

CHAPTER III

RESEARCH METHODOLOGY

3.1 Introduction

Chapter 2 has discussed literature related to this research, including concepts of multiliteracies, multimodality, multimodal literacy, technology in multiliteracies learning, and multiliteracies in ESP practices. This chapter provides a detailed description of the methodology of the study, which drew on all the literatures reviewed. The discussion is subsequently arranged to delineate the research design, setting, participants, data collections and analyses. This study was a qualitative case study (Creswell, 2012; Hamied, 2017; Stake, 2005; Yin, 2012) in which the data collections were conducted in an ongoing way (Fraenkel and Wallen, 2000).

As stated in Chapter 1, the purposes of the study are (1) to investigate the implementation of multiliteracies pedagogy in a technology-supported environment in ESP course to cultivate students' multimodal literacy; and (2) to examine students' responses toward the multiliteracies teaching program in ESP classroom. Based on the above purposes, the present study attempted to address the questions: 1) Can multiliteracies pedagogy conducted in a technology-supported environment facilitate ESP learners in developing their multimodal literacy?; and 2) How do the students perceive the implementation of multiliteracies instruction in their ESP learning?

3.2 Research Design

In accordance with the purposes and research questions stated above, qualitative research embracing case study design was utilized in this study. This particular design was selected for several reasons. First, this research design enables the researcher to focus on a single group of subjects and to utilize multi-method data collection techniques to investigate the emerging phenomena from the teaching program implemented (Yin, 2014, Hamied, 2017). In this study, the single group was a cohort of ESP students taking Informatics Engineering as their study program. This group was also treated as a case for this study. Single case was

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employed and was regarded sufficient because the case was special and represented a significant contribution to the knowledge and theory building (Rowley, 2002), that is, to enrich the literature of multiliteracies pedagogy, multimodal literacy, and ESP practices in Indonesia context. Meanwhile, the multiple sources of evidence were collected through classroom observations, semi-structured interviews, students' responses to open-ended questionnaires, students' reflective journals, and students' artefacts. These sources of evidence were discussed further in the following sections of this chapter.

Second, the case study design has the potential to provide an in-depth understanding of process rather than outcome and to achieve holistic picture of the research and participants of the study. This includes the "detailed views" of participants and research conducted in the participants' "natural setting" (Creswell, 2003, p. 15). In the context of this study, this particular design was used to closely examine the instructional process of multiliteracies pedagogy implementation in ESP context for the purpose of improving students' multimodal literacy.

Third, the qualitative case study design offers "rigorous and thorough data collection and analysis which can be used to further develop themes and theories that lead to improved understanding of a phenomenon (Creswell, 2007). This statement mirrors the idea of Cohen, et.al. (2013) stating that case study method allows researchers to present a comprehensive and thorough description of the problem, and provide a unique example of real people in real situations.

As regard with the role of researcher in qualitative research, Woods (2006) claims that "the qualitative researcher seeks to discover the meanings that participants attach to their behavior, how they interpret situations, and what their perspectives are on particular issues". To this end, being an "insider-researcher" (Unluer, 2012) has been the role that qualitative researcher plays in the research undertaking for it allows the researcher to have a greater understanding of the class and learning culture and to have "an established intimacy which promotes both the telling and the judging of the truth" (Unluer, 2012, p. 1). However, there can be challenges associated with the researcher being an insider: he/she may become subjective and biased due to familiarity with the topic through prior experience. In the context of this study, the researcher was also the teacher in the classroom, and

was physically present to observe the students' interactions with each other in their natural setting (Emilia, 2005).

3.3 The Research Site and Participants

3.3.1 The Research Site

The study was undertaken in an Informatics Engineering Study Program at a state polytechnic located in Banjarmasin, South Kalimantan. Polytechnic education is a practice-based learning which provides learners with hands-on experience within dynamic and progressive learning environment. In addition to academic knowledge, polytechnic also emphasizes the acquisition of certain important life skills. The key skills learned among others are communication, presentation, and problem-solving. Work attachment with industry partners are part of the curriculum that enables learners to gain on-the-job experience and provide opportunities to work with industry expert. Therefore, it is of paramount importance to equip polytechnic students with communication skills both verbally and multimodally.

Informatics Engineering Study Program was basically chosen for two reasons. First, the researcher has been teaching in this institution for more than 14 years that gives her advantage to have easy access and feasibility of the research. The researcher's familiarity with the situation and the participants in the research site was expected to lead to a more natural conduct of research. Second, the Informatics Engineering students at tertiary level have remarkable technological strengths and passions in deploying multimodal tools and hence, these undergraduate engineers should be given the empowerment, autonomy and independence so that they can become efficient and multiliterate learners. To become a truly global engineer, undergraduate engineers need to be encouraged to generate their own ideas and discuss around given topics so as to keep them engaged. These students also need to be trained how to make meaning, analyze and synthesize and evaluate information, and communicate ideas and messages effectively using a range of available technological inventions in a variety of situations to prepare them to be successfully functioned in the global world of work that they likely face in the future.

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3.3.2 Participants

In order to obtain rich information for the research, purposive sampling was employed in this study (Patton, 2002) which calls for the researcher to select participants based on the particular aims of the study. This study involved 30 semester two ESP students of Informatics Engineering Study Program of a state Polytechnic in Banjarmasin. The selection was based on the consideration that the students had accomplished English for Specific Purpose subject in the first semester in that they were considered to have basic English skills that could be used to acquire more skills in their further learning of English for Specific Purposes in the second semester.

In addition, the selected participants were heterogeneous in terms of gender, sexes, and place of origin. From the perspective of classroom observation in EFL, having a natural setting and heterogeneous participants allowed this research to study things as they are without manipulating the environment (Norum, 2008). In addition, Van Lier (1988 as cited in Emilia, 2005) suggested that “in an ongoing class, things are done along similar lines a number of times, and they turn into routines in which all participants know what is likely to happen next” (van Lier, 1988, p.10 as cited in Emilia, 2005), which can lead to “a natural and undisturbed lesson” (van Lier, 1988, p.39, as cited in Emilia, 2005).

All participants in this study were between 17-19 years of age. They were mostly from Banjarmasin, having Banjarese language as their mother tongue. Only several of them use Indonesia language in their day-to-day class interaction. The English and Indonesian languages were used mainly in the teaching and learning activities in the classroom.

3.4 Data Collection Method

This study utilized multiple techniques of data collections as required in a case study. As stated by Yin (2014), a case study requires multiple sources of data to address a wide range of behavior issues and add trustworthiness to the research. To meet the data qualifications, this study used five data sources including classroom observations, interviews, questionnaires, students' written

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reflections, and students' artefacts. As also suggested by Creswell (2007) that in-depth analysis of multiple data sources allows the researcher to create rich contextual perspective of the case, preparing the research for validation strategies and transferability.

3.4.1 Classroom Observation

Determining which data collection methods will best meet the needs of the study is one of significant parts of the research design process. In qualitative research, observation is regarded as one of the salient methods of data collection. Creswell (2003) described observation as one in which "the researcher takes field notes on the behavior and activities of individuals at the research site" (p. 185). To comply with the objectives of this study, observation was selected to be one of the data collections used. The observations were carried out in the classroom for fourteen sessions during the teaching learning process in which the researcher acted as 'teacher as researcher' and participant observer. The observations took a particular attention to students' activities and interactions in the teaching process. The researcher's involvement in the research setting aims to reveal information in depth (Creswell, 1994; p. 150; Merriam, 1998; p. 100) from the classroom activities. The purpose of such observation enables the researcher to discern ongoing behavior as it occurs and to make appropriate notes about its salient features (Cohen & Manion, 1994).

During the observations, the researcher wrote down all events happened in the instructional process and upon completing each of teaching session, these events were constructed into field notes. Field notes were formatted using the suggestions from Bogdan and Biklen (1982). On the first page of each set of notes, the researcher recorded the date and time and a working title that indicated the content of the notes. Topics are addressed in the field notes included particular events that participants recalled, the researching speculations about emerging themes, points of clarification, and any other things that the researcher detected. Other topics included in the field notes included observations about the participant's attitude and direct quotes that caught the attention of the researcher. The researcher immediately highlighted quotes from participants in red that caught attention so that the quotes could be easily found during the data analysis.

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To increase the reliability of observational evidence and to reduce bias as well as to avoid missing important events during the observation process (Cohen & Manion, 1994; p. 112), the researcher employs two observational techniques, that is, the inclusion of research collaborator and the use of video recording. In terms of research collaborator, the researcher involved one of her colleagues to do observation and take note on all events encountered in the teaching process. Her name was Kridya (in pseudonym), a senior ESP teacher in the research site. She was selected due to her experiences of teaching and the position she held as a teacher supervisor in one of leading private course affiliated from Jakarta. She had also chosen for her good command of English. Unfortunately, due to her busy schedule, the research collaborator could not attend the whole sessions of classroom activities. As soon as each session was over, the researcher and the collaborator had discussion on the students' responses and activities during the lesson. The researcher then made notes on crucial points reported by the research collaborator. In terms of the recording, the researcher utilized recording device (i.e. video recorder) to capture activities conducted in the classroom.

The observations on the implementation of multiliteracies pedagogy can be seen in Table 3.1 below.

Table 3.1 Multiliteracies Program Implementation

Week	Topic	Teacher Activities
1	Introduction to the teaching program	<ul style="list-style-type: none"> - General overview of the teaching program. - Conducting online questionnaire survey: The questionnaires are constructed by using google form application at http://bit.ly/Pre_SurveyStudy. The purpose of distributing the questionnaires is to find out students' information regarding their level of engagement in technology and their multimodal experience in learning English. - Conducting diagnostic test of students' English Proficiency. - Introducing <i>Schoology</i> application as Learning Management System (LMS) platform to be used in the overall instructional program - Introducing several technology applications (e.g. <i>Canva</i>; <i>Sway</i>; <i>Powtoon</i>; <i>Screen Cast O'matic</i>) to be used in the production of digital multimodal texts. - Giving information on students' weekly task of writing reflective journal (A journal written in English containing information about what they learn from the teacher, what they learn from their peers, what they perceive about the lesson and what their suggestions toward the teaching program)
Lesson 1: Introduction to Multimodal Text		

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2	Explicit Teaching (Direct Instruction on Multimodal Texts)	<ul style="list-style-type: none"> - Conducting an explicit teaching on multimodal texts - Conducting an explicit teaching on metalanguage of multimodal texts
Lesson 2: Digital Poster/Ads Creation (Screen-Based Lesson)		
3	Situated Practice (Knowledge Process of Experiencing)	<ul style="list-style-type: none"> - Showing digital advertisements to students taken from https://hamptonroads.myactivechild.com/blog/workshop-sexting-texting-cyberbullying/ and https://kayleechurch.weebly.com/english-1010/visual-analysis. - Eliciting students' understanding on the content of the poster and its multimodal aspects by asking the following questions: <ol style="list-style-type: none"> 1. What is the poster trying to inform you about? 2. What is the focus of the poster? 3. Which area draws your attention? 4. What is the purpose of this poster? 5. Which subjects/objects are larger and which one is smaller? Why? (6) Which subjects/objects are sharper and which one is blurred? 6. Who is the target audience?
	Overt Instruction (Knowledge Process of Conceptualizing)	<ul style="list-style-type: none"> - Explicit instruction on multimodal texts on poster or advertisement - Explicit instruction on metalanguage of Poster
	Critical Framing (Knowledge Process of Analyzing)	<ul style="list-style-type: none"> - Having students work collaboratively in a group to search for a poster in the internet - Having students identify the multimodal elements of poster - Having students discuss the multimodal elements of poster with their classmates.
	Transformed Practice (Knowledge Process of Applying)	<ul style="list-style-type: none"> - Having students create a digital poster or ads in a group - Having students identify the multimodal elements of digital poster they create in a group - Having students create digital poster individually
5	Transformed Practice (Knowledge Process of Applying)	<ul style="list-style-type: none"> - Having students conduct live presentation on the digital poster/ads they create - Providing feedback to students' poster/ads
6	Transformed Practice (Knowledge Process: Applying)	<ul style="list-style-type: none"> - Having students conduct live presentation on the digital poster/ads they create - Providing feedback students' poster/ads
7	Transformed Practice (Knowledge Process: Applying)	<ul style="list-style-type: none"> - Having students conduct live presentation on the digital poster/ads they create - Providing feedback students' poster/ads

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Lesson 3: Digital Multimodal Instructional Text: Digital Animated Video Production (Screen-Based Lesson)		
8	Situated Practice (Knowledge Process: Experiencing)	<ul style="list-style-type: none"> - Having students watch a video on “How to build a website using Weebly”. This video is retrieved from https://www.youtube.com/watch?v=Bm7hSqtV2J8 - Eliciting students’ understanding related to the video - Having discussion related to the content of the video
	Overt Instruction (Knowledge Process of Conceptualizing)	<ul style="list-style-type: none"> - Having students arrange jumbled sentences to construct a good instructional text. - Having discussion on the linguistics features of the text - Conducting an explicit teaching of the generic structure of an instructional text
9	Critical Framing (Knowledge Process of Analyzing)	<ul style="list-style-type: none"> - Having students identify linguistic features and generic structure of an instructional text. - Providing feedback to students’ response
	Transformed Practice (Knowledge Process of Applying)	<ul style="list-style-type: none"> - Having students work collaboratively to create an instructional text. - Having students create an instructional text individually in the form of digital video animation.
Lesson 4: Digital Multimodal Persuasive Text Construction: Digital Video Movie Production (Screen-Based Lesson)		
10	Situated Practice (Knowledge Process of Experiencing)	<ul style="list-style-type: none"> - Eliciting students’ background knowledge on their use and the society use of smartphone - Watching video on “Why constant smartphone use is bad for your health https://www.youtube.com/watch?v=Yhy3UxA-rHk - Discussing the content of the video <ul style="list-style-type: none"> - What does this video try to inform you? - What is the purpose of the video? - Why is the video produced? - When was it produced? - What activities are demonstrated in the video? - Does the background music suitable with the moving object performed?
11	Overt Instruction (Knowledge Process of Conceptualizing)	<ul style="list-style-type: none"> - Presenting reading text on “Constant smartphone use may increase stress: study” retrieved from https://www.deccanchronicle.com/lifestyle/health-and-wellbeing/240217/constant-smartphone-use-may-increase-stress-study.html - Eliciting critical students’ understanding on the reading text. <ul style="list-style-type: none"> - What is the purpose of the text? - When was it written? - What is the implicit agenda behind this text? - Who is the author of the text? - What audience is the text written for? - What does the writer want us to believe or do?

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		<ul style="list-style-type: none"> - Discussing the multimodal aspects of the text - Conducting explicit teaching of language features and generic structure of persuasive texts
12	Overt Instruction (Knowledge Process of Conceptualizing)	<ul style="list-style-type: none"> - Presenting reading text “Does 'phone separation anxiety' really exist?” taken from https://www.theguardian.com/lifeandstyle/2017/aug/28/does-phone-separation-anxiety-really-exist - Eliciting critical students’ understanding on the reading text. <ul style="list-style-type: none"> - What is the purpose of the text? - When was it written? - What is the implicit agenda behind this text? - Who is the author of the text? - What audience is the text written for? - What does the writer want us to believe or do?
	Critical Framing (Knowledge Process: Analyzing)	<ul style="list-style-type: none"> - Having students identify linguistic features and generic structure of persuasive text. - Providing feedback to students’ response
13	Transformed Practice (Knowledge Process: Applying)	<ul style="list-style-type: none"> - Having students to work collaboratively to create multimodal persuasive text - Producing multimodal persuasive text in the form of “Digital Video Project”
14	Wrap-up	<ul style="list-style-type: none"> - Summing up the teaching program

Table 3.2 demonstrates the multiliteracies instructional process conducted during the teaching program. It can be seen from the table that the multiliteracies teaching program involved five general activities including the introduction to the teaching program, the explicit teaching of multimodal texts, the teaching of digital poster creation, the teaching of digital demonstrative text, and the teaching of digital persuasive text. The teaching stages were organized based on the principles suggested in multiliteracies pedagogy and learning by design process which consisted of situated practice (experiencing), overt instruction (conceptualizing), critical framing (analyzing), and transformed practice (applying).

3.4.2 In-depth, Semi-Structured Interviews

The second source of evidence used in this study was interviews. The consideration of using this data collection method was based on several reasons suggested from the research scholars. Firstly, interviews are appropriately used when “studying people’s understanding of the meaning in their lived world” (Kvale,

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1996, p. 105). Secondly, interviews are the best technique to use “to find out those things we cannot directly observe...feelings, thoughts, and intentions” (Merriam, 1998, p. 72). Thirdly, interviews result in thick descriptions of the subject being studied. An interview is like a “conversation” (Blommaert & Dong, 2010) that can help motivate participants to express their own thoughts, views and perceptions deeply and insightfully (Yin, 2014). Lastly, interviews also allow for triangulation of information obtained from other sources (Lincoln & Guba, 1985). Further, the interview is described as ‘professional conversation’ (Kvale, 1996, p. 5), and “the gold standard of qualitative research’ (Silverman, 2000, p. 51).

Taking a closer look of the research questions in this study, semi-structured type of interview was regarded to be the appropriate method to be applied. This particular method allowed the researcher to obtain useful information from the participants by maintaining a focus on the research topic (Yin, 2014). As also suggested by Cohen, et.al. (2013) semi-structured interviews enabled participants to discuss an issue from their own point of view and to express their attitudes, beliefs and opinions. In addition, Bogdan and Biklen (1992) claimed that semi-structured interviews served the purpose of gathering data in participants’ own words in order to develop insights on how they interpret a situation. Similarly, Marshall and Rosmann (2006) emphasized that semi-structured interview was powerful to uncover and describe participants’ subjective perspectives on events.

Following the suggestions and guidelines of semi-structured interviews, a series of the interview questions in this study was set in advance to guide the researcher throughout the process (Edwards & Holland, 2013). The interview questions were formatted, ordered, and grouped to create a coherent questioning process and allow the interviewee to build upon ideas from one question to the next. The interviews were composed of open-ended questions in order to give participants an opportunity to voice their opinions and experiences and to focus on particular themes structures beforehand according to research question (Cohen, Manion, & Morrison, 2013). The language of the interview was in Bahasa Indonesia since the researcher did not want the interview language to be an obstacle for the participants to express themselves (See Table 3.3 for the distribution of questions based on the central themes and Appendix 17 for the interview questions).

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The interview was audio recorded to avoid losing data. Extensive notes were taken during the interview. The extract from the interview was translated into English by the researcher. The researcher set up the interview appointments and facilitates a quiet environment where interruptions could not occur during the interview (Emilia, 2005).

Table 3.2 Distributions of Questions Based on the Central Themes

	Central Themes	Distributions of the questions
Central theme 1	Students' responses on the teaching program in general	1. What do you think about the teaching program in general? Why?
		2. What knowledge did you get during the English learning this semester?
		3. What do you think about the tasks given in the teaching program?
Central theme 2	Students' perceptions on the use of multimodal texts in teaching program	What do you think about the use of multimodal texts in the teaching program?
Central theme 3	Students' perceptions on the integration of technology in the teaching program	What do you think about the use of technology in the teaching program?
Central theme 4	Students' suggestions about improvement to the teaching program	1. What do you think are the strengths and weaknesses of the teaching activities conducted in this English learning?
		2. What are your suggestions to make the teaching program better?

The interview data in this study were deployed to bring the participants' awareness of the knowledge gained in the teaching program and to seek some information on the teaching program implemented from the students' perspectives. In addition, the interview data not only lead to unexpected insights, but also allowed the researcher to receive spontaneous responses to a question. It could also enable the researcher to enquire as to why individuals behave in the way that they do. To corroborate and confirm the results of the interview data, the open-ended questionnaire was employed in this study.

3.4.3 Open-Ended Questionnaire

Questionnaires can be defined as “any written instruments that present respondents with a series of questions or statements to which they are to react either by writing out their answers or selecting from among existing answers” (Brown, 2001, p.6). Questionnaires allow second language researchers to gather a variety of types of information concerning learners’ beliefs about learning, their motivations to learn and their attitudes and reactions to learning, to classroom activities and to instruction (Mackey & Gass, 2005, p. 93), as well as data on language use and communication difficulties (Richards, 2001, p. 60).

Compared with interviews, questionnaires have the advantages of flexibility and brevity of timing, since respondents can “fill out a questionnaire in their own time, at their own pace, and fit it into their schedule” (Brown, 2001, p. 77). When completing a questionnaire, people are usually free from the stress and anxiety commonly associated with face-to-face interviews. According to Cohen et. al. (2013), “lack of face-to-face contact between the researcher and the respondents in a questionnaire might facilitate responses to sensitive materials” (p. 333).

Two types of questionnaires item are usually identified: open and closed ended (Mackey & Gass, 2005; Cohen et al., 2013; Dornyei, 2007; Brown, 2009; Hamied, 2017). A closed-ended item requires respondents to choose an answer from a limited selection determined by the researcher beforehand, whereas open-ended questions allow respondents to answer in their own words by writing in a blank space (Mackey & Gass, 2005; Dornyei, 2007; Brown, 2009). While both types have some disadvantages, Brown (2009) observes that “many questionnaires contain both types, and they are usually seen as being complementary” (p. 201). Both types of the questionnaires were used in this study, because it was believed that they would serve different useful purposes.

The questionnaire data in this study were obtained from an online open-ended questionnaire. This questionnaire consisted of 8 questions sought to elicit the students’ responses toward the implementation of multiliteracies program. As mentioned earlier in this chapter, the questions were set up to confirm the results of the interview data and to examine the consistency of the students’ responses. The first question tried to gain information toward the English teaching learning process

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they went through during one semester. The second and the third questions were concerned about the knowledge and the skills they gained upon the completion of the multiliteracies program. The fourth and fifth questions aimed to find out the perceptions that the students had on the activities and the tasks they got during the teaching program. The sixth question tried to reveal the students' perceptions on the use of technology in the classroom. The seventh and the last questions were related to the students' problems faced during the teaching program and their suggestions for the betterment of the teaching program conducted. This open-ended questionnaire was posted online on google document and can be accessed at http://bit.ly/Kuesioner_BhsInggris2 (see Appendix 18).

3.4.4 Collection of Students' Written Reflections

The journals or the students' written reflections contained records and reflections on what has occurred in the classroom. These reflective comments provided an opportunity for the researcher to hear the voice of the students through the chance given to them to express the thoughts and changes they experience as part of their learning experience (Dunlap, 2006). Through reflective writing, the researcher allowed the students to reflect on new knowledge learned in class, structure their learning experience by recording their evolving thought process as they progress further in the course, learn new material, and form new conclusions (Stevens & Cooper, 2009).

In this study, the students were assigned to record in what they thought they learnt from the teacher and from friends in each meeting of the teaching program. Their written reflective comments were posted publicly on their *Schoology* wall so that everybody in class could read their works. These reflective comments were written in English to encourage the participants practice their English. As Stevens and Cooper (2009) assert that students who write regularly in a journal will see improvements in their writing skills, as well as their creative and reflective thinking. The sample of the students' written reflection can be found in Appendix 16.

3.4.5 Students' Artefacts

In the context of multiliteracies teaching program in this study, artefacts are defined as objects created by students during the course of instruction. Artefacts include samples of student works, photograph, film or audio recordings, assessment records and reports, or any documents that impact on the activities of the students and teacher. Collecting artefacts in this study are useful to capture evidence of before (baseline-data), during (process-data), and after (outcomes-data) which become evidence of what-happened-how and can demonstrate the consequences of the interventions. In the context of this study, several students' artefacts were utilized as the sources of data including students' diagnostic scores and three multimodal artefacts: students' works of digital poster, of digital video demonstrative presentations, and of digital video persuasive presentation. The samples of students' artefacts can be seen in Appendix 10.

3.5 Data Analysis

This study is designed to investigate how multiliteracies pedagogy help EFL learners develop their skills in the consumption and production of multimodal texts and how the students responded to the implemented teaching program. To achieve the set goals, a series of data collections was conducted including classroom observations, semi-structured interviews, open-ended questionnaires, students' written reflections, and students' artifacts. These set data were analyzed qualitatively during and after research undertaking.

Since the research project was conducted in an English as a Foreign Language (EFL) classroom and the students were not studying English as their major study, some of the data were in English and some were in Bahasa Indonesia. Classrooms artifacts such as students' written reflections, digital posters, and video presentations were written in English because they were parts of the course assessment. The informal conversations were mostly in Bahasa Indonesia because the researcher encouraged the students to express themselves in a language that they were comfortable with. Forcing or imposing the idea of expressing themselves in the English language was likely to invite undesirable response from the students and would restrict the richness of the data.

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Data in Bahasa Indonesia were not translated to English in the analysis stage to maintain the meaning that was communicated by participants. Only data that were presented in this dissertation were translated into English to assist understanding of dissertation readers. All data were transcribed verbatim by the researcher. Transcription is a vital step for providing important detail and an accurate record of the data (Cohen et al., 2013). Errors in transcription were minimized to enhance the trustworthiness of qualitative data (Easton, McCornish, & Greenberg, 2000).

The thematic and open coding were applied for the data analysis of field notes, interviews, open-ended questionnaire, and students' written reflections. These particular data coding were not generalizable and well applied to other research contexts due to several factors such as individual differences in terms of personal characteristics and contexts of the study (Braun & Clarke, 2006). Detailed account of analysis for each data collection are described in the following section.

3.5.1 Classroom Observations

The observation data were obtained during the teaching and learning process. The researcher took note on everything that was going on in the classroom, and as soon as leaving the class, events were reconstructed into field notes. These notes were carefully read to look for some common patterns and themes. Coding procedures were applied to the entire body of data. Open coding was applied initially to identify the themes in the transcripts. Open coding is “the process of breaking down, examining, comparing, conceptualizing, and categorizing data” (Strauss & Corbin, 1990). Each code was used to represent a theme or idea with each part of the data associated.

3.5.2 Semi-Structured Interview

In regard with the interview, the three-phase analysis was conducted. First, the interview transcripts, transcribed by the researchers, were reviewed several times, searching for “recurring regularities” (Merriam, 1998, p. 180). During the transcription stage students' names are substituted with pseudonyms (Silverman, 1993). The researcher, then highlighted quotes and phrases from the interviews that

were significant to the study. In this stage, the researcher went back and forth among the transcripts to name the data and coded the transcripts. Second, the researcher brought together the coded interviews and field notes and looked for relationships within and across the data sources. Finally, the researcher integrated and refined the categories until themes solidified (Strauss & Corbin, 1998).

3.5.3. Students' Written Reflections

The textual data from the students' reflective journals were refined into a manageable level, then searched for patterns through keywords and repeated words, and categorized into themes. As suggested by Creswell (2013), the data were first reduced and grouped into small categories of similar information. Then, each category was assigned a label. The step after this was forming the theme by combining several related labels to a broad unit of information. The thematic coding and re-coding continued on an ongoing basis, each time from different perspectives, until patterns begin to emerge. These themes served as the framework for analysis. Words or phrases which appeared to be similar were grouped within the same theme. Finally, the researcher reread the entire journals in order to check the salient themes coded. The original quotes from students' reflective journals were used as evidence to support these coding themes.

3.5.4 Open-ended Questionnaire

The data from the open-ended questionnaire were analyzed using thematic analysis method in which the researcher closely examined the data to identify common themes—topics, ideas and patterns of meaning that come up repeatedly. This kind of analysis is suggested to be used because it allows the researcher to have a lot of flexibility in interpreting the data, and allows the researcher to approach large data sets more easily by sorting them into broad themes.

3.5.5 Students' Artefacts

The students' artefacts were assessed using scoring rubrics. The first rubric was developed to assess students' digital posters. There were eight criteria to see the multimodal elements, the visuals, the aesthetic aspect, the grammar, the

mechanic, the autonomy in learning, creativity, and the overall presentation. The second rubric was developed to assess the students' works on video production projects. The rubric was adapted from Hafner and Ho (2020) consisting of five categories: organization and content, multimedia and visual effects, language, learning autonomy, and creativity. This rubric also contained 5 bands for each category: outstanding, good, satisfactory, marginal, and failed.

Table 3.3 Digital Poster Rubric

	Excellent (5)	Good (4)	Fair (3)	Marginal (2)	Inadequate (1)	Point(s)
Written content	The poster includes all information relevant to the topic. The poster is creative, clear, complete and concise.	The poster includes most of the relevant information; however, it could have been better organized and could be more creative.	The poster does not have all of the relevant information. Information is presented in an unorganized fashion.	The poster is lacking in elements required. There are many gaps in information presented.	The poster is lacking in elements required. There are many gaps in information presented. Some or all of the written elements are plagiarized	
Visuals: Relevance	All visuals are related to the topic and make the poster easier to read and understand.	Almost all visuals are related to the topic, and most make it easier to read and understand.	Some visuals are related to the topic and make it easier to understand.	Few visuals relate to the topic.	No visuals relate to the topic.	
Attractiveness	The poster is exceptionally attractive in terms of design, layout, and neatness.	The poster is attractive in terms of design, layout, and neatness.	The poster is attractive but a bit messy.	The poster is poorly designed and very messy.	The poster is distractingly messy and unattractive.	
Grammar	Grammar and usage are correct and contribute to clarity and style.	Grammar and usage are typically correct, and errors did not detract from the presentation.	Grammar and usage are typically correct, but some errors detracted from presentation.	There are several errors in grammar and usage that detracted from the presentation.	Repeated errors in grammar and usage detracted greatly from the presentation.	

Mechanics	Capitalization and punctuation are correct throughout the poster.	There is 1 error in capitalization or punctuation.	There are 2 errors in capitalization or punctuation.	There are 3 errors in capitalization or punctuation.	There are more than 4 errors in capitalization or punctuation.	
Presentation	Student presents the information clearly and displays a complete understanding of the information. It is evident that the student is well prepared.	Student presents the information fairly clearly and displays a reasonable understanding of the information.	The information presented is fairly displayed throughout the project.	The information presented is not clearly displayed throughout the project.	Not enough preparation was done for the presentation, it therefore lacks many elements of what is expected.	
Independent Learning	Student consistently follows instructions and expectation; requires little or no teacher support	Student usually follows instructions and expectation; requires minimal teacher support	Student sometimes follows instructions and expectation; requires occasional teacher support	Student rarely follows instructions and expectation; requires teacher support	Student does not follow instructions and expectation; requires teacher support	
Creativity	Student produces original ideas with no guidance and encouragement.	Student produces original ideas, with minimal guidance and encouragement	Students produces original ideas with some guidance and encouragement	Student produces original ideas with extensive guidance	Student does not produce original ideas	
					Total	

Table 3.4 Digital Video Rubric

	Outstanding	Good	Satisfactory	Marginal	Failed	Score
	5	4	3	2	1	
Organization and content	Able to present information in a clearly organized and creative/original way, using effective signposting with an attention-grabbing opening, an effectively organized body which clearly follows scientific conventions, and a memorable conclusion/ending.	Able to present information in an organized and somewhat creative/original way, using appropriate signposting, with a clear opening, a clear body which follows scientific conventions, and a clear conclusion/ending	Able to present information in a moderately organized and moderately creative/original way, using appropriate signposting, with a brief opening, a moderately organized body which mostly follows scientific conventions, and a short conclusion.	Little evidence that the student is able to present information in an adequately organized and creative/original way, with a brief opening, a moderately organized body which may not follow scientific conventions, and a short conclusion.	Unable to present information in an adequately organized and creative/original way, with a brief opening, a body which may follow scientific conventions, and a short conclusion. The body of the presentation is poorly organized.	
Multimedia and visual effects	Able to design creative and interesting visuals which effectively and appropriately support the project and utilize an appropriate variety of multimedia and visual effects, e.g. video clips, pictures, objects, graphs, diagrams, tables.	Able to design visuals which appropriately support the project and utilize an appropriate variety of multimedia and visual effects.	Able to design visuals which are moderately appropriate, support the project and utilize a somewhat limited and/or somewhat appropriate range of multimedia and visual effects.	Little evidence that the student is able to design visuals which are mostly appropriate, support the project most of the time and utilize a range of visual aids. The visuals may be very wordy and/or inappropriate.	Unable to design appropriate visuals which support the presentation and utilize a range of visual aids. The visuals are very wordy and/or inappropriate.	
Language	Able to express ideas in fluent, accurate English with few errors (of grammar, vocabulary,	Able to express ideas in fluent, accurate English with some errors, using mostly	Able to express ideas in mostly fluent, accurate English with some errors, using mostly appropriate	Little evidence that the student is able to express ideas in mostly fluent, accurate English with	The project is difficult to understand because of the language issues.	

	pronunciation), using appropriate language for the context.	appropriate language for the context.	language for the context.	some errors, using mostly appropriate language for the context.		
Independent	Student consistently follows instructions and expectation; requires little or no teacher support	Student usually follows instructions and expectation; requires minimal teacher support	Student sometimes follows instructions and expectation; requires occasional teacher support	Student follows rarely instructions and expectation; requires teacher support	Student does not follow instructions and expectation; requires teacher support	
Creativity	Student produces original ideas with no guidance and encouragement.	Student produces original ideas, with minimal guidance and encouragement	Students produces original ideas with some guidance and encouragement	Student produces original ideas with extensive guidance	Student do not produce original ideas	

3.6 Establishing Trustworthiness

To increase the trustworthiness of the study's findings, the researcher employed strategies suggested by Lincoln and Guba (1985). The researcher decreased threats to credibility by triangulating data. Data triangulation is defined by Patton (1999) and Cohen, et al. (2013) as the use of multiple methods or data sources in qualitative research to develop a comprehensive understanding of phenomena. To increase dependability, the researcher provided an audit trail by describing in detail how data was collected, how categories were derived, and how decisions were made throughout the inquiry (Merriam, 1998). This study used good rich, thick description (Merriam, 1998), thus enabling other researchers to make decisions about transferability. To increase conformability, the researcher attempted to control for bias by constantly comparing data, employing participant observer to obtain multiple viewpoints (Strauss & Corbin, 1998), and checking and rechecking data (Marshall & Rossman, 1989).

3.7 Summary of Research Methodology

This chapter has discussed the research methodology which contains the specific procedures or techniques used to identify, select, process, and analyze information about the research topic. This chapter also elaborates the methodological approach used in the research, the rationale of choosing the research design, the methods and types of data collection, the ways of the data analysis, the research site and participants, and any tools or materials used in the research

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