CHAPTER III
RESEARCH METHOD

This chapter covers a detailed description of research methodology deployed in this study concerning the implementation of scientific approach to nursing students at one of the institute of health in Cirebon, West Java. This chapter falls into eight major sections: Section 3.1 restates a research question as previously mentioned in chapter one. Section 3.2 concerns a research design where a case study is chosen in this study for several purposes. Section 3.3 informs research site and participants where 25 nursing students at one of the Institutes of Health were selected in this study. Section 3.4 outlines goal of the teaching learning process of ESP within scientific approach framework at the research site. Section 3.5 enumerates data collection techniques where observation, two times interview, document analysis, on-going assessment and progress test, pretest and posttest were taken. Section 3.6 provides data analysis procedures followed by data triangulation in section 3.7 and conclusion in section 3.8.

3.1 Research Question

As previously stated in Chapter One, there is a probing question that requires an in-depth answer addressed to the present study:

1. What are the effects of scientific approach on students learning of English for Specific Purposes particularly in terms of healthcare communication?

3.2 Research Design

The study was undertaken on the basis of a case study framework following its rationale behind the implementation of scientific approach to the process of teaching and learning English for specific purposes to nursing students. Several reasons are attached to this study: First, the utmost importance of this study, to find out the effect of scientific approach, is in line with the nature of the case
study in “testing whether a specific theory and model actually applies to phenomena in the real world” (Meredith, 2007: 567-605). Second, as case study allows researchers to gain an in-depth understanding of certain phenomena, a program, a process, an activity, etc through detailed contextual analysis by means of variety of data collection procedures (Cresswell, 2009:13). This study, as mentioned in chapter one, tries to learn how the teaching and learning process within scientific based activities are perceived by the students and to witness its effects, advantageous and challenges during the implementation. The findings will be presented in narrative form as Hancock and Algozzine (2006) clearly stated that “the report of outcome of the process is generally narrative in nature”

3.3 Research Site and Participants

The present study was carried out to 25 nursing students on the basis of a purposive sampling method at one of the Institutes of Health in Cirebon, West Java. Indonesia for several intentions: First, purposively, scientific approach was implemented to find out the effects on students’ learning in the context of English for Specific Purposes (ESP), for nurses in particular. Second, technically, English for nursing covers medical terminology, nursing intervention and certain medical procedures which require an understanding of English. The work of Derose (2007: 1261) with respect to immigrant and health care provided evidence that in real life of medical field “limited English proficiency affects patient safety, increasing the probability of an adverse reaction resulting from problems in understanding instructions.” This conspicuously depicts that English proficiency, for communication purpose in particular, is strongly required for every healthcare profession. Third, medical topics enable both teacher and students to undertake and conceptualize the learning through simulations, experiments or projects based learning to promote independent learning as stated by Poikela (2012: 36) that to experience learning, “learner learns independently and the teacher does not control learning but guides the learning process.” Accordingly, scientific based
learning is expected to expand teachers and students horizon in the context of English for Specific Purposes to nursing students.

Regarding the ethical issue, this research was conducted to participants’ knowledge; they were fully aware of being selected as research participants to undertake ESP learning within scientific approach framework with the aim of discovering the effects on their ESP learning. For an initial stage, participants were informed what scientific approach was and what stages were involved. They have also been assured that positive participation is welcomed since the characteristic of scientific based learning encourages learners to immerse themselves in the process of teaching and learning. The proponent of discovery or inquiry learning stated that this type of learning promotes “autonomy, responsibility and independence” (Burner, 1967).

3.4 Goals of the Teaching Learning Process

As discussed in chapter one that the goal of ESP teaching stated in syllabus at this research site is improving nursing communicative skills in terms of healthcare communication and fostering their knowledge in medical terminologies which are mostly written in English. It should be made clear that the meaning of communicative skill in this study is the skill that only embraces short functional text or short dialogue and short report. The skill covers neither long text nor complex dialogue. Therefore, in this study, each stage of scientific approach can be implemented in one meeting from observing, questioning, experimenting, associating and communicating activities as will be shown in chapter four.

As previously stated in chapter two, observing in this study is expected to promote the nursing students’ ability in scrutinizing a certain object to attain useful information in constructing knowledge by means of videos, slides of picture, short paragraph and nursing documentation forms. This ability is further expected to increase the nursing students’ skill in conducting clinical observation in the work field to carry out their nursing duty (Mulhall, 2002: 307). This activity
was also carried out in this study as will be presented in chapter four. Soon after observing activities were accomplished, questioning stage guided the teaching learning to elicit questions as many as possible from the nursing students in relations to the topic they were dealing. This activity is intended to arouse students’ critical thinking and curiosity, as provided in chapter two. Through this questioning stage, the nursing students will strengthen their ability in seeing critically a particular thing, problem, and phenomena in their daily practice at work (see chapter four).

In the meantime, the ability to collaboratively work in a team is mainly one of the intents of both experimenting and communicating stages (stated in chapter two) where the nursing students searched more data from various sources, analyzed the data to construct an understanding, organized and prepared the data to be shared in communicating stage where the nursing students presented their findings and understanding of the lesson through presenting, dialoguing or role playing and concluding that enabled them build classroom interaction. These activities are expected to generate the nursing students’ teamwork skills and leadership which was also found in this study that will be provided in chapter four. Associating activity in this study, on the other hand, counts on the ability of each student to find a liaison between the learning materials as also stated in chapter two. This activity is expected to encourage the skills of withdrawing analogy to see a particular thing as a reflection of overall understanding.

3.5 The Research Site’s Syllabus

Syllabus in the research site demands each nursing student to be capable of communicating in healthcare setting. The ability to produce short functional text is the foremost concern for nursing students to perform their duties in a hospital. For example, telling medical measurement to a patient, checking vital signs, telling doctor’s schedule, reporting symptom and diagnosis to a doctor and so
forth. Again, it is worth of noticing that in this study each stage of scientific approach could possibly be implemented in one meeting as the teaching program is concerned with basic healthcare communication. The discussion will be shown in chapter four. On the contrary, when it comes to a long text, dialogue, report, or even the creation of drama or an essay, it definitely is impossible to implement all the five stages of scientific approach in one meeting as occurred in this study.

This issue should not be assumed that scientific approach can be implemented in one meeting to all cases. This is what all the English teachers’ erroneous beliefs that reflect a complete misunderstanding. Therefore, it should be very careful in applying the scientific approach to achieve the learning goals based on what the syllabus and learning materials

3.6 Data Collection Techniques

This section will cover four techniques in collecting data as follows:

3.6.1 Observation

Observation was intended to obtain the data of students’ learning experience and teacher’s performance in classroom activities within scientific approach framework which encompasses five stages: Observing, questioning, experimenting, associating and networking or communicating. The researcher served as a participant observer in implementing scientific approach to nursing students in learning ESP. Participant observation, as Punch (2009: 157) suggests, allows the researcher to participate during the observation and changes the role of researcher to both participant and observer at the same time in a certain context or situation. Thus, this type of observation enables the researcher to experience how scientific approach should be properly implemented, to witness what improvement that students accomplished and to sense students’ attitude during the teaching and learning process.

The observation was conducted once a week for eight weeks. The five stages of scientific approach guided both teachers and students in the process of
teaching-learning for 100 minutes every session. The topics covered in this study were based on the research site’s syllabus. For instance, medical equipment and each function in English; Asking for and giving direction to rooms in a hospital including name of departments or units in a hospital; Checking vital signs including request and command; Telling time, date and Doctor’s schedule including name of professions in a hospital; Parts of the body and health problems; Cardio Pulmonary Resuscitation (CPR) and stages of doing CPR in English; Nurse’s duty in ward and common tenses used to describe daily routine of nursing occupation in helping patient with Activity of Daily Livings (ADLs); Nursing documentation which also includes several common abbreviations available in nursing documentations such as nursing assessment sheet, nursing care plan, vital signs, fluid balance chart, medicine/drug chart, informed consent, and incident/accident form (see appendix).

Each session of teaching and learning process was videotaped to capture both teacher and students’ performance and interaction in order to gain a detailed portrait of every single occurrence throughout overall procedures of scientific approach took place in the classroom. Latvala et al (2000:125) believe that “videotaped material is rich and provides several possibilities for analyzing the data.” In addition, credibility can certainly be reached by reviewing the same videotaped situation over and over again.

In the effort to minimize the subjectivity that might inevitably be encountered by the researcher, another observer served as a complete observer was invited to class to play a passive role. The presence of another observer was intended to take notes at the scene while the teaching and learning process was going on in order to avoid missing important event (Cohen, Manion and Morrison (2007:407). Accordingly, personal influence on the result and bias can be avoided in interpreting the data, making judgment and justifying the findings. Accordingly, reliability of the observational evidence can be constructed (Yin, 2011: 93). The ultimate decision about having co-observer during classroom observation is that
the other observer may contribute to the observed, in this case, the researchers have opportunities to “see class through someone else’s eyes; to re-evaluate the classroom from a different perspective and to receive input (suggestions, ideas, resources) from a colleague” (Bilash, 2011).

3.6.2 Interview

Interview was conducted for the reasons given by Fraenkel (2012: 445) that interview enables a researcher to possibly gather precious information of “people’s attitudes, their values, and what they think they do.” Approximately ten to fifteen minutes of an in-depth recorded semi-structured interview was administered to six out 25 nursing students comprising two higher, two moderate and two low achievers. They were purposively selected (Creswell, 2009) to obtain more information concerning their opinions toward scientific approach, to reveal challenges that the nursing students encountered, to discover advantageous and limitations of scientific approach from the nursing student’s point of view, to understand their overall learning experience during the process of ESP learning and to elicit suggestions that might be proposed by the nursing students for better improvement. Nine questions were prepared ahead of time to guide the interviewers stay focused during the interview (see appendix 7.1).

The semi-structured interview in this study served as a more guided conversation in such a way that participants felt comfortable to talk rather than a rigid structured one that they might feel the tension to share with. Cohen (2006) also revealed that “semi-structured interviews allow informants the freedom to express their views in their own terms.” Another consideration proposed by Barribal (1994: 330) that “semi-structured interview is well-suited for the exploration of the perceptions and opinions of respondents…” The interview was carried out twice by different interviewers within different time for clarification of the nursing students’ responses. As concurred by Krefting (1990: 219) that “the importance of variety in time, space, and person in interviewing…” may be of
great advantage. Inviting the researcher’s colleague to interview the nursing students was further aimed at crosschecking the data obtained from the first interview which was conducted by the researcher and confirming consistency made by the interviewees within different time. In so doing, the second round of interview enabled the researcher to “test the reliability of the students’ verbalization” (Emilia, 2005: 8.4). All the interviews were carried out in Bahasa Indonesia to eliminate misunderstanding between the interviewer and interviewee towards each question and response.

3.5.3 Document Analysis

In this study, document analysis enabled the researcher to scour for an understanding of the process of ESP teaching learning to nursing students in accordance with existing curriculum, syllabus and need analysis of the research site by reviewing those documents (see chapter four, section 4.1). Department of Health and Human Services (2009) states that document analysis or document review is “a way of collecting data by reviewing existing document.” In addition, Guba & Lincoln (1981: 228) clarified that document is “any written material other than a record that was not prepared specifically in response to some requests from the investigator.” The written documents used in this study are document of needs analysis, curriculum and syllabus.

The school curriculum and syllabus of the research site were utilized in this study to help gain understanding of what and how to teach the nursing students. This study notices how the content of curriculum and syllabus are intertwined based on the definition of curriculum by Lunenburg (2011) who examined curriculum as “content, learning experience, behavioral objectives, a plan for instruction and a non technical approach.” and syllabus by Yalden (1987) who defines syllabus as a “summary of the content to which learners will be exposed.” Those two definitions above can also mean that syllabus outlines what have to be taught to meet learning objectives based on what stated on a curriculum.
This study is eager for sources that are used in document analysis to learn more how the need analysis support the school curriculum and syllabus as well as the lesson plan at the research site. Several considerations were made to conduct the document analysis. Firstly, need analysis is required to design instruction that best meets students’ need in which communicating in healthcare setting and understanding medical terms in English are the goal of instruction at the research site. Dudley-Evans (1998:121) stated that the need analysis involves “…the process of what and how of a course…” should be conducted. Secondly, the importance of a need analysis framework in ESP is “…the main tool to define learners’ needs in a specific field because the awareness is more recognizable in a specific target situation representing a real-life-situation.” (Alharby, 2005:11). Those two assumptions emphasize how need analysis is necessary to conduct in ESP setting and to learn what content should be taught on the basis of students’ need. Accordingly, the result of a need analysis will also be analyzed to see the relevance among the curriculum and syllabus.

3.5.4 Pre-test and Post-test, Progress Test and Self-Assessment

Pre test and post test were administered in the present study to witness the effect of scientific approach on students learning of English for Specific Purposes. A Test of English for International Communication (TOEIC) was selected as an evaluation to measure nursing students’ English proficiency. TOEIC was chosen for at least two considerations: firstly, as the name suggest, it represents level of students’ English proficiency for International communication purposes; it measures students’ knowledge of English as a whole in which nursing students learn English for improving communication skill in order to understand and to be understood in English communication. This test is also somewhat relevant to what the research site requires that passing at least a minimum acceptable score of TOEIC is a must. Secondly, according to National Council of State Boards of Nursing (NCSBN, 2014); Nurses Association of New Brunswick (2014), every
non native English nurse who wishes to work overseas must have an appropriate level of English proficiency certification such as TOEFL, IELTS and TOEIC in seeking a job. This clearly clarified that TOEIC is relevant to the test taker’s needs for professional requirement.

Considering level of difficulties offered in TOEFL and IELTS, this study only utilized TOEIC to see students’ English proficiency. The following is a list of the passing scores for each exam informed by GoffWilson, a firm which is devoted to the immigration law and provides immigration services in New Hampshire, the United State of America in assisting immigrants to obtain temporary or permanent work visas for those who are interested in working at hospitals, nursing homes and other healthcare facilities throughout the United States (2014):

- **TOEIC**: required passing score is 725.

Apart from pretest and post test, this study utilized self assessment that was distributed in every meeting before students left the classroom. The importance of self assessment was highlighted by Rolheiser & Ross as cited in Bilash (2009) that “using self-assessment with students can positively effect self-efficacy and intrinsic motivation levels in students.” In this study, what students wrote on a self assessment will be used to see if it addresses the learning objectives. Other benefit of self assessment provided by Bilash (2009) is to “see if there is a need for review, more practice, or a re-framing of the content.” Similarly, Luzma et al (20120) clearly stated that teacher can benefit from self assessment to understand students’ needs, their progress along with difficulties.

Progress test was also administered in this study in form of written test and the students’ oral performance through presenting, dialoguing and role playing. This kind of assessment reflects authentic assessment which according to Birenbaum (2003) cited in (Guliker et al 2004) is contextualized, interpretative.
and performance based. As happened in this study, performance based assessment were used to check the students’ progress.

3.6 Data analysis Procedure

The focus of this section is on the analysis of data that were collected through observation, interview, document analysis and the result of both pretest and posttest. All the data obtained were organized and classified. Central themes were established through coding frameworks which then led to a “condense body of information” Kvale (1996) as cited in Emilia (2005: 245). Detail of each data analysis is enumerated below:

3.6.1 Analysis of Data from Observation

Observation notes that were written by the co-observer were classified into the fifth stages of scientific approach (observing, questioning, associating, experimenting and networking/communicating) on the basis of what activities performed by both the researcher and the students in each meeting. Meanwhile, the data taken from audio visual recording were utilized to confirm what had been written on observation sheets by the co-observer. In this study, six groups of questions for field note analysis proposed by Emerson et al (1995) as cited in Silverman (2005:175) were guided the researcher in understanding an on-going class by considering:

(1) What are people doing? What are they trying to accomplish? (2) How exactly do they do this? What specific means and/or strategies do they use? (3) How do members talk about, characterize and understand what is going on? (4) What assumptions are they making? (5) What do I see going on here? What did I learn from these notes? (6) Why did I include them?

Miles and Huberman’s suggestion, cited in Silverman (2005:177) about “data reduction, data display and conclusion drawing” were used in this study to analyze the data from observation. Data reduction involves selecting, focusing, simplifying, abstracting and transforming raw data; Data display involves
assembling data into displays such as graphs, charts; Conclusion drawing and Verification.

3.6.2 Analysis of Data from Interview

In this study, the procedure of data analysis taken from two stages of interview involves transcribing, categorizing, and interpreting. Central themes were also made in classifying the data (Kvale, 1996 as cited in Emilia, 2005: 243). Cohen, Manion & Morrison (2007) involves “coding, categorizing, comparing and concluding from the text.” In this study, the data taken from interview were classified and categorized into themes. One category to another was compared to reach a similar conclusion which would then be selected as the final data in form of condensed information.

3.6.3 Analysis of Data from Pre-test and Post-test

Data of pretest and posttest were gained by administering TOEIC (Test of English for International Communication) and the test items are provided in appendix 8 and appendix 9. The result of both pre and post tests in this study were in narrative form to see if the process of teaching and learning English within scientific approach framework contributes to students’ achievement in TOEIC. Students’ raw scores were calculated by using a converted score (see appendix 10) which was then interpreted by adopting a chart of score level and its general description. The following chart was adopted from Waikato Institute of Education retrieved April 15, 2014 from http://wie.ac.nz/toeicconversion.htm, to help understand how each student gained the score.

<table>
<thead>
<tr>
<th>Score Level</th>
<th>General Description</th>
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<tbody>
<tr>
<td><strong>905 - 990</strong> (91% - 100%)</td>
<td><strong>International Professional Proficiency</strong>&lt;br&gt;Able to communicate effectively in any situation.</td>
</tr>
<tr>
<td><strong>785 - 900</strong> (79% - 90%)</td>
<td><strong>Working Proficiency Plus</strong>&lt;br&gt;Able to satisfy most work requirements with language that is often, but not always, acceptable and effective.</td>
</tr>
</tbody>
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Table 3.1. Score Level of TOEIC and its Description
<table>
<thead>
<tr>
<th>605 - 780 (61% - 78%)</th>
<th><strong>Limited Working Proficiency</strong></th>
<th>Able to satisfy most social demands and limited work requirements.</th>
</tr>
</thead>
<tbody>
<tr>
<td>405 - 600 (41% - 60%)</td>
<td><strong>Elementary Proficiency Plus</strong></td>
<td>Can initiate and maintain predictable face-to-face conversations and satisfy limited social demands.</td>
</tr>
<tr>
<td>255 - 400 (26% - 40%)</td>
<td><strong>Elementary Proficiency</strong></td>
<td>Speaker has functional, but limited proficiency. Able to maintain very simple face-to-face conversations on familiar topics.</td>
</tr>
<tr>
<td>10 - 250 (0 - 25%)</td>
<td><strong>Basic Proficiency</strong></td>
<td>Able to satisfy immediate survival needs.</td>
</tr>
</tbody>
</table>

Soon after the result of both pretest and posttest classified into each category, a statistical analysis through a paired of t test was employed to compare the mean of pretest and posttest (see appendix 11) in order to see if the effect of scientific approach is found on the students’ TOEIC performance.

### 3.6.4 Analysis of Data from Curriculum, Syllabus and Need Analysis

The concept of Lunenburg (2011) in seeing a curriculum as content, learning experience, behavioral objectives and a plan for instruction will guide the analysis of curriculum and syllabus of the research site as will be presented in chapter four.

### 3.7 Data Triangulation

To triangulate the data, this study uses multiple sources and investigators. According to Schell (1992: 5) “Most case studies use at least two sources of data: multiple sources, even multiple investigators and sites may be involved in the collection of interview, observation and administrative documents…” Thereby, this study makes use of classroom observation and interview and multiple investigators who serve as participant observer and a complete observer. Each classroom observation is videotaped and an English teacher of Senior High who impalements scientific approach in his classroom is invited to help observe the process of teaching-learning. Interview is administered to crosscheck the findings during the observation; a semi structured interview is held twice by both investigators in different time to confirm consistency of student’s responses.
Theoretical concepts of scientific approach mentioned by the Indonesian government – observing, questioning, associating, experimenting and networking – are put forward along with other relevant theories proposed by other researchers or experts. The aforementioned triangulation method is intended to ascertain the findings that finally reach equal conclusion and increase the objectivity of this study.

3.8 Concluding Remarks

In summary, this chapter focuses on the research methodology that is employed in this study to discover the effects of scientific approach on nursing students’ learning of English for specific purposes as the major interest of this study. As previously stated, a case study design guided this study which involved 25 nursing students at one of the institutes of health in Cirebon, West Java. Observation and interview were the top two lists of the research instruments, followed by document analysis (curriculum, syllabus and needs analysis) and the result of pre-test and post test, self-assessment as additional information. Data, theory and researcher triangulation were indicated in this study where the researcher invited other co-observer to help take note of every single thing occurred in the process of teaching-learning and also help interpret observational data. This study also provides tremendous relevant theories stated by other prominent scholars and researchers in scientific approach and English Specific Purposes. In the meantime, data triangulation was reached by collecting various data such as observation, interview and document analysis. In brief, the aforementioned research methodology in this study serves as a vehicle for conducting this study. The following chapter will present the findings of the study with respect to the effect of scientific approach to nursing students in nursing students’ ESP learning.