

## CHAPTER III

### METHODOLOGY

This chapter details how the study was planned and conducted. It starts by stating the research's methods, purpose, and research questions. This chapter describes the research design, the research settings & participants, and the research instruments. In addition, data collection and data analysis were presented and discussed.

#### 3.1 Purpose of the Study and Research Question

The purpose of the study is to explore Indonesian EFL teachers' self-efficacy toward technology integration into online learning during the Covid-19 pandemic. In doing so, the study examines the level of Indonesian EFL teachers' self-efficacy in technology integration. Furthermore, this study investigates factors influenced Indonesian EFL teachers' self-efficacy in integrating technology into their online learning practices. The following research questions are addressed in this study:

1. What are the levels of the EFL teachers' self-efficacy in technology integration into online learning during the Covid-19 pandemic in Indonesia?
2. What factors influenced the EFL teachers' self-efficacy to integrate technology into online learning during the Covid-19 pandemic in Indonesia?

#### 3.2 Research Design

This research employed a case study design. It was proposed by Tschannen-Moran et al. (1998) that a case study is necessary to investigate teacher self-efficacy to "provide a thick description of teacher self-efficacy" (p. 242). Furthermore, this study explored teachers' beliefs and the social phenomenon of technology integration in online learning during the Covid-19 pandemic. It is suggested by scholars (Creswell, 2018; Merriam, 2009; Yin, 2016) that employing a case study allows the researcher to comprehend the natural context of human life and how they

socially interact or engage in a specific situation under investigation. It starts with the relevant assumptions and theoretical frameworks to frame the social phenomena or problems.

To begin the case study, a technology self-efficacy questionnaire adapted from Wang et al., (2004) was utilized to determine teachers' current levels of technology self-efficacy. The questionnaire data were quantified and used to help identify the participants who participated in the research. This study used multiple modes of data collection, including questionnaires, interviews, and artefacts. These sources of information and the triangulation gave the researcher a complete picture. Using this specific design, it was possible to explore how and why specified factors affect teachers' technology self-efficacy in addition to identifying the factors that influence teachers' technology self-efficacy. According to Yin (2009), the case study design is the best technique of research when the investigator is interested in answering "how" and "why" questions.

### **3.3 Research Site and Participants**

The main goal of this research is to explore Indonesian EFL teachers' self-efficacy toward technology integration into online learning during the Covid-19 pandemic. The study's research site was in South Sumatra, Indonesia. The researcher chose this site because of the easy access to the participants. The participants in this study were selected by using the purposive sampling method. In a qualitative study, the participants can be chosen purposively (Hamied, 2017). Their perspective replicates this difference and offers a reliable qualitative study (Creswell, 2018). Purposive sampling is based on the concept that the investigator wishes to find, comprehend, and acquire insight and hence must select a sample from which the most can be learned (Merriam, 2009, p. 77). The researcher employed this sample strategy to produce representativeness, allow for comparisons, focus on specific, unique topics or cases, and generate theory through the gradual accumulation of data from numerous sources (Teddie & Yu, 2007).

First, purposive sampling was employed in order to gather EFL teachers who worked full-time in junior high school and senior high school level in South Sumatera and have been teaching online for approximately 12 months during the covid-19 pandemic. The questionnaires were distributed to 150 EFL junior and high school teachers using Google Forms links. From the population survey, only 40 EFL teachers completed the questionnaire. Of the 40 teachers, 11 (27.5%) were male, and 29 (72.5%) were female. Regarding age, 25 teachers (62.5%) were under 30 years old, 13 teachers (32.5%) were between 31 and 50 years old, and 2 teachers (5%) were above 50 years old. There were 26 teachers (65%) who got a bachelor's degree and 14 teachers (35%) who earned a master's degree. Furthermore, 30 teachers (75%) had less than 10 years of teaching experience, 8 (20%) had 11 to 20 years of teaching experience, and 2 (5%) had more than 20 years of teaching experience. Additionally, there were 22 teachers (55%) who had been teaching for approximately 12-18 months in online learning during the covid-19 pandemic, 13 teachers (32.5%) who had been teaching online for 19-24 months, and 5 teachers (12.5%) who have been teaching online for more than 24 months during the covid-19 pandemic. Furthermore, there were 25 participants (62.5%) who teach at a junior high school level and 15 teachers who teach at a senior high school level (37.5%). Table 3.1 presents the teachers' demographic data who participated in the questionnaire.

**Table. 3.1**  
*Participants' Demographic Data*

No.	Category	Sub-category	f	%	Total (%)
1	Gender	Male	11	27.5	100
		Female	29	72.5	
2	Age	≤ 30 years old	25	62.5	100
		31-50 years old	13	32.5	
		> 50 years old	2	5	

<b>3</b>	Educational Background	Undergraduate	26	65	100
		Graduate	14	35	
<b>4</b>	Teaching Experience	≤ 10 years	30	75	100
		11-20 years	8	20	
		> 20 years	2	5	
<b>5</b>	Teaching Online Experience	12-18 months	22	55	100
		19-24 months	13	32.5	
		> 24 months	5	12.5	
<b>6</b>	Instructional Level	Junior High School	25	62.5	100
		Senior High School	15	37.5	

The questionnaire data were analysed quantitatively and divided into low-to-medium, medium-to-high, and very high technology self-efficacy. The first questionnaire at each level was used to identify potential participants for additional in-depth interviews. The questionnaire was then gathered and quantified. From the 40 participants who participated in the initial questionnaire, 6 EFL teachers were invited for further semi-structured open-ended interviews. In this stage, participants in this study were (1) EFL teachers who have conducted online learning for at least 12 months during the Covid-19 pandemic, (2) 2 EFL teachers with very high technology integration self-efficacy, (3) 2 EFL teachers with medium-to-high technology integration self-efficacy, and (4) 2 EFL teacher with low-to-medium technology integration self-efficacy. Teachers were not selected based on the grade level or school region in which they teach, nor were they chosen in terms of gender, age, or a number of years of teaching experience. Neither factor was taken into consideration during the selection process. The teachers' current levels of technology self-efficacy were the only criteria considered when selecting participants for further interviews. Additionally, the teachers' willingness to engage

in further interviews was also taken into consideration. Table 3.2 presents the participants' profiles for further interviews.

**Table 3.2**

*Participants interviewees' profiles*

Participant	Gender	Age	Educational Background	Instructional Level	Teaching Experience	Online Teaching Experience	Technology Self-Efficacy Level
Ms. Titi	Female	24	Under-graduate	Junior High	2 years	12 months	Low-to-Medium
Mrs. Hida	Female	29	Under-graduate	Junior High	6 years	24 months	Low-to-Medium
Mr. Adi	Male	42	Graduate	Senior High	13 years	12 months	Medium-to-High
Mr. Tio	Male	33	Under-graduate	Senior High	5 years	24 months	Medium-to-High
Mrs. Ika	Female	32	Graduate	Senior High	6 years	25 months	Very High
Mrs. Ana	Female	27	Under-graduate	Junior High	5 years	24 months	Very High

The rationale for choosing only six participants for a semi-structured open-ended interview is because the researcher wants to focus on understanding the participant's uniqueness, particularity, and context (Stake, 2010). Therefore, the researcher may conduct an in-depth data analysis regarding EFL teacher self-efficacy in technology integration in online teaching during the Covid-19 pandemic.

In addition, informed-consent forms were supplied and signed by each participant. The informed consent forms explained the study's goal, data collection procedures, participant rights, and consent to the data collection. However, pseudonyms were employed, and pictures containing their faces were blurred to maintain the participants' confidentiality in this present study. Participation in the case study was entirely voluntary; thus, if the first participant contacted declined, the next person in the given level was approached.

### **3.4 Data Collections**

This case study used two kinds of instruments to collect the data. A close-ended teachers' technology self-efficacy integration questionnaire adapted from Wang, Ertmer, & Newby (2004) was distributed to determine teacher self-efficacy in technology integration. The questionnaire aimed to answer the first research question of the study. Furthermore, the second instrument was a semi-structured open-ended interview aimed at answering the second research question of the study. The Interview was conducted to explore what factors influence Indonesian EFL teachers' self-efficacy in technology integration. Each data collection was further explained in the following sections.

#### **3.4.1 Technology Integration Self-Efficacy Questionnaire**

This study used a questionnaire to identify the level of teacher self-efficacy in technology integration into online learning during the Covid-19 pandemic. This research employed a close-ended questionnaire. This type of questionnaire marks a yes/no, a short response, or a checkbox from a list of possible responses (Creswell, 2012).

The Technology Integration Self-Efficacy questionnaire, which was designed by Wang, Ertmer, and Newby (2004), was utilized in order to measure the level of self-efficacy possessed by EFL teachers in regard to the integration of technology. According to Wang et al. (2004), a panel of self-efficacy specialists evaluated the questionnaire for both content and construct validity before it was distributed. Most of the evidence for construct validity is empirical in nature (Wang

et al., 2004). The researchers ascertained that the questionnaire is a valid instrument for measuring teachers' self-efficacy in technology integration.

The validity of the questionnaire was tested on 20 non-sample participants with similar characteristics to participants in this study. The result of the test was calculated by using SPSS (Statistical Package for Social Science) 26 using Corrected-Item Total Correlation. The result showed that 20 items were valid because the  $r$  obtained was higher than the  $r$  table. Item 2 was considered invalid because the  $r$  obtained was lower than the  $r$  table. Therefore, item 2 was deleted. The Cronbach's Alpha Reliability Coefficient was calculated to determine the overall reliability coefficient of the questionnaire. Cronbach's Alpha is a test reliability technique that only takes single test administration to produce a unique estimate of the test's reliability (Gliem & Gliem, 2003). According to Creswell (2012), the coefficient of the test is regarded as reliable if Cronbach's Alpha is more than 0.70. Based on the pilot test, the coefficient of reliability for the questionnaire was 0.939, indicating that it was reliable. Therefore, there were 20 items tested in the sample of this study.

Technology Integration Self-Efficacy questionnaire was aimed to measure the teacher's confidence level with integrating technology into classroom instruction. The questionnaire consists of twenty questions, each with five possible responses written on a Likert scale with values ranging from "strongly disagree" (valued 1) to "strongly agree" (valued 5) and relating to the participant's level of confidence when it comes to using various types of technology (e.g., "I feel confident that I understand computer capabilities well enough to maximize them in my classroom," "I feel confident I can regularly incorporate technology into my lessons, when appropriate to student learning."). The questionnaire was distributed to assess teachers' technology integration self-efficacy in two areas: (1) teachers' self-efficacy in terms of technology capabilities and strategies (items 1-13, 15, 17), and (2) teachers' self-efficacy in terms of external influences of technology use (items number 14, 16, 18, 19, 20).

To collect data, the questionnaires were sent electronically as a link to the teacher's email or WhatsApp number, along with information about the study and an informed consent letter that explains the purpose of the questionnaire and the study. Before starting the questionnaire, the researcher informed the participants about their confidentiality and privacy. After a period of four weeks, the responses to the questionnaire were gathered, then evaluated, and any invalid or incomplete data was discarded. It was vital for teachers to enter their names on their forms so the researcher could get in touch with those teachers who were selected for the interview sample. The findings of the questionnaire were categorized according to those teachers who were placed into one of three categories with their level of technology self-efficacy: very high, medium-to-high, or low-to-medium. These levels were based on the total score on the teachers' technology self-efficacy questionnaire. Once questionnaires were measured and categorized, interviews were then scheduled for the selected participants.

### **3.4.2 Interview**

This study implemented an interview to collect data on each participant's perspectives, thoughts, and feelings about their self-efficacy in technology integration into online learning during the Covid-19 pandemic. An interview can be described as a meaningful interaction between a researcher and respondents who consent to participate in the study to gather in-depth data (Hamied, 2017). Because social cognitive theory forms the basis of self-efficacy, it was essential to comprehend the participants' perceptions of their technological capabilities. Interviews are used in qualitative research to delve deeper into a topic and allow the researcher to encourage participants to elaborate on their responses, provide examples, and describe their experiences (Rubin & Rubin, 2005). Similarly, Hochschild (2009) asserts that interviews can do what questionnaires cannot: they can investigate subject matters in-depth, analysing how and why people construct their ideas, as well as how and why they connect beliefs, values, experiences, opinions, behaviours, and so on.

To collect data, the interviews were placed after teachers' regular work hours, which was convenient for them. The interviews were done with video conference calls through Zoom and lasted approximately one hour. Follow-up interviews through personal communications were conducted at least three times for each participant. The interviews began with a series of semi-structured questions, with room for open-ended questions and discussion to encourage participants to express their personal experiences with technology. The open-ended interviews enabled the researcher to delve deeply into the participants' experiences and perceptions (Creswell & Clark, 2007). Furthermore, open-ended questions have several advantages: they are flexible; they enable the interviewer to probe so that she can go into greater depth if she so desires, or to clear up any misunderstandings; they allow the interviewer to test the limits of the respondent's knowledge; encourage cooperation and help to establish rapport; and enable the interviewer to make a more genuine assessment of what the respondent truly believes (Cohen, Manion, & Morrison, 2018). Interviews were audio recorded with signed participant permission and then subsequently transcribed. A professional transcription service was hired to transcribe the interviews.

A set of interview questions on self-efficacy in technology integration developed by Farah (2011) was used in this study. According to Farah (2011), the interview questions were peer-reviewed by the panel to confirm their validity. In the research findings, the interview questions successfully answered the research question about factors that influenced teacher self-efficacy toward technology integration. In other words, the study interview responses indicated that the interview questions led to the finding of beneficial information that contributed to the research findings. Thus, the interview questions are valid.

The interview consists of 15 questions. The questions were developed with the literature on social cognitive theory in mind. According to research, mastery experiences, performance accomplishments, and vicarious learning experiences are sources of efficacy (Bandura, 1994; Bandura, 2000). While personal, environmental, and behavioural factors are the factors that impact self-efficacy

(Bandura, 2001; Martin, 2004). Given this, several the interview questions focused on different participants' personal, environmental, and behavioural facets. Other interview questions explored participants' previous experience with technology. Additionally, for the purpose of this study, the context of the Covid-19 pandemic will be added to interview items 1, 4, 6, 7, and 14. The researcher believes that the Covid-19 pandemic context will add more layers to teachers' responses to their self-efficacy in technology integration. Table 3.3 present each of the main interview questions and which factors or sources of efficacy it is connected to.

**Table 3.3**

*Teacher Self-efficacy in Technology Integration: Focused Interview Questions*

<b>Questions</b>	<b>Related aspect of efficacy</b>
1. How would you describe your attitude toward instructional technology in regards to its role in online learning due to the Covid-19 pandemic as an instructional tool?	Personal
2. Have you participated in training that targets the use of instructional technology? How or in what ways?	Mastery/ Vicarious Learning Experience
3. How often do you use technology during the regular workday for housekeeping tasks/for instructional purposes?	Mastery/ Vicarious Learning Experience
4. What, if anything, challenges you/scares you about using technology in an online classroom during the Covid-19 pandemic?	Personal
5. How often do you experiment with/take the time to learn new technology?	Mastery/ Vicarious Learning Experience
6. How important do you think technology is to education especially in online learning during the Covid-19 pandemic? Why?	Personal
7. Do you think using technology is essential to students' future success? Why or why not?	Personal
8. What interests you about using technology in the online classroom?	Personal
9. Do you consider yourself a risk-taker? Why or why not?	Behavioural
10. Do you feel you have adequate time during the regular school day to learn about technology to use in your online classroom?	Environmental
11. Do you feel you have adequate opportunities and/or time to learn about technology to use in your classroom	Environmental

Questions	Related aspect of efficacy
through other avenues such as professional development seminars/workshops, conferences?	
12. Do you feel instructional technology engages students more so than other methods of instruction? If yes, why or how?	Personal
13. Describe the local support you have with using instructional technology in your online classroom during the Covid-19 pandemic.	Environmental
14. Do you consider yourself an innovative person? Why or why not?	Behavioural
15. What more can you tell me about your experiences with instructional technology in relation to your teaching practice during the Covid-19 pandemic?	Mastery/ Vicarious Learning Experience

### 3.4.3 Artefacts

Artefacts also become valuable data sources in a case study. Artefacts offer true, genuine, and authentic data sources. Artefacts are typically composed of concrete or physical things. However, since digital technology has advanced, it is increasingly easy to find artefacts (e.g., audio, video, images, animation). Correspondingly, Merriam and Tisdell (2016, p. 162) argued that artefacts data sources could exist in both a physical setting and an online setting. This study aimed to seek the teacher's technology self-efficacy in online learning. By collecting and examining the artefacts, the researcher could develop a bigger viewpoint regarding all the technology integration done by teachers during the online learning, far more than what could be directly examined during the limited time visit. The current study carefully analysed video presentations and photographs as artefacts. The analysis related to EFL teachers' technology integration into online learning during the Covid-19 pandemic

### 3.5 Data Analysis

Data analysis is a complex process that calls for alternating between inductive and deductive reasoning, concrete data, abstract concepts, and description and interpretation (Merriam, 2009, p. 17). The key goal of data analysis is to seek

answers to the study's research questions. The following sections discuss the analysis of the data collection.

### 3.5.1 Technology Integration Self-Efficacy Questionnaire

The questionnaire was established to determine the level of self-efficacy of EFL teachers toward technology integration into online learning during the Covid-19 pandemic. It concerns teachers' self-efficacy about technology capabilities and strategies and teachers' self-efficacy regarding external influences of technology use. This closed-ended questionnaire contains 20 items, each with five options written on a Likert scale ranging from "strongly disagree" (valued 1) to "strongly agree" (valued 5). The questionnaire responses were categorized into five types of scores.

**Table 3.4**

*Questionnaires Score Categories*

Categories	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Scores	1	2	3	4	5

The results were computed and categorized into three levels: low-to-medium, medium-to-high, and very high technology self-efficacy. The indicators of teachers' technology self-efficacy across levels can be found in Chapter 2. The SPSS 26 for windows was employed to summarize the EFL teachers' scores using descriptive statistics. Ranges and mean scores were calculated for descriptive data. The higher the mean score, the higher the level of technology integration self-efficacy possessed by the EFL teacher. Participants' questionnaire Using the previously indicated assigned point values, the results were quantified into three categories: low-to-medium technology self-efficacy (20–70), medium-to-high technology self-efficacy (71–89), and very high technology self-efficacy (90–105).

The level of interpretation was adapted from Farah's (2011) previous study on teachers' level of self-efficacy in technology integration.

### **3.5.2 Interview**

The interview data were analysed to determine factors that influenced EFL teacher self-efficacy in technology integration into online learning during the Covid-19 pandemic. Several processes were followed, encompassing numerous levels of analysis, and varying from the specific to the general (Creswell, 2018). Step (1) consists of organizing and preparing the data for analysis by transcribing interviews, digitally scanning material, classifying all visual material, and categorizing and sorting the data into distinct types based on the information sources. Step (2) requires re-reading or examining all the data. This step provided an overview of the sources and an opportunity to reflect on their general significance. Step (3) is where all the data coding begins. Coding is the process of categorizing data by bracketing chunks (or text or image segments) and putting a word in the margins to represent a category (Rossman & Rallis, 2012). It comprises gathering text data (or paragraphs) acquired during data collection, categorizing sentences (or paragraphs) or photographs, and storing the results. Coding is the foundation of qualitative analysis because themes form and take root in the data during coding. For this case study, open coding was specifically applied. Auerbach and Silverstein (2003) claimed that "you can use an open coding framework without all of the assumptions of grounded theory, coding as you go, rather than preparing a list, refining the concepts, and then marking them in the text" (p. 223). Open coding enabled the researcher to analyse the data for significant units that frequently appeared, which seemed crucial for this research. Before initial coding began, the theoretical framework and research questions were revisited to bring the main research problems to mind. The transcripts were then examined in their entirety to create an understanding of the main potential concepts. The last step (4) is to create a description and themes. The data from the previous coding process generated a description of the setting, participants, and categories or themes for analysis. These

themes are the ones that are utilized as headings in the study's findings sections and are presented as major findings.

### **3.6 Data Triangulation and Trustworthiness**

Data triangulation is the use of several data sources, observers, and/or methodologies (Ary et al., 2006). Additionally, Yin stated that one of the three principles of data collecting and one of the key advantages of case study data collection is the use of multiple sources of evidence (2009). Utilizing questionnaires, interviews, and artefacts increased the probability that the phenomenon under study was understood from various angles. Since this case study attempted to distinguish various factors that may influence teachers' technology self-efficacy, the use of multiple sources helped develop the holistic picture sought. In the case of studies, using numerous sources of information allows an investigator to examine a broader spectrum of historical and behavioural concerns (Yin, 2009, p. 115). Furthermore, in order to get reliable results, it was crucial that the findings from one data source be confirmed in other data sources. According to Stake (2006), this procedure helps increase assurances because multiple data sources must support each essential interpretation.

Trustworthiness indicates the credibility, dependability, and transferability of research findings. For the current study, there were several ways to address reliability and credibility. First, gathering data from various sources made it possible to triangulate the results and make sure that the information obtained from one source was supported by or validated by an additional source. According to Lincoln and Guba (1985), triangulation happens when data are cross-checked using various sources. The researcher also hired a professional transcriptionist to transcribe interviews. Regarding the transferability, thick descriptions that outlined data collection and data analysis techniques, as well as specific detail regarding participant characteristics and the research setting, were provided, allowing others to replicate this study if desired. The inclusion of lengthy descriptions provides

those who seek to apply all or a portion of the findings elsewhere with the data they need (Lincoln & Guba, 1985).

### **3.7 Concluding Remarks**

This chapter has explained the research methodology which was used in this study. This chapter provides as guidance in determining the method of the study, the subjects, the data collection, the data analysis, and the data triangulation and trustworthiness of this present study. Further data analyses and data presentation will be delivered in the following chapter.