

CHAPTER III

RESEARCH METHODOLOGY

This chapter provides an outline of how the present study was conducted, starting from the rationale of embracing design-based research (henceforth DBR) to procedures taken in understanding the context, designing, developing, and evaluating an ESP course for nurses at one of the health sciences institutes in Cirebon, Indonesia. This chapter falls into five major sections: First, section 3.1 restates the research questions of this study. Section 3.2 describes the research design guiding this study. Section 3.3 details the research procedure under the Integrative Learning Design Framework (henceforth ILD Framework). Section 3.4 informs the research site and participants. Section 3.5 enumerates data collection methods and instrumentation. Section 3.6 describes the data analysis procedure and section 3.7 concludes the overall methodology of the present study.

3.1 Research Questions

As previously presented in chapter one, this study probed four questions as follow:

- 1) What kind of ESP course do nursing students need to meet the occupational competency standards of Indonesia (The SKKNI)?
- 2) What are the features of a hybrid model of an ESP course in this study?
- 3) How is the intervention design developed and implemented for nursing students?
- 4) What changes are found in the teaching and learning of ESP and the students' English proficiency (TOEIC), resulting from the hybrid model of ESP course design?

3.2 Research Design

Four research questions were investigated in this study: the existing ESP practice for nursing students (context analysis), model clasification, model development and implementation, and evaluation. The first research question focused on current ESP practice by ESP teachers at one of the Institutes of Health Science, which led to a better understanding of what ESP course design nursing students require.

The first research question's findings led to the second question concerning classifications or features of ESP hybrid model in this study. Once the classifications had been established, the third research question regarding ESP course's design, development, and implementation process was investigated, which resulted in an initial intervention design. The refinement and validation of the developed design for implementation were part of the development process. In the meantime, the fourth research question looked at how the developed ESP course affected nursing students' ESP learning and their English proficiency through the evaluation phase. The ESP teacher's perspectives were also included as part of the evaluation.

The present study adopted Design-Based Research (DBR) by Reeves, Herrington, & Oliver (2005) to produce an ESP learning model for nursing students based on the needs of the healthcare industry as specified by Indonesian occupational competency standards (the SKKNI). It is envisaged in this study that an iterative development and implementation in context will improve ESP learning methodologies and provide solutions to the difficulties raised in Chapter 1, informing future decision-making for improving ESP teaching in the research setting.

The four rationales for selecting DBR in this study were based on the characteristics of DBR defined by Wang and Hannafin (2005): *pragmatic, grounded, interactive, iterative and flexible, integrative, and contextual*. First; *Pragmatically*, DBR assisted the researcher and ESP practitioner in this study by developing a hybrid model of ESP course, intervening in the implementation, and the potential of expanding theories and refining design principles (Design-Based Research Collective, 2003). In addition, this study shared a similar view to Angelie & Valanides (2009) that DBR is a promising research design in addressing teacher instructional contexts to design technology-rich lessons.

Second, in terms of *grounded*, this study tested neither the effectiveness of blended learning theory nor a proposed course design but develop it all along the research process as suggested by Akker van den (1999). In addition, the purpose of DBR is to produce new theories, teaching aids, and practices with an impact on learning and teaching in real situations (Barb & Squire, 2004). Therefore, the hybrid model of the ESP course in this study was developed throughout the research process to “*enact and refine theory*” (Edelson, 2002) as well as the design. It is

expected that the refined theories and design “*do real work*” in practice (Cobb, Confrey, diSessa et al, 2013) and promote practical and theoretical evidence (Collins, Joseph, Bielaczyc, 2004) in the context of ESP teaching and learning to nurses to see how varied learning environments in online and offline modes impact the learning as highlighted by Brown (1997).

The third characteristic, *interactive, iterative, and flexible*, described three processes of this study: (1) the interactive process involving the researchers, ESP practitioners, nursing instructors, users, and nursing students; (2) continuous effort to develop and refine the proposed design along with the research phases and; (3) the flexibility of a more iterative design process than those approaches of traditional experiment research. The intention was to elicit positive changes in the real context (Reeves, Herrington, & Oliver, 2005). Thus, recursive efforts to bring changes in the context of ESP teaching and learning through a developed and refined course design in compliance with the occupational competency standards and blended learning environment were made in this study.

Fourth, *integrative and contextual* as the characteristics of DBR in this study were seen from the use of multiple sources and varied data collection methods involving both qualitative and quantitative research paradigms to confirm credibility and contextual in terms of a setting where the design process, solutions, interventions, and research took place, how the proposed design reached the desired outcomes of local context and needs and how the findings could possibly be adapted in new settings. Drawing upon the aforementioned characteristics by Wang & Hannafin (2015) and a study by Meyers, Jacobsen & Henderson (2018) who found that DBR was beneficial to investigate and facilitate changes in education and healthcare, this study also employed DBR as the research method in investigating changes occurred after the proposed hybrid model of ESP course had been implemented to nursing students.

DBR in the present study followed the instructional phases of Integrative Learning Design Framework (henceforth ILD) proposed by Bannan-Ritland (2003) consisting of an informed exploration phase, enactment phase, and evaluation phase. The process started from the identification of problems and analysis of needs

and expectations of the nursing students and stakeholders embedded in the document of occupational competency standards of Indonesia (The SKKNI) as activities in the informed exploration phase, followed by the enactment phase with three subsequent processes: (1) Creating a prototyping solution underpinned by theories and concepts of blended learning, technological innovation and existing design principles mandated in the occupational competency standards of Indonesia; (2) trying it out to reflect on areas needed refinement in the practice; (3) developing the prototype informed by reflection and feedback from the students and the ESP teacher to enhance solutions in the implementation. The last phase of ILD was evaluation aiming to see how the prototyping solution or intervention course design affected the teaching and learning of ESP and the students' English proficiency.

The aforementioned ILD stages are appropriate for this study since this framework provides a comprehensive guide in a flexible manner to generate successful interventions through "*a socially constructed and contextualized process*" (Bannan-Ritland, 2003) In addition, this research methodology allows the researcher to pair "*the design of the learning environment with research on learning*" (Hermes, Bang, & Marin, 2012) and to provide solutions that are both practical and attractive for practitioners, as well as research with high ecological validity (Hansen et al, 2019). The following figure visualizes the process, research timeline, and activity of designing and developing a hybrid model of an ESP course for nursing students in this study.



Figure 3.1: DBR Research Timeline

The present study began its journey to conduct the first phase of ILD, informed exploration, in September to November 2018 to explore information concerning research context and participants to better understand the situation of current ESP practice and expectations of several parties (Nursing students, ESP teachers, and stakeholders). The next phase, enactment, was carried out in December 2018 until November 2019 to design a preliminary intervention design, to have it tried out, to develop the design, and implement the refined design. The last phase, evaluation, ended in April 2020 to observe changes resulting from the intervention in this study. What follows detail those three phases in the research procedure.

3.3 Research Procedure

As briefly stated above, this study involved three core phases of the ILD Framework proposed by Bannan-Ritland (2003): informed exploration, enactment, and evaluation, concentrating on learning as a process rather than just observing. Hence, the researcher intervened in the overall operations from start to finish and investigated the effect of the intervention on this study.

3.3.1 Informed Exploration Phase

The purpose of the first stage, informed exploration, was mainly to learn the existing situation of current ESP practice to identify problems, gain a better

understanding of the research context, analyze students' needs, and understand occupational competency standards of English in the nursing field, as well as link the students' and stakeholders' expectations in order to further develop a hybrid model of ESP course. In this study, the informed exploration phase included six activities: problem formulation analysis, audience characterization, literature survey, document review of existing solutions, needs analysis, and preliminary design principles as outlined below.

First, as the point of departure, problem formulation analysis was conducted to identify issues of ESP teaching and learning in the medical field. It all started with the researcher's personal experience teaching medical students. The problem analysis has then enlisted with the help of other ESP practitioners from different institutions to see whether they had similar or different experiences to the researcher and colleagues. Cobb et al (2013) claim that the researcher's own personal experiences in and out of the classroom often affect the process of detecting a learning issue. In support of this viewpoint, this study suggests that addressing problem analysis from the researcher's perspective is acceptable. During the process, three ESP practitioners from the research site and five from various health institutions participated in a pilot study to discover the typical challenges in teaching ESP. They are currently lecturing in the study programs of midwifery, nursing, public health, physiotherapy, and radiology. As a result of this initial activity, similar issues in teaching ESP to medical students emerged which will be explored further in Chapter 4 Section 4.1.

Second, audience characterization. This task was primarily used to limit the scope of this study, identifying which medical students and majors they belonged to and which Health institute out of the five to focus on. In this phase, the researcher examined the students and the environment or context in which they were learning. These are referred to as learner analysis and context analysis, respectively. Several questions guided the researcher in this activity such as who were the ESP learners?, where would the learning take place? and where would the learning be applied? This activity allowed the researcher to consider audience-centered rather than product-led in the process of creating solutions or interventions for the ESP course.

In so doing, the researcher was able to recognize what to offer in the intervention design. A detailed description of the research context and participants will be provided further in section 3.3.

Third, a literature survey. This task required the researcher to study a number of relevant literature specifying theories of hybrid or blended learning, publications on the issues in ESP practices, and occupational competence requirements for English in the nursing field. This activity provided a comprehensive look at them, most importantly, to expand the researcher's knowledge and familiarity with other people's work pertinent to this study. As a result of this insight, the researcher came up with solutions to the problem found in this study.

Fourth, document review of existing solutions, current evidence, and ESP practice. Reviewing thoroughly several existing documents such as curriculum, syllabi, lesson plans, nursing students' performance of TOEIC score, reports on typical problems they faced, was part of this informed exploration phase in this study to understand the current situation at the research site. According to the Department of Health and Human Services (2009), document review is meant to collect data by reviewing the existing document. All of the instructional aspects were thoroughly investigated to discover what worked and what did not. When comparing the overall teaching documents at the research site to occupational competency requirements (the SKKNI), inconsistencies were identified. The real demands for nursing students that are relevant to healthcare workplaces, as predicted by the SKKNI, were not addressed in the syllabus or lesson plans. This study conducted a needs analysis accordingly (see chapter four section 4.1).

Fifth, needs analysis, this activity aimed at exploring the needs for learning English in nursing from the perspectives of students, ESP practitioners, nursing educators, and users of nurses from the state and private hospitals. This data verified prior document review results that the disparity in this study was real following cross-checking activity with the nursing students. In this study, the needs analysis activity focused on discovering the gap between what the nursing students' actual needs were and what they should be taught as defined by Brindley (1989: 56).

Seventh, design principles, were made to help guide the process of designing an intervention to address the identified problems in this study. It contains essential features of ESP for nurses as expected in the SKKNI within a Hybrid learning setting. Additionally, according to Subramaniam, Jean, Taylor & et al (2015), design principles characterizing aspects of learning environments should emerge from DBR to guide future development and implementation by others that are suited to their local context. Therefore, design principles should hold characteristics of specificity and adaptability so that they can be applied in a range of situations (Collins et al., 2004; Barab, 2014).

3.3.2 Enactment Phase

The design and development activity in this study revolved around this enactment phase aiming at developing ESP courses for nurses in a Hybrid setting. As the main reference, the occupational competency standards of English for the nursing area issued by the Ministry of Labor of Indonesia (the SKKNI) guided the design process resulting in an initial intervention design of a hybrid ESP course, a detailed prototype, and refined design principles. Several tasks covered in this phase were activities of design, field trials, development, negotiation and validation, dissemination, model implementation.

First, initial intervention design. This phase entailed creating an instructional design that addressed both theoretical and practical aspects of the identified learning problems. In formulating a hybrid model of ESP course design for nurses, several supporting documents such as a syllabus, lesson plans, and teaching materials were prepared on the basis of what was needed in the SKKNI. Online learning platforms supporting the implementation of blended learning were also thoughtfully selected. During this initial design process, this study adjusted the involvement of the ESP teacher. The researcher was in charge of developing design concepts, creating initial intervention design, and providing resources for the intervention. In this scenario, the ESP teacher was tasked with putting both the initial and refined hybrid model of ESP design into action.

According to Engestrom (2011), this function of teachers might occur in DBR and can contribute to the design development process to some extent. As a

result, the researcher made all decisions about how the design was executed and assessed in this study, while the ESP teacher conducted the intervention in the classroom. The researcher was led by two key questions she asked herself during the course design process, such as what content would be included in the course? and what instructional method would be employed in the classroom?.

Second, field trials served as a pilot study or preliminary work to assess the fit and feasibility of the initial intervention design in the present study by testing it on a nursing class comprising of 25 nursing students. An ESP teacher was invited to teach the students using the prototype in her classroom. This activity allowed them to share their thoughts on the materials, course design, and technological aid used in this study that helped develop the prototype. In other words, this data served as an evaluation process of the intervention to refine the initial course design. In keeping with the essence of design-based Research, the design should be tested, in collaboration with teachers, to actual students in the classroom context (McKenney & Reeves, 2012). Therefore, in this study, there were two rounds of implementation to see how the intervention design worked: one round of field trials with the initial design and the other round with the refined design involving different participants. During the trials, the researcher was directed by three main questions such as (a) what were the results of the students' efforts?. (b) what feedback has the researcher received, and what adjustment does the researcher intend to make?

Third, development and refining was the next activity in the enactment phase. Following a trial run, the initial course design was refined based on at least three inputs: (a) Feedback from the nursing students and the ESP teacher; (b) consultation with nursing educators at the research site; (c) interaction with users from state and private hospitals. Their thoughts and recommendations were helpful in refining and developing a more thorough design. During development and refining, the ESP teacher was involved to agree with Collins et al (2004) who recommended that both researchers and instructors be involved from conception to reflection.

Fourth, negotiation and validation in this study aimed at discovering and rectifying inconsistencies while also adhering to the occupational competency

standards (the SKKNI) and the framework of blended learning by Mirriahi et al (2011). Five validators were involved to validate the refined design, one for each of the following: ESP, research methodology, educational technology, nursing education, and user. The validation consisted of two parts: first, design validation to determine the degree of utilization (utility) and ease of use (feasibility); second, subject validation to determine the context. In the following stage of the enactment phase, the revised design was re-implemented to ensure usability and advantages.

Fifth, dissemination, in this study, aimed at preparing ESP teachers to better understand the hybrid model of ESP courses as expected. The ESP teacher received training on how to use the refined design to teach ESP. The training helped the ESP teacher to overcome the challenges she encountered during the first round of implementation (the trials) and might encounter them the next round. In this regard, the researcher was allowed to intervene throughout the DBR phases, according to Design-Based Research Collective (2003), which had the potential to develop theories and improve design principles.

Sixth, Hybrid model implementation, this stage showed how the refined proposed design which had already been developed, consulted, and validated was implemented in the following year to 37 undergraduate nursing students in their sixth semester. Changes in schedule and lesson topics were well-received and adopted in the present study as an effort to refine the design. A 14-week course was compressed to 7 weeks, with twice-weekly sessions available in both online and onsite modes of delivery.

3.3.3 Evaluation Phase

This evaluation phase enabled the researcher to see how effective the proposed design was and how well it addressed the problems at this nursing institute by comparing the overall data taken from the informed exploration phase, the enactment phase, before and after the implementation of blended learning to ESP course for Nurses.

According to Bannan (2013), the local impact phase and the broad impact phase are both parts of the evaluation process. This study, however, primarily looked at the local impact and has not yet completed the phase of the broad impact

that would allow the proposed design to be implemented across the educational system. Despite the fact that it was initially communicated to 127 lecturers at the research site in a lecturers' meeting, the dissemination was still internal for the local context.

The evaluation in this study, therefore, consisted of two parts: first, an assessment of the Hybrid course design itself (evaluation of the designed model), which must include elements of blended or hybrid learning and meet the expectation of the occupational competency standards, the needs of nursing students, users, as well as nursing educators; Learning outcome charts adopted from course design workshop, teaching and learning center, University of Calgary (2013); and a syllabus checklist instrument adapted from Palmer, Bach, and Streifer's Syllabus Rubric (2014). Those instruments guided the evaluation of the designed model. Second, a functional evaluation of the designed model was administered to examine its impact on nursing students learning through students' self-reflection notes and TOEIC. Notes for self-reflection intended at determining the nursing students' personal appraisal of what they were capable of accomplishing and comprehending with the course design. Meanwhile, TOEIC was used as a summative evaluation to see how the course design affected the students' English ability in general.

3. 4 Research Context

The research site in this study was chosen from among many Health institutes in Cirebon, West Java, Indonesia, for four reasons: First, this is the only school in Cirebon with a program that prepares medical students to work in healthcare providers abroad. Consequently, the necessity of learning English for international communication appears to be a significant priority as emphasized by Derose et al (2007). Their study on immigrants and health care revealed that in the actual world of healthcare, low English proficiency affects patient safety, increasing the likelihood of an unfavorable response arising from difficulty in comprehending instructions. This clearly shows that English is a must for all healthcare professionals to communicate in a clinical context.

Second, this institution offers the widest range of educational opportunities, including nursing, midwifery, public health, radiology, and physiotherapy. The variety of majors offered by the research site generates a significant sample size for this study. In addition, other medical institutions have only one English teacher teaching ESP. The research site, on the other hand, has three English ESP practitioners, including the researcher. Hence, the possibility to gain richer data is relatively high.

Third, the potential of cooperating with ESP teachers from other institutions during the inquiry process was limited for some reasons. According to the ESP teachers, their busy teaching schedules might prevent them from responding to the researcher immediately. Their students might object to being investigated as part of the research since the inquiry procedure might lead them to lose their learning focus. Therefore, to the convenience of the researcher, this research site where the researcher works were chosen. Furthermore, the researcher neither met nor built relationships with other ESP teachers from different medical schools prior to the study. Importantly, all of the training lab's medical equipment are conveniently available at the research site. In contrast, obtaining authorization at other schools required the researcher to engage with numerous tiers of connections and stakeholders.

Fourth, unlike the research site placing English right before the medical students begin clinical practice in hospitals, other institutions position English in the early semester. It implies that medical students in other institutions have more time to learn English without any hassle to finish the course immediately or to skip English class in favor of clinical preparation. As stated in the background of this study (see chapter one, section 1.1) that the issue of poor attendance for English class often occurred as the result of clinical training preparation and consultation with nursing instructors took precedence over English class.

For the reasons stated above, a hybrid model of ESP course was purposefully implemented at the research site to revamp the ESP course, meet the students' needs, the SKKNI's expectations in terms of content requirements, and provide solutions to the prevailing problems as well as answer the research

questions of the present study. This study was conducted with the participant's consent, which addressed the ethical issue. The participants were first given an overview of the hybrid model of the ESP course and how it functioned. The research participants are described in-depth in the section that follows.

3.5. Research Participants

In comparison to other study programs, the nursing study program was chosen because of the large number of students it had at the research site. Additionally, Nurses are sent to foreign countries more frequently than any other medical practitioners, such as midwives, physiotherapists, or radiologists, under the Indonesian government programs. Most importantly, nursing English includes medical terminology, nursing intervention, and healthcare procedures requiring an understanding of the English language. Therefore, the researcher is particularly interested in contributing to ESP practice in the preparation of Indonesian nurses.

This study involved 135 participants in total comprising 119 nursing students, eight ESP practitioners, three nursing educators, three nursing instructors, and two users from government and private hospitals. When exploring the major difficulties that ESP practitioners encountered in teaching ESP to nurses, eight ESP practitioners from various health institutes participated in the informed exploration phase. Only one out of the eight was chosen to collaborate further, undergoing the next phases of enactment and evaluation throughout the present study.

Three nursing educators who taught nursing subjects and three nursing instructors who supervised nursing students during their apprenticeship in the hospital, as well as two users of nurses from both private and public hospitals, were asked to participate in the informed exploration and enactment phases by completing a questionnaire and interviews. Their voices, thoughts, and insights provide significant input to construct an initial intervention ESP course design in this study since they have a solid grasp of what is necessary in the actual world of medical practice in terms of English communication for nurses.

This study enlisted the participation of 119 nursing students. As many as 82 students took part in the informed exploration phase filling the questionnaire and

participating in focus group discussions to elicit their ESP learning needs and expectations. A total of 30 students were chosen to experience in a trial of the first intervention design. Meanwhile, in the following semester after the trial, 37 nursing students who were also part of the evaluation phase throughout this study were given the updated and refined course design. The table below shows the number of participants in this study.

Table 3.1: List of Participants

Participants	Activities in DBR Phase	Number
Undergraduate nursing students	Informed Exploration Phase: -. Need analysis (three classes of nursing: 25, 27, 30) Enactment Phase: -. Pilot Study: Field trial (30) -. Implementation of refined course design (37) -. Evaluation Phase (the same students in refined design implementation)	119
ESP Practitioners	Informed exploration phase (8), Implementation phase (1) and, evaluation phase (1)	8
Nursing educators (Teaching nursing subject)	Informed exploration and enactment phases	3
Nursing Instructors (Supervising nursing students during clinical training in hospitals)	Informed exploration and enactment phases	3
Users (Head nurse of both private and public hospitals)	Informed exploration and enactment phases	2
Total		135

3.6 Ethical Consideration

Ethical approval was sought before conducting the study at the Institute of Health Sciences. Permission to perform this study was granted by the foundation founder, the director, and the head of the nursing program. The institution gave the researcher full authority to conduct the study and have access to all of the medical instruments required for the study. Other school facilities such as classrooms, internet connection and a technician to assist with technical issues or troubleshooting were also readily supplied. More importantly, the training lab was

conveniently accessible that the researcher may utilize it at any time. Other medical schools, on the other hand, necessitated the researcher to engage with multiple tiers of connections and stakeholders to acquire authorization.

In addition, some of the reasons given by ESP practitioners from five different medical institutions appear to confirm that they were opposed to being investigated. First an objection may arise from students who do not want to be a part of the research since it may disrupt their learning concentration. Second, the ESP teachers may be limited in their ability to respond to and collaborate with the researcher due to time constraints. Third, when the nursing lab is required for research purposes, additional contacts should be made to seek approval.

Student nurses or nursing students at the research setting who took part in the study gave their informed consent. Their objections to being video recorded during class observation were also accommodated to prevent losing their concentration on the learning and to maintain the classroom activities as natural as possible. The use of pseudonyms in presenting the data ensures anonymity and confidentiality in this study. To protect anonymity, the international radiotelephone spelling alphabet, often known as the NATO (North Atlantic Treaty Organization) phonetic alphabet, was utilized in this study, with letters such as Alpha, Bravo, Charlie, Delta, Echo, and so on.

3.7 Data Collection Method and Instrumentation

The nature of design-based research as characterized by Anderson & Shattuck (2012) required both qualitative and quantitative methodologies to produce a rich picture of how instructional tools and their implementation influenced student learning. When quantitative and qualitative research findings are combined, the affordance of each technique is maximized, resulting in a greater understanding than if each approach were used alone (Warfa, 2006). Furthermore, combining qualitative and quantitative inquiries enables the researcher to explore the mechanism and process of students' thinking rather than just reporting whether or not differences exist (Barab, 2014).

In the informed exploration phase, there were four data supporting problem identification, needs analysis, and literature survey: first, interview with ESP teachers to understand challenges in teaching ESP for medical students; Second, the current ESP syllabi, lesson plans, students test scores, and existing TOEIC performance were evaluated and compared with the SKKNI competency requirements to understand the existent issues; Third, questionnaires for nursing students, nursing instructors, and users to reveal ESP learning needs of the nursing students; Fourth, a focus group interview with nursing students was conducted to confirm the results of the needs analysis and to ensure that the students were consistent in their responses to the questionnaire. All information in this phase was utilized for the prototyping process to create a syllabus.

Following the first phase in this study was the enactment phase, with two primary data sources: observation and self-reflection notes. A chart of learning outcome writing adopted from course design workshop, teaching and learning center, university of Calgary (2013) was also used to evaluate how well the learning outcomes aligned with criteria including clarity, measurability, attainability, and relevance when creating the prototype. In the evaluation phase, TOEIC and interviews with the ESP teacher and the students were administered to collect final data that led to any changes in their ESP teaching and learning as well as their English proficiency resulting from the hybrid model of ESP course. A detailed description of techniques in collecting data and instrumentations are as follows:

3.7.1 Document Analysis (The SKKNI and Syllabus)

Document analysis was carried out in this study during the first phase of informed exploration. According to Bowen (2009), documents may give background information and a wide range of facts, making them useful for placing one's study within the context of its subject or field. The nature of documents are stable, "non-reactive" data sources, which means they may be read and reviewed several times without being influenced by researchers or the research processes.

Bowen (2009) also suggested that the analysis process may include categorizing information into themes in the same way that focus group or interview transcripts are studied and a rubric can also be used to help grade the documents. In

this study, a syllabus checklist, developed from Palmer, Bach, and Streifers' syllabus rubric (2014), was used to assess the needs and expectations inherent in the existing syllabus and document of the Indonesian Occupational Competency Standards (SKKNI). It aimed at answering the first research question in the informed exploration phase. The checklist has six components covering learning goals and objectives, learning contents, learning assessments, schedule, and learning activities. More information is available in appendix 1.

To ensure inter-rater reliability, the researcher worked on a syllabus checklist with a co-researcher to evaluate what was relevant and what was not, comparing the current ESP curriculum to the SKKNI. Other instructional resources were examined as well, including lesson plans, student test scores, and previous TOEIC performance, in order to have a better understanding of the current ESP practice at the research site. To ensure reliable findings, the researcher and co-researcher went through a comprehensive preparation process prior to document analysis, using O'Leary's (2014) eight-step planning process: Collect relevant documents; Create a system for organization and management; Make annotation copies of the originals; Examine the authenticity of documents; look into the document's agenda and biases; Explore background information; Ask questions about the documents (e.g., who created it?). Why? When? What kind of data do we have?); Explore content.

3.7.2 Questionnaire

During the informed exploration phase, a questionnaire was presented to analyze the students' needs and collect information regarding their ESP learning. The questionnaire asking five key questions: First, how essential English skills are to them to support their future career as healthcare professionals and what for; second, select 14 of the 27 ESP lesson topics that they believe important and justify their choices; third, whether ESP teaching and learning in their class has covered the topics they chose and why; fourth, asking the most commonly used teaching method by their teachers; fifth, challenges they found in learning ESP. The 27 lesson topics provided in the questions were adopted from the SKKNI (The Ministry of Labor, 2010). See Appendix 2 for more details.

3.7.3 Focus Group Discussion

Prior to the second phase activity of prototype formulation, a focus group discussion with nursing students was performed for three reasons: (a) to provide clarification on the findings of the questionnaire and ensure consistency over their responses, (b) to recognize the needs that have been addressed and those that have yet to be met, (c) to discover issues and ideas that were previously overlooked, yet were essential to the nursing students. This information assisted the researcher in making decisions on what to include in their ESP course for initial intervention design.

The discussion was held for three different groups of eight nursing students. They, in total 24 students, took turns participating at the designated hour on the same day. Instead of a rigorous and formal scenario, the nursing students' responses emerged naturally as if they were having a conversation despite the fact that their voices were recorded. They were comfortably seated in a circle, voluntarily answering questions and contributing their thoughts. The questions were categorized into three: (a) Opening questions, to elicit their ESP learning in general such as asking what ESP for nurses was to their point of view and why they need to learn ESP. (b) Key questions, to ask four keys of interest to this study such as content preferences, their ESP teachers' teaching strategy, and ESP learning difficulties. (c) Closing questions, to hear their reflections, such as what they thought was important to them as the result of the discussion and what suggestion they might have. Appendix 3 provides the details.

3.7.4 Observation (Onsite Mode)

The observation was intended to collect data on classroom teaching practices during face-to-face sessions or onsite mode in this study. The observation was carried out once every two weeks for 100 minutes to capture a thorough portrait of every single event during the entire teaching and learning process in a hybrid or blended setting. This study included the researcher as a participant-observer.

Another observer was invited to class to assume a passive role in order to reduce the subjectivity that the researcher could face. According to Cohen, Manion & Morrison (2007:407), it is critical for a co-observer to take notes at the scene while the teaching and learning process is taking place in order to prevent missing

any key events by the researcher. Additionally, personal bias and impact on the outcome may be avoided when evaluating facts, making judgments, and defending conclusions. Thus, the reliability of observational evidence can be constructed (Yin, 2011: 93). Another factor to consider was that having a co-observer during classroom observation allowed the researcher to experience the classroom through the eyes of another person, re-evaluate it from a different perspective, and have feedback in the form of recommendations, ideas, and resources (Bilash, 2011).

The second research question in this study was addressed by using an observation sheet to document evidence of Hybrid model implementation in face-to-face sessions. The sheet contains components and descriptions adopted from the TNTP Blended Core Teaching Rubric of Betheni (2016) and document of the Occupational Competency Standards of Indonesia (The Ministry of Labor, 2010). Six components that need to be carefully observed are a culture of learning, essential content, academic ownership, demonstration of learning, and student agency. There were also spaces for comments and extra field notes to document the entire process of face-to-face learning from beginning to end, exploring what they were doing and how they were doing it during face-to-face class. More information may be found in appendix 3.

3.7.5 Self-Reflection Note (Online Mode)

The nursing students in this study were guided to report their learning outside of the classroom through a self-reflection note comprising four questions: (a) to monitor their learning: what did you learn from today's lesson? (Providing definition and procedure of the nursing topics they learned); (b) to identify learning problems: what difficulties, if any, did you find in learning today's lesson? (Specifically from two aspects: materials and activities); (c) to observe how they approach the challenge of learning: How did you handle the difficulties if any; (d) to ensure their readiness: Can you share your knowledge and understanding of the lesson with your peers in face-to-face class activities such as discussions, simulations and role-plays? Clarify your answer. Their reflection notes served as a stand-in for classroom observation during online mode to track evidence of the students' progress. For further details, see appendix 4.

The students' reflection notes were accompanied with success criteria developed from the TNTP Blended Core Teaching Rubric (Betheni, 2016), Exit Card of Learning Goals and Success Criteria (Ontario Schools, 2010) containing a list of features that this study intended the students to include during their online learning. The criteria may aid students in focusing on their studies by letting them know what was expected of them and encouraging them to extend themselves during the learning. The criteria fall into three categories: excellent performance, satisfactory performance, and unsatisfactory performance. Appendix 5 has further information.

3.7.6 Interview

In this study, interviews were conducted twice, once during the informed exploration phase and once during the evaluation phase. In the first phase, 8 ESP teachers were interviewed to learn about difficulties related to teaching ESP to medical students aiming to analyze situations from teachers' factors. Appendix 6 includes the interview questions. Meanwhile, in the evaluation phase, nursing students were interviewed to assess the performance of the hybrid model of the ESP course following the implementation of the refined design. The interviews were used in this study for fundamental reasons indicated by Fraenkel (2012: 445) that interviews allow researchers to learn about people's attitudes, values, and beliefs. In an in-depth recorded semi-structured interview that resembled a more directed discussion for roughly fifteen to twenty minutes, the opinions of both nursing students and ESP teachers were obtained.

The interview was largely conducted in Bahasa for their comfort. According to Murray & Wynne (2010), the interviewee should be permitted to speak whatever language in which they feel confident and comfortable. This may also help to avoid misinterpretation of interview questions and replies. In this study, the interview was conducted twice, with the first and second taking place at different times by two different interviewers. As recommended by Krefting (1990: 219) that diversity in location, time, and the person is crucial. Cross-checking data and ensuring consistency is very likely to occur in this manner. In addition, Emilia (2005:84)

noted that assessing the verbalization's reliability is also achievable in the second round of interviews.

3.7.7 English Proficiency Test (TOEIC)

The Test of English for International Communication (TOEIC) was utilized to assess the nursing students' English proficiency at the research site for at least two reasons: First, TOEIC is important since passing a minimum acceptable TOEIC score is a prerequisite for graduation. Second, nursing students from this Health Institute will be competing for foreign nursing jobs, and one of the prerequisites for non-native English nurses is to have an adequate level of English proficiency certification (National Council of State Boards of Nursing, 2021; Nurses Association of New Brunswick, 2014).

In the TOIEC, the nursing students were asked to complete two sections: listening and reading. They were required to demonstrate their understanding of spoken English in the listening test by answering four different types of questions: photograph, question-response, conversations, and short talks. In the reading test, they read a range of reading materials and answered a variety of reading comprehension questions, such as incomplete sentences, error recognition, single and double passages.

3.8 Data Analysis

In this study, both qualitative and quantitative data analyses were used. The qualitative analysis was guided by the approach provided by King & Harrocks (2010). The transcripts were closely reviewed and re-read in the initial phase of the study. Those that appeared to correspond to the central themes were highlighted, coded, and what was of particular interest was noted as well. Similar codes were clustered together to focus the interpretation. In brief, transcribing, categorizing, and interpreting were all part of the procedure in understanding qualitative data. This study also employed central themes given by Kvale (1996) to organize the data, as indicated by Emilia (2005), in which the data were compared from one category to the next to reach condensed information. The transcribed data were checked verbatim for accuracy before being presented as excerpts in a non-verbatim

format. In the final step, peer debriefing was used to increase the credibility of the findings by requesting an experienced colleague to review if the findings matched the data collected from participants.

As can be noticed in chapter four, some parts of the information taken from the transcripts are included to support the findings. In this study, the excerpts were presented using non-verbatim transcriptions, which removed unnecessary words like "er," "well," and "you know," leaving only the primary point of the quotes supplied by the participants. Non-verbal nods and repeated phrases or sentences were also excluded.

Descriptive analysis was used to analyze the quantitative data in this study. The TOEIC pre-and post-test data were presented in narrative form to see if the hybrid model of the ESP course added students' TOEIC scores. The students' TOEIC results were interpreted by using the score descriptor information from the TOEIC website's resource pages at www.ets.org/toEIC and a five-level scale of the CEFR which provides a descriptive framework for interpreting the meaning and practical implications of language test scores as shown in the image 1 below:

TOTAL TOEIC Listening and Reading Score	TOEIC Listening Score	TOEIC Reading Score	CEFR Level	CEFR General Description
945 pts	490	455	Proficient user - Effective Operational Proficiency (C1)	Can understand a wide range of demanding, longer texts, and recognize implicit meaning. Can interact fluently and effectively for social, academic and professional purposes. Can produce clear, well-structured texts for an explicit purpose, showing control of oral production processes, coherence and cohesion devices...
785 pts	400	385	Independent user - Vantage (B2)	Can understand the main ideas of complex text on both concrete and abstract topics, including technical discussions in his/her field. Can interact with a degree of fluency and spontaneity that makes regular interaction with native speakers quite possible, though with some strain. Can produce clear, detailed text on a wide range of subjects and can do so in a clear, organized way, using the sub-structure of the text...
550 pts	275	275	Independent user - Threshold (B1)	Can understand the main points of clear standard text on familiar matters, especially in his/her field of interest. Can deal with most situations likely to arise while traveling. Can participate in discussions on familiar matters within his/her area of competence. Can produce simple connected text on familiar topics and can describe events, experiences and activities.
225 pts	110	115	Basic user - Waystage (A2)	Can understand sentences and frequently used expressions related to areas of immediate relevance (e.g. very basic personal and family information, shopping, local geography, employment). Can communicate in simple and routine tasks requiring a simple and direct exchange of information on familiar and routine matters. Can describe in simple terms aspects of his/her background, immediate environment and needs in terms of his/her life.
120 pts	60	60	Basic user - Breakthrough (A1)	Can understand and use familiar everyday expressions and very basic phrases aimed at the satisfaction of needs of a concrete type. Can introduce himself/herself and others and can enter into simple conversations. Can describe in simple terms his/her family and immediate surroundings. Can interact in a simple way provided the other person speaks slowly and clearly and understands the context.

Image 1: TOEIC Listening and Reading Test Scores and the CEFR Level

After categorizing the pretest and posttest results into each level, a statistical analysis utilizing a non-parametric test was conducted to compare the mean of the pretest and posttest and to examine if the students' TOEIC performance was affected by their ESP learning in the hybrid environment.

3.9 Concluding Remarks

Design-based research embracing the integrative learning design (ILD) framework of Mirriahi (2015) guided this study to formulate an intervention course design, named *A Hybrid Model of ESP Course for Nursing Students*. It aimed to overcome existing problems in the ESP class at the selected Institute of Health Science in Cirebon, Indonesia. The ILD framework involves three phases in this study: informed exploration, enactment, and evaluation.

In phase one, several activities of informed exploration such as problem formulation analysis, audience characterization, literature survey, document review of existing solutions, needs analysis, and preliminary design principles were conducted. It aimed at acquiring a deeper knowledge of the study context, assessing the needs of nursing students, and comprehending English occupational competency standards in the nursing sector, as well as linking students and stakeholders' expectations. All essential information, such as instructional models of hybrid learning, occupational competency standards for English in nursing as well as individuals related to the area, was taken into account to help with the design process in the next phase,

Phase two, enactment, was informed by all information collected in the exploration phase to select instructional models and strategies in designing a prototype to provide solutions to the research site regarding the issues raised in this study. Three key tasks were involved in the enactment phase: (a) creating a prototype solution based on theories and ideas of blended learning, technology innovation, and current design principles specified by the Indonesian occupational competency requirements; (b) Testing the prototype to identify areas in which the practice might be improved; (c) Developing and putting the refined design into action in the classroom.

The last phase in IDL Framework served as an evaluation of the overall design to see if the designed prototype addressed the ESP teaching and learning challenges at the research site. In this study, the evaluation involved formative and summative. The formative evaluation was carried out at the prototype development stage to assess the prototype's strengths and weaknesses. Expert evaluations were

conducted as part of the process. The data was then utilized to develop the prototype. Another type of evaluation was used: summative. It was administered after the refined design was implemented to assess the impact of hybrid learning on ESP teaching and learning, as well as students' English proficiency.