

CHAPTER 3

METHODOLOGY

Chapter three provides the methodology used to examine the ways English teachers learn through community of practice. The research procedure is displayed to find out the answer to the research questions stated in Chapter I. This chapter presents eight main parts of the investigation: research design, participants, data collection technique, and data analysis.

1.1. Research Design

The current study used a case study design to thoroughly understand how teachers learn within community of practice and develop technology-integrated teaching tools. A case study research design was chosen as it allows for an in-depth exploration to comprehend phenomena, issues, or problems under investigation. Thus, this research explored how teachers learned to improve their professional teaching through community of practice. By delving into the unique dynamics and interactions aspects within a real-world context, the case study design enables a holistic understanding of teachers' learning experiences within community. In this study, CoP refers to a collaborative group of teachers within the context of a professional learning community. The CoP is facilitated by one of the English teachers' associations in Indonesia that provide teachers to engage in learning activities, exchange knowledge, and collectively work towards enhancing their proficiency in integrating technology into teaching practices.

Case study provides the flexibility to utilize multiple data sources, allowing for a comprehensive exploration of the processes involved in CoP. Therefore, this study employed the data from the interactions between teachers and trainers in Telegram Chat and virtual meeting, interview, media, lesson plan to see how technology is implemented in their classrooms. It is investigated through the participant teachers' interactions during discussions and virtual meetings in an online professional learning program.

This design is advantageous for capturing the contextualized insights into CoP dynamics and examining cause-and-effect relationships related to the influence of CoP on EFL teachers' learning and the subsequent reflection in the development of technology-integrated learning media. It is supported by the notion that case study design is commonly used to investigate complex, real-life contexts and get a comprehensive and nuanced knowledge of the underlying causes and effects (Yin, 2014; Flick, 2015; Cohen, Manion, & Morrison, 2007). The multiple resources are then processed to provide a comprehensive and detailed picture of the cases utilized to answer research questions and develop the theories and insights (Yin, 2014; Flick, 2015). In addition, the case study strives to describe 'what it is like' to be in a particular situation, to catch the close-up reality and thick description (Geertz, 1973, cited in Cohen, Manion, & Morrison, 2007). Case study research can give a comprehensive, detailed, and nuanced understanding of a complex phenomenon. Therefore, it employs triangulation to increase the validity and reliability of the findings (Flick, 2015).

1.2. Site and Participants

The research took place in an online learning environment. The program aims to develop teachers' abilities in using technology in the classroom effectively and in a variety of ways. This CoP program is implemented using the Telegram application (using chat and video chat features) and Google Classroom.

The participants were one group English teachers who were actively involved and engaged in the DIGI Collaborative Teacher Professional Development program. DIGI is a teachers professional development program initiated by one of the associations for English teachers in Indonesia. The study focuses on one specific group to give an in-depth investigation of the subtle dynamics and experiences inside the DIGI program, providing insights into how teachers learn and develop within this environment. However, it is critical to acknowledge the possible limits of this decision, particularly in terms of generalizability. It may limit the findings' generalizability to a larger population of English teachers or various professional development program.

This program lasted for nine months, and each month focused on a topic. The activities for each month unfolded in the following stages.

Table 3.1. Teachers' Activity in DIGI Program

Time	Activity
Week 1	MOOC – Asynchronous, self-access via Google Classroom
Week 2	Post MOOC – Synchronous, discussion via Telegram video chat
Week 3	Class Experiment
Week 4	Synchronous, discussion via Telegram Video Chat

The first week is independent learning. The teachers had to access a pre-structured online course, commonly referred to as a MOOC to watch the video related to the topic (See Table 3.2), answer the questions, and fill out the assignment. This initial week emphasizes asynchronous learning, allowing participants to progress through the course materials at their own pace. The learning platform chosen for this phase is Google Classroom, indicating a digital and self-accessible format. The second week is a synchronous session where the teachers join the live session using telegram video chat. Telegram video chat serves as the chosen medium for these discussions, facilitating dynamic and immediate communication among participants. During this session, the teachers further elaborated on the previous week's video from the trainers. They also have a discussion with the trainers and the other members, doing collaborative reflection, and shared insights.

The third week is for a practical application of the knowledge or skills acquired during the process of learning and discussion. Teachers are expected to implement a class experiment. This phase likely involves hands-on application in a classroom setting, allowing teachers to implement theoretical learning into practical teaching strategies. The fourth week is having another synchronous session to discuss the teachers' experiment. It maintains a focus on synchronous discussions, creating an

opportunity for participants to share experiences from the class experiment, address challenges encountered, and delve into additional insights. Within these activities, the trainers and the members also had discussions through a chat room on Telegram.

The program was held in 9 months. Each month had a different topic. These topics include class management, increasing student engagement in learning, developing teaching materials using technology, differentiating face-to-face and online learning processes, providing feedback, and assessment. From each topic, the teacher explores an application to assist the teachers implementing the topic. The detailed information can be seen in Table 3.2.

Table 3.2. Topic and Teachers' Activity

Month	Topic	Apps
April	- Flipped Classroom a lesson idea on Flipping part of the textbook using an online dictionary/digital flashcard	Digital Flashcard
May	Managing the F2F classroom integrating technology and group work	Bitmoji (make an avatar)
June	Adapting existing materials to increase interaction and integrate technology	Padlet
July	Developing Engaging teaching materials	Jamboard
August	- Giving students some ownership in their language learning - Engaging students as partners of their own learning experience	Canva
September	- Managing participation, collaboration - Implementing productive group dynamics in the F2F and virtual environments	
October	Giving Feedback	Padlet and Vocaroo
November	understanding the role of language games	Escape Room
December	Assessment Learning	Escape Room

Table 3.2 presents a well-structured roadmap for the professional development journey of teachers over the course of nine months. Each topic is along with one application. The application is introduced to teachers as an alternative application that can be explored in their classes. Each month is dedicated to a specific theme, ranging from exploring innovative teaching models like the Flipped Classroom to acquiring skills in managing classrooms with technology. The integration of various applications such as Bitmoji, Padlet, Jamboard, Canva, and Escape Room reflects a deliberate effort to equip educators with a diverse set of tools, ensuring versatility in adapting to different aspects of teaching and learning. Another example is the topic regarding “adapting existing materials to increase interaction and integrate technology” used Padlet as the tools. During the learning process, teachers are given an overview of how to use Padlet to develop material, such as uploading material in the form of docs, videos, audio, and so on. Apart from that, padlet can also be used to increase interaction between teachers and students, and between the students. Students can upload audio or video recordings, provide comments to other students, and do many other activities. This comprehensive approach not only addresses pedagogical strategies but also emphasizes collaborative practices, feedback mechanisms, and the incorporation of engaging elements like language games.

The teachers involved in the program were divided into several small groups with one trainer. In this research, only one group was taken to see the teachers' learning process and interactions during the learning process. Thus, learning and interaction patterns can be seen throughout the program. It is in line with Creswell (2014), that the participants can be selected based on criteria relevant to the research questions or the purpose of the study. It can provide an in-depth understanding of the topic from the participants (Guest, MacQueen, & Namey, 2012). In this study, I acted as an observer who observed the process without being involved in any activities.

1.3. Data Collection

In this research, the data were taken from a Telegram chat excerpt, Telegram video excerpt, media and lesson plan, and interview.

The interactions and activities among the teachers and the tutor within nine months of training in Telegram chat and video chat are taken as the primary data to identify the element of community of practice. The Telegram chat was useful for conversations that happened at different times – not all at once. Video chats, on the other hand, allowed real-time discussions and demonstrations. The process of data collection involved observing and analyzing the content of these interactions, extracting valuable insights into how knowledge was shared, problems were addressed, and the other topic of discussions. Therefore, the research could reflect on the collaborative learning environment and the development of a community of practice among the teachers and the trainer.

Another data collection tool is the interview, which is used to explore information that cannot be obtained through other instruments and allows participants to express their interpretation and how they experience a specific situation from their point of view (Creswell, 2012; Cohen, Manion, & Morrison, 2007). It employed a semi-structured interview in which the researcher has a set of pre-determined questions, but the questions can be modified or adapted based on the participant's responses. The questions are planned based on similar studies reviewed in the literature regarding community of practice. The interview was conducted online and took approximately 20 minutes. The questions was delivered in Bahasa Indonesia to avoid misunderstanding. The questions are formulated as follows.

1. During the program, teachers interact with other teachers and trainers. How did the interaction help you to learn about the topic being studied?
2. Which group activity helped you the most in studying and how?
3. What is the role of the trainer in helping your learning process in the group?
4. What is the role of other teachers in helping your learning process in the group?
5. How do you contribute to the discussion in the group?

6. How did you develop the media studied at DIGI for classroom learning? Do you use the template provided or develop your own?
7. How can CoP help you to make a lesson plan?

Two teachers took part in the interview process. All participants consented to take part in the interview procedure willingly. Individual interviews were undertaken to obtain detailed information from each participant. The interviews were recorded and transcribed for analysis.

1.4. Data Analysis

In this research, the results of the data are interpreted descriptively. The data analysis techniques are elaborated.

The recorded interview was transcribed. The transcriptions were then organized and classified based on research questions. It is classified based on the research questions provided. Each interviewee's responses were systematically categorized to align with the specific areas of inquiry outlined in the research questions. The analysis involved identifying recurring themes, patterns, and unique insights present in the interviews. By closely examining the content, researchers gained a nuanced understanding of the participants' perspectives, experiences, and the intricacies of the phenomenon under investigation.

The Telegram and video chat excerpts are exported as text files. Each post was initially categorized according to its function within the chat context. The data were analyzed in thematic analysis. A deductive thematic is chosen in which the analysis will develop a set of pre-existing themes or codes based on previous studies or theory. The analysis will be identified and categorized using thematic analysis according to three critical elements of community of practice by Wenger (1998): mutual engagement, joint enterprise, and shared repertoire.

The following steps constitute the thematic analysis procedure (Braun & Clarke, 2006; Guest, MacQueen, & Namey, 2012).

1. Familiarization with the data. It is the process reading transcripts or other materials several times and taking notes on early findings and thoughts.

2. Generating initial code. The significant data will be systematically identified and labelled using descriptive labels or short phrases.
3. Searching for themes. The initial codes will be reviewed and grouped into bigger categories or themes in order to find the connections and trends across the data.
4. Reviewing and refining theme. The theme is refined and developed by comparing them throughout the data and evaluating their consistency and coherence.
5. Defining and naming theme. Once themes are developed and supported by the data, then it will be identified and labelled variables in a manner that appropriately conveys their significance to the research question.
6. Writing up the analysis. The findings are presented in a clear and consistent way by utilizing data-derived quotes and examples to support their themes and interpretations.

Thematic analysis processes included an iterative process of reducing the database to a small set of themes or categories (Creswell, 2013). After organizing the transcripts from Telegram chat and video chat, theme analysis allowed for the formation of categories using multiple iterative coding processes: open, axial, and selective coding (Creswell, 2013). The iterative coding process is illustrated in Table 3.3.

Table 3.3. The Transition from Open to Axial Coding

Open Codes	Axial Coding		Example of Data Set
	Categories	Properties	
Agreements, disagreements	Sustaining mutual relationships	Agreements and disagreements	"Agree. Google translate is quite useful" "It's better to use digital dictionary to get more about the words. Google translate is only for saving the time."
request, questions	Information, knowledge or experience on practice	Answer requests	Teacher: I still have an English club class Can I have them for experiment?" // Trainer: "Doing the experiment

		with the English club would be great!"
advice	Advise	"Perhaps you may want to add a section focusing on the vocabulary relevant to the environmental issues" (trainer)
information, news	Share information, experience, knowledge related to the topic	The teachers shared their current lesson plan in the group chat.
explanation, example, sampling	Provide examples to explain	"So, we have random letters written on the floor. Then, we say the word and students touch all the letters that make up the word using their body" (Pak UR gave an example of adapting the "dictionary" for vocabulary learning"
Conclusion	Draw implications from messages	"For the class experiment, you can select vocabulary or key words relevant to the topic you are teaching next week"
Suggestion	Provide a suggestion, preference	"This is another good effort in planning flipped learning for your students. My suggestions, you need to be more specific as to what kind of topic that you are going to teach" (trainer)

Table 3.3 illustrates the transition from open to axial coding in the analysis process, showcasing the evolution of codes into categories and their associated properties. The open codes encompass diverse elements such as agreements, disagreements, requests, questions, advice, information, news, explanation, examples, sampling, conclusions, and suggestions. Through axial coding, these open codes are organized into meaningful categories and further refined to reveal underlying properties. The accompanying examples from the data set offer concrete

instances of how these codes, categories, and properties manifest in the context of the ongoing discussions among teachers and the trainer. This systematic transition from open to axial coding enhances the interpretive depth of the qualitative analysis, contributing to a comprehensive understanding of the dynamics within the community of practice.

After that, the three-stage coding procedure were generated. Identifying open codes, reducing these codes into fewer focused codes, and then integrating them into larger conceptual codes were all part of the entire coding process. It is demonstrated in Table 3.4.

Table 3.4. Generating Themes

Open Codes	Axial coding	Selective codes	Theme
request, questions	Answering the request between the peers or from expert to the peers	Sharing information, knowledge, or experience on practice	Sharing information, knowledge, or experience on practice implementing technology in the classroom
advice	Giving advise between the peers or from the experts		
information, news	Sharing the up-to-date information related to profession		
explanation, example, sampling	Providing an example to explain the content		
conclusion	Stating implications from the content being discussed		
suggestion	Correcting a message among the peers and from the experts		
regulation	Sharing the regulations	Sharing teaching procedures and tools	

best-practices	Sharing the practice or routines		
jargon	Sharing the jargon		
Agreements, disagreements	Stating agreements and disagreements towards the statements from the peers and the experts	Stating agreements and disagreements towards the statements from the peers and the experts	Responding to the issue of utilizing technology in the classroom
revising	Revising a particular issue thorough discussion	Collaborating to solve the problems	
solution	Discussing a particular issue to find a solution		
Talk about current issue	Defining current issues related to profession	Defining current issues related to profession	
critism	Critisizing the issue related to the content	Responding to the issue related to the content	
Way of learning	Giving a teacher to learn the basic of the content	Proposing ways to learn	
members knowledge	Understanding the others' people knowledge	Understanding what people know and what people do	Rapport Building in Community of Practice
members action	Understanding the others' people can do		
contribution	Understanding the others' contribution		
feelings	Expressing the feeling of belonging	Expressing the feelings	

In Table 3.4, it displays the outcome of a three-step process used to analyze the teachers' interactions. The process involved identifying initial codes, refining them into focused codes, and then grouping them into broader conceptual

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categories. This organized approach helps construct the extensive data into clear themes that capture the essence of how teachers communicate in the community of practice. The resulting themes highlight key aspects of the community's dynamics, such as sharing information, implementing technology, collaborating on problem-solving, defining professional issues, building rapport, proposing ways to learn tech skills, and expressing a sense of belonging. This structured representation provides a clear way to understand and analyse the complex interactions among teachers, contributing to a nuanced understanding of the community's dynamics.

Thematic analysis is also used to analyze the data which is taken from the media and lesson plan created by the teachers to comprehend how technological pedagogical content knowledge is reflected in their teaching media. The synthesized process is illustrated in Table 3.5.

Table 3.5. A Synthesis of EFL Teachers' Knowledge

Categories	Teacher 1	Teacher 2	Teacher 3	Teacher 4
Technological Knowledge	Canva, LearningApps Google Drive, Knoword	Padlet, Bitmoji	Jamboard, Bamboozle, Padlet, LearningApps	Padlet, Jamboard, Canva, Quizziz, Spreadsheet, Vocaroo
Content Knowledge	Listening Comprehension	Recount Text, Descriptive Text	Descriptive Text (Simple Present Tense, Preposition of Place)	<ul style="list-style-type: none"> • Past Tense • Recount Text
Pedagogical Knowledge	<ul style="list-style-type: none"> • Using different teaching methods 	<ul style="list-style-type: none"> • Using different teaching methods 	<ul style="list-style-type: none"> • Using different teaching methods • Changing methods and styles 	<ul style="list-style-type: none"> • Using different teaching methods

	<ul style="list-style-type: none"> • Changing methods and styles • Choosing teaching materials • Managing and controlling students • Evaluating students' learning outcomes 	<ul style="list-style-type: none"> • Changing methods and styles • Choosing teaching materials • Managing and controlling students • Evaluating students' learning outcomes 	<ul style="list-style-type: none"> • Choosing teaching materials • Managing and controlling students • Evaluating students' learning outcomes 	<ul style="list-style-type: none"> • Changing methods and styles • Choosing teaching materials • Managing and controlling students • Evaluating students' learning outcomes
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Table 3.5 highlights the diverse technological tools and content areas each teacher is familiar with, along with their shared pedagogical approaches, offering a comprehensive perspective on their teaching expertise. The themes that emerged from the thematic analysis are presented in the Findings chapter, along with relevant quotes from the participants' interviews to support the interpretation. The Findings chapter contains a thorough examination of each subject and its implications in the context of current research, contributing to a better understanding of the topic. Then, all the qualitative data from multiple sources were analyzed and triangulated.

1.5. Concluding Remarks

To sum up, this research employed a case study design to explore how teachers learn technology-integrated teaching tools within a community of practice. It involves a group of English teachers in a nine-month professional development program called DIGI that focuses on assisting the teachers to utilize technology in the classroom. The study used data from Telegram chats, video chats, interviews, and lesson plans. The data were analyzed by using thematic analysis and focused on CoP elements. The research provides insights into the teachers' interactions, learning processes, and knowledge development within the CoP.