appropriate way for the researcher to execute the research since it allows studying a particular issue or problems deeply (Bell & Waters, 2014). Therefore, the researcher investigated this study in the form of a qualitative case study research design.

3.2 Research Site and Participants

There were one teacher and 25 students involved in this research. In detail, the research participants were one teacher and 25 tenth-grader students of one of the senior high schools in Bandung. The researcher used a purposeful selection as the most used selection in qualitative research (Oppong, 2013). In this case, the

participants were selected deliberately based on the purpose of the research. Accordingly, Tuckett (2004) points out that purposeful selection allows choosing the research participants based on the criteria determined by the research's purposes. These criteria may include the same particular characteristic or background related to the aims of the study as emphasized by Shank et al. (2014) that this kind of selection, which is often found in the qualitative research, consists of the participants who have particular background or characteristic that makes them the target of closer individual study. Thus, this stands to reason that purposeful selection was demanded in this research since the researcher proposed to provide a comprehension description of the particular phenomenon.

3.2.1 Research Site

The researcher chose the research site based on the importance of HOTs in senior high school. These skills are essential for preparing students with real-life skills such as creativity and innovation (Ibrar & Mukhaiyar, 2020). As a result, one of the senior high schools in Bandung was chosen as the research site. Furthermore, this school maintains active participations in classroom activities. Because the researcher had previously observed this school, she was able to recognize that this school involved active classroom participants, both the teacher and the students. The researcher believed that the active interaction is helpful for the teacher in designing HOTs-based questions in teaching and learning process.

3.2.2 Research Participants

The teacher was selected as the participant because the teacher actively asked the questions in teaching practice. It was helpful to increase classroom interaction, particularly to enhance the students' HOTs. Besides, the teacher's experience in teaching was also taken into consideration. The teacher had been teaching English for around five years. This teacher's experiences helped give better instruction in the questions to improve the students' HOTs. In that regard, Zohar (2013) emphasizes that encouraging the students' HOTs in the classroom needs more substantial attention than adopting a new curriculum due to its

requirement to change teaching and learning practices. Thus, it was required the teachers' capabilities to deal with that phenomenon.

Furthermore, the 25 tenth-grader students were selected because these tenth-grader students consisted of active students. The researcher believed that the active students could help the teacher implement this strategy in designing HOTs-based questions, especially in answering the questions designed by the teacher. Accordingly, Wagenaar et al. (2003) clarify that active student involvement is beneficial for successful teaching and learning. Therefore, the researcher selected the teacher and 25 tenth-grader students as the research participants relating to the research aims.

3.3 Research Instruments

Considering that the research aims to reach a specific description and gain a deep understanding of the study (Ary et al., 2010). Thus, the researcher applied the appropriate, well-sequenced, and arranged data collection which meant that the researcher conducted the various forms of data (Creswell, 2007). Three kinds of data collection techniques were obtained in this research, such as observation, interview, and document analysis as explained below:

3.3.1 Observation

The observation was carried out to mainly collect the EFL teacher's metacognitive regulation data, particularly the teacher's way of designing the questions in teaching, asking and giving opinions to enhance the students' HOTs. Besides, the students' responses to the teacher's questions were also collected to support the data findings. This observation was done using audio-video recordings, an observation checklist, and field notes to scrutinize the phenomena found in the observation. This was conducted because this observation is one of the most frequently used research instruments in case studies (Bell & Waters, 2014).

This observation was conducted in two meetings. Each meeting lasted for 90 minutes. Due to the pandemic of Covid-19, this learning process was done in the form of online learning via Microsoft teams meeting as the learning platform. The researcher did the observation using the audio-video recordings from the teacher. It

was done from July 7, 2021, until July 14, 2021. In observing the classroom experience, the researcher used an observation checklist based on the Metacognitive Awareness Inventory for Teachers (MAIT) proposed by Balcikanli (2011) to increase the focus of the observation. This observation checklist can be seen as follows:

Table 3.1

Observation Checklist

No	Metacognitive Regulation's Types	Statements	Yes	No
1	Planning	Setting Goals		
		In designing the questions, the teacher sets his particular teaching goals.		
		Selecting Appropriate Strategies		
		In designing the questions, the teacher regulates himself about the teaching materials that he designs.		
		Scheduling Time		
		In designing the questions, the teacher organizes himself to have sufficient time.		
		In designing the questions, the teacher organizes his time to achieve the learning goals.		
2	Monitoring	In designing the questions, the teacher checks himself periodically to see whether he meets his teaching goals.		
		In designing the questions, the teacher assesses how beneficial his teaching techniques are while he is teaching.		
		In designing the questions, the teacher regularly checks to what extent his students comprehend the topic while he is teaching.		

		In designing the questions, the teacher checks himself about how well he is doing while teaching.
3	Evaluating	The teacher checks himself about how well he has accomplished his teaching goals once he is finished.
		The teacher checks himself whether he could have implemented different techniques after each teaching process.
		The teacher checks himself whether he has to teach the students more effectively next time.
		The teacher checks himself whether he has considered all possible techniques after the teaching process.

Historically, this metacognitive inventory was firstly proposed by Myres and Paris (1978). Then, it was developed until the metacognition awareness inventory framework, particularly for the teacher, was introduced. This inventory was selected because it had a solid predictive validity to monitor and test someone's performance. As emphasized by Hammann (2005) that this inventory is commonly used because it has strong predictive validity for self-monitoring and test performance, particularly in academic tasks.

In gathering the well-founded data in observation, the researcher also took notes relating to the implementation, challenges, and impacts of the teacher's metacognitive regulation in designing HOTs-based questions. In increasing the data findings, simulated recall protocol was taken into consideration. Stimulated recall protocol became essential to provide more accurate data because it has a satisfactory degree of reliability for attaining the data (Henderson & Tallman, 2006 cited in Meier & Vogt, 2015)

3.3.2 Interview

This interview was addressed both to the teacher and students to gain more valid data related to the aims of this research. Measuring metacognition is quite challenging because it is not an explicit way (Teng, 2019). Thus, to provide the

credibility of this research, the researcher collected more than one data collection as clarified by Veenman (2005) cited in Jin and Kim (2018) that more than one method is essential to study metacognition. As a result, to support the result of the observation, the researcher also collected the data through the interview. This interview was conducted to explore the teacher's opinions regarding the process of designing HOTs-based questions in the classroom process to see his metacognitive regulation and the challenges found in designing the questions, and also explore the students' opinion relating to the teacher's question in the classroom process to see its impacts. More specifically, the interview questions for the teacher were based on the research framework (Balcikanli, 2011) and the teaching and learning phenomena that were taken from the field notes, including the main reason behind the teacher's way in doing one activity, the teacher's goal in doing that activity, and the effectiveness of the activity. The interview process was done using Indonesian language to help the teacher understand the questions and ensure that there was no language issue which may hinder the teacher in answering the questions. The table below shows the interview questions for the teacher based on the research framework as follows:

Table 3.2

Interview Questions for Teacher

Interviewee	
Interviewer	
Day/Date	
No	Questions
1.	How did you design the questions in teaching practice to stimulate the students' HOTs? Probe: Can you tell me more?
2.	What were the strategies for designing the questions to stimulate the students to think and answer the questions?

	Probe: Was it working? Why or why not?
3.	What was your particular teaching goal in designing the questions?
	Probe: Was there any particular goal? Can you tell me more?
4.	How did you allocate the time in designing the questions to stimulate the students' HOTs?
	Probe: Was there any specific strategy? If so, what was it, and why?
5.	Were there any challenges in designing the questions relating to the process of enhancing the students' HOTs?
	Probe: If so, what were they and why?
6.	What are the solutions to overcome those challenges?
	Probe: Can you tell me more?
7.	So far, do you think your strategy in designing the questions effectively enhances the students' HOTs?
	Probe: Can you tell me more?
8.	Do you need to improve your strategy in designing the questions to enhance the students' HOTs?
	Probe: If so, why?
9.	Do you achieve the learning goal to enhance the students' HOTs?
	Probe: Can you tell me more?

The follow-up questions based on the teaching and learning phenomena followed these interview questions to clarify the teacher's metacognitive regulation in designing HOTs-based questions.

Then, the researcher also interviewed several students to explore the students' opinions related to the impacts of the teacher's metacognitive regulation in designing the questions. The researcher selected five out of 25 students as the representation to explore their opinions. The considerations in choosing these five students were the students' engagement and participation in the teaching and learning activities. The five students consisted of those who active and inactive in learning process. In fact, all of the students frequently responded to the teacher's

questions. However, several students contributed less to answering the teacher's questions. Thus, both types of students were interviewed in order to gather more information data. In doing so, the researcher also provided an introductory remark to inform the students what would be done during the particular time and the interview purpose. The researcher simply formalized the questions to avoid the students' confusion. The questions were designed related to the teacher's questions strategy theme consisting of students' understanding, students' attention, students' thinking ability, and students' engagement proposed by Astrid et al. (2019). To support this, the questions were translated into Indonesian language to help the students understand the meaning of the questions. Since these questions were in the form of semi-structured interviews, thus the researcher did not strictly follow the formalized list of the questions. It meant that the researcher asked more open-ended questions to get the rich data. The interview questions for the students were as follows:

Table 3.3

Interview Questions for Students

Interviewee	
Interviewer	
Day/Date	
No	Questions
1.	In teaching and learning practice, does the teacher regularly ask the questions? Probe: If yes, is it effective to improve your thinking skills?
2.	Does the teacher regularly ask the questions in terms of "why and how" questions? Probe: Do you like those kinds of questions? Why yes or why not?
3.	Do you regularly answer the questions given by the teacher?

	Probe: If yes, what kind of questions do you regularly answer? Yes/no answer or a free-form answer?
4.	Did this strategy arouse your interest to think?
	Probe: Is it working-why yes, or why not?
5.	Can you enhance your thinking skills through these questions?
	Probe: Is it working-why yes, or why not?
6.	Did the teacher's questions increase your understanding of the material?
	Probe: Can you tell me more?
7.	Did the teacher's questions help you to focus on the learning process?
	Probe: Can you tell me more?
8.	Did the teacher's questions increase your participation in the learning process?
	Probe: Can you tell me more?
9.	Did the teacher's questions attract your interest?
	Probe: Can you tell me more?
10.	Did you have any problems or difficulties while implementing the teacher's strategy in designing the question?
	Probe: If yes, how can the difficulties be solved?

The data from the interview of both the teacher and students were used to support the collected data from the observation. Scott and Usher (2011) clarify that the interview is commonly used to support the other strategies. It can be said that this interview was conducted to shed more light on the essential parts of this research.

This kind of data collection was selected because it helped the researcher get the rich data since it involved the written records of observed behaviors to answer the research questions of this research. Accordingly, Bordens and Abbott (2011) clarify that the interview is essential in qualitative analysis because it covers the written records data of the observed behaviors. Besides, the interview is also helpful for gathering in-depth information (Kumar, 2011), in this case, the teacher's

metacognitive regulation in designing HOTs-based questions. He further describes that this interview was used due to several advantages. It is more suitable for a complex situation. It is beneficial to gather in-depth information. The result can be supplemented and the questions can be clearly described.

For instance, this interview was conducted with open-ended questions in the form of a semi-structured interview. In interviewing both the teacher and students, the researcher provided the opportunities to encourage communicative discussion and interaction. It happened because these open-ended questions can increase the communicative discussion and interaction and open the opportunities for the research participants to share their thoughts, ideas, and arguments (Blosser, 2000). Then, this semi-structured interview was mainly conducted to help the researcher explore the participants' ideas, responses, motives, and feelings relating to the EFL teacher's metacognitive regulation in designing the questions to enhance the students' HOTs. As noted by Bell and Waters (2014), through the interview, the researcher can follow up ideas, probe responses, and identify the motives and feelings of the participants. Thus, in interviewing the research participants, the researcher rigorously followed the formalized list of the questions and added the additional questions to probe the research participants' opinions to increase the communicative discussion between the researcher and the research participants. As a result, the questions may be modified during the interview depending on the context because this kind of research instrument can be one of the natural ways of collecting information (Dornyei & Taguchi, 2010).

Due to government regulation of online learning, the interview of both the teacher and students was conducted through WhatsApp voice call. This is possible to be done since the interview can be executed in the form of person-to-person interaction, either face-to-face or otherwise, with a particular purpose related to the research's aims (Kumar, 2011). Moreover, the researcher needed to set the interview questions that can be easily recorded, summarized, and analyzed (Bell & Waters, 2014) to help the researcher interpret the data.

3.3.3 Document Analysis

In this research, the analysis of several documents was essential to provide more precise and detailed information to support the data findings. This document analysis provided the opportunity to gain more insights and detailed knowledge and information that beneficially provide a higher familiar sensibility, allowing the appreciation of the benefit of facts (Barzun & Graff, 2003). In detail, in supporting the previous data collected, the researcher analyzed several documents, including the teacher's lesson plan, the teacher's questions, and the students' answers in the form of written works. In this regard, Bell and Waters (2014) clarify that document analysis would be beneficial to supplement the information obtained by other methods, in this case, observation and interview.

More specifically, the researcher analyzed the lesson plan to see the teacher's metacognitive regulation, particularly in planning to see the teacher's way in setting the learning goals, selecting appropriate strategies, and scheduling the times needed to implement the strategy to achieve the learning goal. This mainly used the leading theory of metacognitive regulation proposed by Schraw (1998) and Balcikanli (2011). Besides, the teacher's questions were also analyzed to see the teacher's metacognitive regulation in designing the HOTs-based questions. The concept of the HOTs-based questions proposed by Ahmadi and Kurniawan (2020) was used to analyze teachers' questions. Then, the students' answers in the form of written works were also analyzed to see their thinking level. The concept of the revised version of HOTs proposed by Anderson and Krathwohl (2001) was used to analyze this kind of document.

3.4 Data Collection Procedures

The data collection procedures in this study consisted of several stages, namely observation, interview, and document analysis as described below:

3.4.1 Observation

In the case study, the data between the variables need to be systematically gathered, and the investigation requires to be planned methodologically (Bell & Waters, 2014). The researcher observed the teaching and learning process using the teacher's recordings, particularly the teacher's way of designing the questions.

More specifically, the researcher observed the teaching process using the observation checklist used in this research proposed by Balcikanli (2011) and took notes regarding the teaching process, including how the teacher's metacognitive regulation in designing the questions. Then, the researcher transcribed the data collected from the observation. The transcription can be seen as the process of converting the result (Creswell, 2012). Then, the researcher classified the data based on the theory used in this research and interpreted the data.

3.4.2 Interview

The researcher interviewed the teacher to see his metacognitive regulation in designing the questions. In doing so, the researcher firstly provided the research participant an introduction to know what would be done during the particular time and the purpose of the interview. This interview was done via WhatsApp voice call. Then, both the researcher and teacher played the recordings of the learning process together. After that, the researcher provided the formalized list of the questions and additional questions to prompt and probe the teacher's answers and responses. It was done using Indonesian language, to explore the issues and allow the teacher to explain their opinions. Last, the researcher closed the interview.

Then, the interview for the students was done to see the teacher's metacognitive impacts on the students. Since the pandemic of Covid 19, the interview process for the students was also executed via WhatsApp voice call. Specifically, the researcher interviewed the students one by one. The researcher also firstly provided the research participants an introduction to know what would be done during the particular time and the interview purpose. Then, both the researcher and the students played the recordings of the learning process together. After that, the researcher transcribed the interview result with both the teacher and the students to help the researcher analyze the data. Then, the researcher analyzed the transcription data and interpreted it.

3.4.3 Document Analysis

In collecting the data through document analysis, the researcher first analyzed the teacher's lesson plan used in the classroom process. Then, the researcher analyzed the teacher's questions and the students' answers in the form of written works to see the teacher's metacognitive regulation in designing HOTs-based questions and the students' thinking level. After analyzing the data, the researcher interpreted the data.

3.5 Data Analysis

The data analysis was conducted to answer the research questions of this study. In providing detailed interpretation and description of the EFL teacher's metacognitive regulation in designing HOTs-based questions, including the implementation, the challenges, and the impacts, the researcher analyzed this study as follows:

3.5.1 Data Analysis of Observation

In analyzing the data of the observation, several related theories of this research were used. The researcher analyzed the result of the observation related to the teacher's metacognitive regulation in designing HOTs-based questions. In relating to the teacher's metacognitive regulation in designing HOTs-based questions, the main theories proposed by Schraw (1998) and Balcikanli (2011) were used to see the teacher's metacognitive regulation in designing HOTs-based questions. The researcher firstly transcribed the data. Then, the researcher categorized the teacher's metacognitive regulation type. As the result of this analysis, the researcher interpreted the teacher's metacognitive regulation type in designing HOTs-based questions.

3.5.2 Data Analysis of Stimulated Recall Protocol

Since the observation data were collected in the form of audio-video recordings and the interview data in audio recordings. These audio-video recordings were beneficial to code, summarize, and take note of the specific details (Bell & Waters, 2014). Thus, the analysis process of the stimulated recall protocol became essential to support the research findings.

Moreover, the researcher transcribed the data recordings into a written form to provide an accessible way of analyzing the data. The stimulated recall protocol analysis provided the thick interpretation data of the teacher's metacognitive regulation types, teacher's questions, and the students' HOTs.

3.5.3 Data analysis of Interview

In analyzing the audio recordings of the data interview, it was essential to analyze the teacher's and students' answers to the questions provided by the researcher in collecting the data. In particular, the researcher focused on the teacher's and the students' responses dealing with the teacher's metacognitive regulation in designing the HOTs-based questions to enhance the students' HOTs. In this analysis, the researcher firstly transcribed the data in written form to help the analysis process. Then, the researcher classified the data based on the teacher's and the students' responses. The data from the interview with the teacher were analyzed based on the metacognitive regulation theory proposed by Schraw (1998) and Balcikanli (2011). Besides, the data from the interview with the students were analyzed based on the teacher's questions strategy theme proposed by Astrid et al. (2019). The collected data from these interviews were analyzed to prove the research participants' points of view. As a result, the researcher provided the interpretation of the data findings.

3.5.4 Data Analysis of Documentation

In analyzing the related documents in this research, the researcher mainly focused on analyzing three documents: the teacher's lesson plan, the teacher's questions, and the students' written answers. Relating to the process of analyzing the teacher's lesson plan, the researcher mainly investigated the teacher's metacognitive regulation proposed by Schraw (1998) and Balcikanli (2011), especially in planning to see the teacher's objective of the study, the teacher's strategy, and the allocation time needed for the teaching process. Regarding the teacher's questions, the researcher analyzed the teacher's cognitive action in designing the questions using the HOTs-based questions theory proposed by Ahmadi and Kurniawan (2020). Besides dealing with the students' answers, the

researcher analyzed the answers based on the revised version theory of HOTs proposed by Anderson and Krathwohl (2001).

In this analysis, the researcher firstly provided substantial attention to the research aims to help the documents analysis process. Then, the researcher interpreted the data to see the teacher's metacognitive regulation in designing HOTs-based questions to enhance the students' HOTs. Therefore, the researcher elaborated several theories from the experts to help the researcher analyze the data collected (see Appendix 4, p. 203).

3.6 Concluding Remarks

This chapter has revealed the methodology of the study, which the researcher used in conducting the research. This chapter covered several parts, such as the research design which was used as the design to conduct the research, research site and participants which consisted of the setting of the study and the participants who were included in this research, research instrument which consisted of the instruments will be used in this research, data collection procedures which consisted of the procedures in collecting the data, data analysis which was related to the process to analyze the collected data, and concluding remarks as the conclusion to sum up all the part of this chapter.