

CHAPTER THREE

RESEARCH METHOD

This chapter elaborates the methods used in this study, including Research Design, Data Collection, and Data Analysis. The discussion on the Research Design includes the nature of qualitative research, its characteristics and the reasons of choosing qualitative research. The Data Collection section reveals the participants and the research setting, the methods of collecting data, consisting of two kinds of tests and interviews, and the procedures of collecting data. The Data Analysis presents the discussion of identifying and classifying nominalisations in order to see nominalisation suffixes, the number and the types of nominalisation realised in students' texts.

3.1 Research Design

This study is practising **qualitative research** in which “the researcher might seek to describe or explain what is happening within a smaller group of people” (Dawson, 2005:48). It is believed that in qualitative research, meaning is socially constructed. The research focus is on the participants – how participants experience and interact with a phenomenon at a given point in time and in particular context (Croker as cited in Heigham *et al.*, 2009).

In this study, the researcher describes the phenomena of understanding and realising nominalisation among 20 students. The focus of investigation is on how those Polytechnic students practice nominalisation receptively and productively.

In addition, qualitative research focuses on understanding the process of what is going on in a setting by trying to understand how the gains were made. Qualitative research is not defined by a particular set of research methods or techniques. It focuses on questions that examine the relationship between

information about people's action and phenomena, and the settings in which they do these things (Croker as cited in Heigham *et al.*, 2009).

Moreover, Bogdam and Biklen (cited in Frankle & Wallen, 1996:442-443) describe the characteristics of qualitative research, as follows:

That the nature setting is the direct resource of data, and the researcher is the key instrument in qualitative research, and that data are collected in the forms of words rather than numbers; that qualitative researchers are concerned with process as well as product; that qualitative researchers tend to analyse their data inductively.

This investigation is decided to conduct a qualitative case study approach. There are several reasons for choosing this research approach as mentioned by Hood (as cited in Heigham *et al.*, 2009:68). First, the researcher has determined the students she wished to study and the contexts intended to act.

Second, the rich data, deep analysis, and the long-term contact with the cases afforded by the case study are better suited to these research interests than quantitative methods. Third, the aim is not to generalise or to test a hypothesis, but rather to improve support and training for other students on the same campus. Fourth, case study is popular with qualitative researchers precisely because it provides a framework for analysis such material (Hood as cited in Heigham *et al.*, 2009).

In this opportunity, the case is mainly focused on the manifestation of nominalisations in 20 Polytechnic students' texts, that is *Procedure Texts*. Other focus is the students' level of understanding nominalisations in a scientific text, copied from a scientific textbook (Dieter, 1991). The framework of analysis is a taxonomy of nominalising metaphor proposed by Halliday (1998 in Ravelli & Ellis, 2004; Christie & Martin, 2000).

This study is qualitative in nature, but in some of its descriptive analysis, quantitative criteria are used (Croker, 2009. In Heigham *et al.*, 2009). The numerical data are used, but their purpose is supplementary, not central.

3.2 Research Setting & Participants

Research setting. This study was carried out in a state-owned Polytechnic in Bandung. This institution of education is running Diploma III and IV programs, majoring in manufacturing engineering. This Polytechnic was chosen for the reasons of practicality and accessibility. First, it was practical because of its ease, as to save time, finance, energy and effort, as proposed by Patton (1980, cited in Lincoln & Guba, 1985, cited in Alwasilah, 2011).

Second, it was accessible because of the familiarity with condition of teaching technical English in this Polytechnic. The researcher has been teaching English in this institution for years. Third, it was to portray the phenomenon of realising nominalisation, since it has not been taught in its English class due to the lack of time. Therefore, this institution is the appropriate site for conducting this investigation.

Participants. The participants in this study were 20 Polytechnic students of year three. They were chosen as volunteers for several reasons. Firstly, Polytechnic was programmed for undergraduate students. This investigation was aimed to explore the realisation of nominalisation especially among undergraduates' written texts. So, these Polytechnic students were regarded the appropriate participants to choose for this research.

Secondly, Polytechnic students had study background of mechanical engineering. Their involvement in this study was based on the assumption that they had experienced with the application of scientific English in their previous years, one and two, in Polytechnic. They had opportunities to practice scientific English receptively and productively. Some examples for the former are when reading engineering textbooks and manuals; and the latter are when making operational plans before working in workshop, when presenting their scientific topics in front of the class, and when reporting their practical assignments in their workbooks. So, it is assumed that nominalisation was frequently realised in their academic activities and texts.

Thirdly, Polytechnic students were the type of participants whom the researcher had a big possibility to contact with (Dawson, 2009), since the researcher was also the English teacher in this institution

There were initially 25 participants taking part in the English tests for collecting data. But, then, in the process of sorting out the data, it was found that five texts were not completed with the notions written on the test paper #2, as attached on Appendix #3.4. So, 20 written scientific texts were considered sufficient to gain the representative data.

In the present study, all participants were coded as P#1 to P#20. Most of the participants were male students, only three were female, at the age of about 23-27 years. They were willing to take part in this research.

Although it is under no obligation to use English, some instructors and lecturers (of non-English subjects) often invite students to practice English whenever possible in their workshop, laboratory or classroom. There are some extra points as the reward for those realising scientific English. This idea is supported by Halliday's statement that nominalisation is commonly realised in scientific texts (1998. In Halliday & Martin, 2005).

The following section is to discuss the data collection techniques to response the three research questions posted in the previous chapter. Those techniques include English Test #1 and Test #2 conducted among all participants, and interview among selected participants. Before those techniques are elaborated in detail, the comprehensive steps of collecting data are presented in the data collection procedure, as part of data collection techniques.

3.3 Data Collection Techniques

There were two methods of data collection, conducting English Tests: Test #1 and Test #2, and interviewing some participants, representing the high, the medium and the low achievers. The data in the forms of scores and texts, resulted from the tests, were triangulated by the data collected through interviews. This

triangulation improves the validity and reliability of the study (Alwasilah, 2011). It is also asserted by Miles and Huberman (1994:266) that “triangulation is supposed to support a finding by showing that independent measures of it agrees with it or at least, do not contradict it”.

Test #1, using a reading text, was intended to find data to answer the first research question. On the other hand, Test #2 was an essay test, which was supposed to produce data to response the second and the third research questions. The two tests were held at the same day. These were followed by interview session which was held a few days after the researcher finished checking the test results.

The tests were conducted in a classroom without prior information or even students' preparation. This was carried out in such a way, spontaneously, in order to follow Lazaraton's (2009, in Heigham et al, 2009:245) idea that “the text is produced spontaneously rather than elicited experimentally specifically for the sake of research”.

The procedure of collecting data consists of conducting Test #1, Test #2, interview, and data collection. It is elaborated further in the following section.

3.3.1 Data Collection Procedure

Concerning the data collection procedure, the comprehensiveness of the sequential steps for collecting data is divided into **four stages**: Test #1, Test #2, interview session, and data collection. They were described chronologically as follows.

Stage I: Conducting Test #1. First, in the classroom the students were asked for their readiness to perform as participants in this study. It was not the time for English class and no prior information for the tests. So, the process of collecting data is naturally set. Second, the students were told to follow the instructions on the test paper for Test #1: to read a reading text, to underline nominalised words on the reading text, and to unpack them into their roots or base forms. It spent about 30'. Third, they submitted the completed test papers directly to the researcher. The test paper #1 is attached on Appendix #3.1.

Stage II: Conducting Test #2. First, the situation was set to do Test #2. The students were invited to recall their own experience when making a product or operating a device in their workshop or laboratory. Second, every student was directed to make a draft of working procedure on a draft paper, based on their own experience. It needed about 15'. Third, the students were instructed to rewrite their drafts following the guidelines written on the test paper for Test #2. It took about 30'- 45' to finish their works of about 150-200 words. Fourth, the students submitted the completed test paper #2 directly to the researcher. The test paper #2 is attached on Appendix #3.4

Stage III: Conducting interview. First, six students were selected, based on their test results, representing the low, the medium, and the high achievers. Second, they were individually interviewed by the researcher in a teaching room. The list of questions for interview is attached on Appendix #3.5.

Stage IV: Collecting and organising data. First, the data taken from the Tests #1 and #2 were identified and classified. Second, the results of interview were condensed. Finally, all collected data in the forms of scores and texts were ready to present and to discuss in the next chapter.

Some of the above steps, for examples in conducting Test #1, Test #2 and interview, are elaborated more detail in the following sections for the sake of presenting complete and clear explanation.

3.3.2 Data Collection from Test #1

In Test #1, a scientific reading text was used. This text is entitled '*Technological Innovation*,' containing 22 nominalised words. The text of about 202 words was copied from a scientific textbook written by Dieter (1991) from Maryland University. The hard copy of the original text is attached on Appendix #3.2.

This test was used to follow Droga & Humphrey's (2011:110-111) exercises with the topic of nominalisation. In this test, students are asked to read a text, then to highlight (by underlining or circling) the realisation of nominalisations. After that, the nominalisations they have underlined are unpacked, turning the nominalised words into their base forms or their roots.

This test's focus of attention is on portraying the level of understanding on nominalisation in a scientific text among undergraduate students. Referring to Halliday's (1998, in Ravelli et al., 2004) theory, there are four types of nominalisation. However, for some reasons, only two types are tested. It is very hard for undergraduate students of non-English department to understand a text containing all types of nominalisation. Even in native's scientific texts, the four types of nominalisation are rarely used. It refers to Eric Glendinning's text in English in Mechanical Engineering (1973), wherein two types of nominalisation are realised. This text is scanned, then attached in Appendix #3.7. It is also evidenced by referring to Dieter's text (1991) used in this test, in which only two types of nominalisation are manifested.

Furthermore, highlighting on two types of nominalisation is supported by some linguists' opinions. Christie and Martin (2000) state that 'through the process of nominalisation an event (e.g. it *moves*) or a property (e.g. it is *hard*) is construed as a noun (*motion, hardness*). Paltridge (2006) mentions that there is a high level of nominalisation in written texts where actions and events are presented as nouns rather than as verbs, and adjective is changed into noun.

In addition, in one occasion, Halliday (in Halliday & Martin, 2005:145) states that noun is the only syntactic class that can accept thematic 'packages', the process of packaging turns (metaphorises) all events and attributes into textual objects. These ideas mean that nominalisation Types I & II (shifting verb and adjective into nouns) are more frequently discussed by those linguists than Types III & IV (shifting adverb and conjunction into nouns). Therefore, Test#1 only use the first two types of nominalisation.

The scientific reading text (stated above at the beginning of this section) was chosen in test #1 for three reasons. First, the familiarity of this topic among Polytechnic students, since their study background is engineering. Furthermore, this text is copied from an engineering textbook used in Polytechnic, so that most students do not experience any difficulty in digesting its contents. This idea is

supported by Tomlinson's (1998) argument that materials can help learners to feel more at ease with the texts they can relate to their own culture (in this case, engineering) than those which are culturally exotic.

Second, the domination of nominalisation in scientific language as it is argued by some linguists (see Halliday & Martin, 2005). The exploration of this study is on the students' level of understanding on nominalisation realised in a scientific text. So, the reading text copied from the engineering textbook is regarded to be able to meet this need.

Third, the level of difficulty of the scientific reading text used in Test #1 is regarded moderate. This is viewed from many sources, including Ravelli's (1999) texts' lexical density (that is 7.2) and Halliday's (Halliday & Martin, 2005) argument that written language tends to have around four to six (4 - 6) lexical words per clause. In other occasion, he mentions that text's lexical density is between three and six (3 - 6) (Halliday, 1985, as cited in Yuliana, 2011). On the other hand, the lexical density of the reading text used in the test is 5.5. Therefore, based on these data, the scientific reading text has an appropriate level to be used by Polytechnic students in Test #1. The complete calculation of the lexical density of those texts are attached on Appendix #3.3.

In Test #1, Tomlinson's (1998:8) other idea is also applied that "most learners feel more comfortable with materials with lots of white space than they do with materials in which lots of different activities are crammed together on the same page." To do so, the reading text in the test paper was retyped and rearranged in order that it was not too thick for the participants to read. Moreover, by retyping and rearranging the text, there was enough space for the participants to write the unpacked words. Redesigning the test paper in such a way was for the sake of practicality for the participants to do the test. The test paper for Test #1 is attached on Appendix #3.1.

The procedure of carrying out Test #1 is described as follows. To begin with, the researcher asked every participant to read a scientific text given to them.

Then, they were instructed to identify, by underlining, the 22 nominalised words found in the text. Next, they were directed to unpack the nominalisations they had underlined on the test paper. For example, taken from the reading text, ‘*ability*’ (as a noun), was unpacked into ‘*able*’ (as an adjective). The test paper #1 completed with key answer is attached on Appendix # 3.1.1. The complete list of nominalisations found in the text, as the key answer, is in the table below.

Table #3. 1 : Key Answer of Test #1 (List of Nominalisations)

List of			
Nominalisations	Σ	Unpacked Words	Σ
<i>advancement, invention (2x), innovation (8x), diffusion, initiation, question, ability, well-being, living, television, indication, importance, opportunities, contribution</i>	22	<i>advance, invent (2x), innovate (8x), diffuse, initiate, quest, able, well-be, live, televise, indicate, important, opportune, contribute,</i>	22

After this test, the participants’ works were checked and scored. Score 1 was not only given for identifying every nominalised word correctly, but also for unpacking it correctly. The maximum score for every task was 22, as there were 22 nominalisations in the text. Finally, their scores were collected and arranged in Table #4.1 in Chapter IV.

3.3.3 Data Collection from Test #2

English Test #2 was an essay test. The idea of carrying out this test is inspired by Droga et al. (2011:99) and Knapp et al. (2005). They stated that in one study of nominalisation, some university students are asked to write a descriptive text using nominalisation. In another study, some Year 6 students are asked to write an article. They were given some important points and structural features as the guidelines. This notion agrees with Halliday’s statement (1989, in Paltridge, 2006:15) that ‘there is a high level of nominalisation in written text where actions and events are presented as nouns rather than as verbs.’

In Test #2, two pieces of test paper were prepared for each participant. One paper was used for making a draft of '*Procedure Text*'. The other one, completed with some brief guidelines, was used for finishing the text. It took about 60' to finish the test.

The guidelines on the test paper consist of social purpose and the structure of the text. The former tells someone how to make something. On the other hand, the latter tells the **goal** of the activity, a list of **materials** (ingredients, equipment, etc, needed to achieve the goal) and **method**, that is the sequence of steps to follow by using: first, then, next, later, and finally. These guidelines are adapted from Butt et al. (2006), Droga et al. (2011), Derewianka (2004), Paltridge (2006) and Anderson et al. (2003).

The brief guidelines provided a framework of writing scientific text of description, following Tomlinson's (1998:8) notion that 'most learners are more relaxed with materials which are obviously trying to help them to learn than they are with materials which are always testing them'. The test paper for Test #2 is attached in Appendix #3.4.

The text type *Procedure Text* is chosen in this essay test for many reasons. Firstly, this topic is concrete or factual. It can be related to learners' prior experiences (Hyland, 2004; Anderson et al., 2003; Butt et al., 2006). In this case, Polytechnic students' daily activities in their workshop and laboratory are also factual. So, most students are expected to be able to write up their own experience optimally.

Secondly, more familiar or easier topic can engage and motivate students to work more optimally (Hyland, 2004). In Polytechnic, most of the content of lesson units in English class has already been linked and matched to their needs in their workshop, for examples: describing procedure, describing technical object, making definition, and classification. *Procedure Text* is one of several lesson units discussed in English class in year two in Polytechnic. Thus, the students get used to practice this text type.

Thirdly, '*Procedures* can be found in science experiments and in instructional manuals such as gardening, cookbooks and technical instruction sheets' (Emilia, 2011: 27-28). Therefore, in this study, *Procedure Text* is considered the appropriate text type to use in Test #2.

Fourthly, technological English is concerned with the processes and technology of industrial production. It uses specialised terms and grammar to describe technology and systematically organises the manufacturing process in written text (Rose, in Christie & Martin, 2000).

The procedure of conducting Test #2, consisting of some steps, is chronologically explained below. First, the participants were asked orally by the researcher to recall their activities in the process of producing workpieces using machinery in their workshop. This was a brainstorming session to set the situation before starting the real essay test. Then, they were directed to choose one topic for each participant based on their own experience. Next, they were instructed to make a draft on an extra paper describing the procedure of making a product within about 15 minutes. After that, on the test paper completed with a brief guidance, they were told to write down the complete text of *Procedure Description*. Within about 45 minutes, the participants were allowed to complete this test. Finally, they handed in the texts directly to the researcher.

3.3.4 Data Collection from Interview

Besides the main data mentioned above, there were other data resulted from interviewing the selected participants. In fact, Fetterman (cited in Frankel & Wallen, 1996) describes interviewing as the most important data collection technique a quality researcher possesses. The roles of these interview data were to support, to clarify the main data, and to elicit some important information from the selected participants, which were not obtained by conducting the written tests only.

The interview was held individually among the six selected participants, representing the high (2), the medium (2), and low achievers (2). It was conducted

in a teaching room, a few days after the researcher finished correcting the first and the second tests. It is proposed by Gee (1999) that interview with participants can be used (keeping in mind that they are not always conscious of what they mean and do) to achieve some degree of validity in regard to convergence and to extend the analysis to other sources of related data.

In this study, a semi-structured interview was an appropriate type of interview chosen. This is verbal questionnaires consisting of questions designed to elicit specific answers (Frankel & Wallen, 1996). The reason to do is that the interviewer has a clear picture of the topics that need to be covered, but is prepared to allow the interview to develop in unexpected directions where these open up important new areas as Richards stated (cited in Heigham & Crocker 2009).

A list of questions, prepared as an interview guide (Dawson, 2009), used when interviewing the participants, was posted in Appendix #3.5. For the sake of the ease and flexibility in addressing the questions, the questions were grouped into three categories. The first category contained some questions exploring the students' background in learning English. The second one explored the students' understanding on nominalisations. The last category asked about the results of the tests. The results of the interview were reported in condensed version, attached in Appendix #3.6.

3.4 Methods of Data Analysis

The focus of analysing the students' written texts is more on the realisation of nominalisations rather than on the their texts' type or the overall organisation of the text. This section will cover the framework of data analysis and methods of analysing data resulted from Test #1 and Test #2.

3.4.1 Framework of Data Analysis

The framework of data analysis is based on a taxonomy of metaphor proposed by Halliday (1998. In Ravelli & Ellis, 2004, and in Paltridge, 2006). According to him, there are 13 types of elemental metaphor, in which there are four types of

nominalisation, developed and elaborated by Halliday and Matthiessen (1999. In Ravelli & Ellis, 2004), the presence of which is a typical feature of written language . The complete taxonomy of metaphor is attached in Appendix #2.1. The framework of analysis is the four types of nominalisation posted below.

Table #3.2: Types of Noms. (adapted from Ravelli&Ellis, 2004:196; Droga & Humphrey, 2011)

Classification	Types of Nom.	Semantic Shifts / Grammatical Shifts	Examples
Major Types	Type I metaphor	from quality to entity/ from adjective to noun	<i>stable – stability</i>
	Type II metaphor	from process to entity / from verb to noun	<i>drive – driving</i>
Minor Types	Type III metaphor	fr circumstance to entity / fr. adv/prep.phrs t noun	<i>very fast - the speed</i>
	Type IV metaphor	from relator to entity / from conjunction t noun	<i>so - the result</i>

In Table #2, there are four types of nominalisation, consisting of two major classes, Types I and II, and two minor classes, Types III and IV. In reality, it was found only the application of major classes of nominalisation. Based on the above reason, the framework of data analyses implemented in this study is the major classes of nominalisation. They consist of Type I, that is the grammatical shiftings from adjective to noun; and Type II, from verb to noun, for examples: *unstable* → *instability* and *maintain* → *maintenance*.

This classification of nominalisation is parallel to some definitions of nominalisation proposed by some linguists, namely: Christie & Martin (2000), Knapp & Watkins (2005), and Derewianka (2004). At the present moment, it is concluded that there are two types of nominalisation which are mostly found in Polytechnic students' written texts.

3.4.2 Analysing Data from Test #1

This analysis was supposed to answer the first research question, that is about the students' level of understanding nominalisation as the result of derivation in a

scientific text. The process of the data analysis includes identifying, scoring, organising, classifying and interpreting. The level of analyses of these data is the lexicogrammatical or words used in the scientific text.

The accurate nominalisations counted in the analysis are the ones as the results of derivation, as Ravelli (1999: 63-69) states that derivation is a device used for detecting grammatical metaphor. The inaccurate ones are consequently excluded from the analysis. She further mentions that many metaphorical ones are found without any derivational suffix, like *fast* → *speed*. However, derivation does not always indicate a metaphorical form, for example *-er* and *-or*, in *singer*.

In detail, the process of analysing data is described as follows. To start with, the students' works of underlining nominalisations were identified, continued with the unpacking task. Then, score was given to the correct answers with the maximum score of 22 for every task. After the scores were classified, they were transformed into percentages. After that, they were categorised into five: very low, low, medium, high and very high categories. The results of categorisation were finally interpreted.

3.4.3 Analysing Data from Test #2

This analysis was intended to response the second research problem concerning with how nominalisations are realised in students' texts and to answer the third research problem, that is about the types of nominalisation found in students' texts. The procedure of analysis covers identification, classification, organisation, transfer into percentage, and interpretation of the results. The levels of analyses of these data are sentence or clause in students' texts and words.

The procedure of analysing data from Test #2 is explained below. Firstly, the nominalisations manifested in students' texts were identified. Secondly, they were classified following the taxonomy of nominalising metaphor proposed by Halliday (1989. In Ravelli & Ellis, 2004). Thirdly, they were organised following the kind of suffixes to see the frequency of occurrence and to see the number of

nominalisation in each student's text. Forthly, the frequencies of occurrence were transferred into percentage. Finally, the organised data were interpreted.

The last group of data derived from conducting interview. The data were presented in the condensed version, attached in Appendix #3.6. As the role of these data was to support the main data resulted from the tests, the results of analysing the interview data were inserted while analysing the main data.

3.5 Concluding Remarks

This chapter has elaborated research methods of conducting this study. It consists of research design, research setting & participants, data collection techniques from Tests #1 and #2 and from interview, methods of data analysis and its framework of data analysis. The following chapter will describe about data presentation and discussions. For the sake of convenience in reading this section, the data will be presented gradually part by part. Every part of the data is presented, it is followed by its discussion.