

**Understanding the Role and Practice of Nursing Lecturers in Facilitating  
Problem-Based Learning for Nursing Students: A Singapore Perspective**

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**Thesis Submitted to the University of Nottingham Malaysia  
For the Degree of Doctor of Philosophy**

**19 November 2019**

**Abstract****Introduction**

This thesis explores the roles and practice of nursing lecturers facilitating problem-based learning for nursing students in Singapore. Educators have used problem-based learning in teaching nursing students to improve their critical skills in making clinical decisions to improve patients' outcomes. The study applies the constructivist learning theory as a theoretical framework.

**Aims**

This study aims to understand nursing lecturers' role and practice in facilitating problem-based learning (PBL) in the classroom for second-year nursing students. It also aims to identify specific challenges and issues faced by nursing lecturers in facilitating the nursing science module for nursing students.

**Problem Statement**

The shift from a teacher-centred approach to a student-centred approach improves students' learning. One example of student-centred learning is PBL, where the teacher is the facilitator in guiding the students to learn. Previous research has shown that successful implementation of PBL improves students' levels of participation, learning outcomes and motivation. The roles of PBL facilitators are complex, and they face many challenges. Almost one-third (30%) of nursing lecturers in the case study organisation are new and have no experience.

## **Methodology**

This study uses a qualitative research approach to explore the nursing lecturers' roles and practices in facilitating PBL in the classroom. The researcher used purposive sampling to select the participants. Four participants met the requirements of having at least two years of experience facilitating PBL and clinical experience. The data were collected through documentary analysis, observation and interviews, adopting a thematic approach for qualitative data analysis.

## **Findings**

The nursing lecturers provided a non-threatening and conducive learning environment for the students to learn by building rapport and good staff-student relationships. They managed the group dynamics effectively by guiding the students and giving them responsibility. One of the nursing lecturers used music to enhance students' learning. They also managed conflicts among students during problem-based learning. They engaged the students in PBL by motivating them to work as a team to solve complex problems, using praise, feedback and effective communication skills as tools.

## **Conclusions**

This research has shown that the nursing lecturers adopted various roles and practices in facilitating PBL for nursing students. The findings show that facilitators have adequate knowledge of the subjects they taught and could apply pedagogical knowledge based on their clinical experience and professional knowledge. Creating positive relationships with the students and attending to students' needs helped develop good relationships with them.

## **Acknowledgements**

I am grateful to my supervisors at the University of Nottingham: Professor Tony Bush of the School of Education and Associate Professor Derek Chambers of the School of Nursing. Thank you for your extreme patience and extensive support that you gave me during my Ph.D. journey.

I would like to thank the Director of my institution, Miss Bella Tan for giving me support for my study and all the facilitators and the students who took part in this research.

Thank you to my two sisters, Dr Zee of University of International Mara and Hajah Salmah of University Brunei Darussalam, Dr Jennifer Loke of the University of Hull and Associate Professor Ashley of University of Nottingham, Malaysia for supporting me throughout my Ph.D. journey.

I am also grateful to my family in Kuala Lumpur for their encouragement and support, always telling me that you can do it whenever we met.

I also want to say 'thank you' to my Ph.D. colleagues at the University of Nottingham, Malaysia, especially Sabrina Koh who travelled with me to Kuala Lumpur for research workshops and supervision, and to Jo, Bok Lan, Deepa, Sarah, Eva and Chee Fong.

I am thankful most of all to my husband, Mohd Ia'ni and my two sons, Irwan and Ridzuan for all your love and support.

Thank you to all my friends who repeatedly told me that you can go all the way to complete my Ph.D.

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### **List of Abbreviations and Acronyms Used**

|      |                                 |
|------|---------------------------------|
| MOE  | Ministry of Education           |
| MOH  | Ministry of Health              |
| PBL  | Problem-based learning          |
| PCK  | Pedagogical Content Knowledge   |
| SNB  | Singapore Nursing Board         |
| TLLM | Teach Less Learn More           |
| TSLN | Thinking School Learning Nation |
| Fac  | Facilitator                     |
| Std  | Student                         |

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## **Chapter One: Introduction**

### **Background**

This thesis aims to understand the nursing lecturers' role and practice in facilitating problem-based learning (PBL) to second-year nursing students in Singapore. The aim was to conduct an in-depth study of how nursing lecturers facilitated PBL for nursing students in the classroom to ensure effective learning.

This chapter provides the study's background, describing Singapore and its education system. It discusses the educational policies and changes discussed, and explores changes in nurse education, emphasising the need to facilitate diverse groups of nursing students in higher education. The chapter also discusses the study's aims and research questions.

### **Changes in Health Care Delivery**

Healthcare in the 21st century has transformed, especially regarding technology and health care delivery (Potgieter, 2012). The changes include the expansion of technology (Thimbleby, 2017) increasing patients' demands (Sangestani & Khatiban, 2013), more complex multi-pathology and long-term patients' conditions (Kannusamy, 2005). This means that nurses must be better prepared to meet these challenges (Benner, 2012).

In response to these challenges, nursing education needs to enable learners to access information, think critically, and solve complex clinical problems to deliver safe, competent care to the patients (Kaddoura, 2011). Critical thinking skills help nurses make clinical decisions to meet patients' needs based on the context and preferences (Schmidt & Stewart, 2009), leading to higher-quality nursing care and improved patients' outcomes (Kaddoura, 2011). Nurses need cognitive knowledge gained through experience, which leads to critical thinking and professional

judgement (Benner et al., 2008).

To meet these changes, nurse educators must find effective teaching methods to build a knowledge base through evidence-based practice and transfer knowledge to solve problems in clinical practice (Kantar, 2014). Nursing education was formerly teacher-centred, focused on giving the students information through a teacher-directed learning process (Kaddoura, 2011). Through enhanced expectations for nurses to think logically and solve problems, nursing education is moving away from teacher-centred to student-centred pedagogical approaches in some countries (Shahin & Tork, 2013). There are many student-centred learning approaches, such as computer-based learning, simulation-based learning and blended-based learning. One approach to pedagogy that has increasing prominence over the last decade is problem-based learning (PBL).

Problem-based learning is an instructional method where students learn by problem-solving and reflecting through experience (Boud & Feletti, 2013). PBL is an innovative learner-centred approach that empowers learners to be involved actively in the teaching and learning process (Dolmans et al., 2016). The lecturer or the facilitator plays an essential role in PBL (Lyberg-Ahlander et al., 2014). The role of the facilitator is complex and challenging. It demands a set of skills from the facilitator, such as facilitation skills, critical thinking skills, collaborative learning strategies, scaffolding, questioning techniques and creating a conducive learning environment (Kassab et al., 2006; Lekalakala-Mokgele, 2006).

Singapore is a small island comprising five million people. It has no natural resources and subsequently depends on human resources. Tremendous changes in education have occurred in the 21st century, and there is constant discussion about how to improve education for students to be innovative and critical thinkers. Tan and Gopinathan (2008) pointed out that although education has been the

prime factor for developing socio-economic policy in Singapore since 1958, changes in education have been rapid.

The British system of education influences the Singapore education system. English is the primary medium of language and is widely taught in Singapore schools and universities. This is particularly so as the curriculum and the teaching and learning approaches have been influenced by western countries (Tan and Gopinathan 2008). The teaching approach was traditionally teacher-centred, whereby the teacher gives information during lectures and tutorials.

Since the late 1980s, the Ministry of Education (MOE) has attempted to make educational reform to change the traditional didactic teaching practice (MOE, 2013). It began by recognising that Singapore education focused too narrowly on examination performance. This led to the implementation of Thinking Schools and Learning Nation (TSLN), an educational reform that focused on student-centred learning, an active learning paradigm. TSLN aims to ensure that students are learning independently with the capacity to think, innovate and learn continuously (Deng & Gopinathan, 2016).

According to the Ministry of Education (1990), students were not taught according to 'progressive methodology.' Students passively took in lectures' knowledge, recorded notes, and followed instructions from the lecturer. Such traditional teaching approaches limited the students in achieving the learning outcomes that employers require, such as critical thinking, innovative and creative skills, to fulfil their work requirement. As with other Asian students, the stereotypical view of Singapore students is that they are examination-orientated and highly skilled at rote learning and reproducing what they memorise when taking examinations. Western researchers observe that such behaviours lead to the successful performance of Asian students in international achievement tests

(Richards, 2004; Watkins & Biggs, 2001). However, the government is now encouraging educators to improve teaching and learning approaches to enhance the quality of tertiary education. Educational policymakers, principals and teachers are expected to adopt new pedagogical approaches based on student-centred learning in Singapore (Ng, 2004).

Goh (2014) stressed that learning in TSLN is more than acquiring facts and content but requires learning and thinking creatively. According to Wolf and Bokhorst-Heng (2008), TSLN aims to revamp education by encouraging students to be more innovative and entrepreneurial and developing active learners with critical thinking skills. The thinking schools were given autonomy to encourage students to be self-directed learners and ask questions in the classroom.

One year after the launch of "Thinking Schools and Learning Nation" (TSLN) programme, Temasek Polytechnic became the first higher education institution to embrace PBL in 1999. Shortly after, the National University of Singapore adopted PBL in the faculty of Medicine followed by Republic Polytechnic.

In 2004, the Senior Minister Lee Kuan Yew supported the "Teach Less, Learn More" (TLLM) phrase, which was formalised into policy by the Ministry of Education in 2005 (MOE, 2005). This policy aimed to help teachers move away from the exam-oriented teaching culture, where students memorised the facts and information given by the teacher and encouraged them to be critical thinkers and self-directed learners (MOE, 2005). "Teach Less, Learn More" aims to promote openness and flexibility in the teaching-learning environment. Lee (2004) stressed that teachers need to re-examine the fundamental of teaching and learning to ensure students understand what is being taught and not merely to pass the examinations but also to engage students' hearts and minds.

Policymakers explained that TLLM is fundamental to teaching and stressed

the what, why and how of teaching, and focused on improving the student-teacher interactions. The other issue is evident in the Prime Minister comments that "grades are not the only thing in life" (Lee, 2004, p. 2). TLLM stressed that the purpose of education is to provide young Singaporeans with "quality education that will prepare them for life more than preparing them for examinations" (Shanmugaratnam, 2005, p. 22). However, teachers were also expected to bring out the best for the students to deliver quality results. It is important how educators plan and implement the vision in schools and plan classroom learning. It is the teachers' role to interact with the students and guide them in their learning. The students are to be self-directed in their learning and are encouraged to ask questions. According to the Ministry of Education (2005), students are expected to articulate and define their learning and be responsible for their own learning experiences. Teachers should create a learner-centred experience by modelling as a facilitator, resource person and learning model (MOE, 2005).

### **Transformation of Nursing Education**

The Singapore Nursing Board (2009) is the regulatory body for nurses and midwives in Singapore. Its policies aim to protect patients' welfare and safety and guide nurses in their practice. The Singapore Nursing Board's education committee is responsible for promoting high standards of nursing education and ensuring that the curriculum is current to meet healthcare delivery needs in Singapore (SNB, 2009). The Ministry of Education and Ministry of Health's education committee influence nursing education within Singapore. Recruitment of student nurses from overseas is jointly assessed by educational institutions, the restructured hospitals and the Ministry of Health. The students are selected according to the Polytechnic Admissions' criteria (Joint Polytechnic Recruitment, 2013).

Nursing education in Singapore has undergone many changes. Historically, nursing education in Singapore was hospital-based (Loke, 2014). This type of training is based on the apprentice model of training. Most of the training was "hands-on." Students were part of the ward staff, most of the training was done in the hospitals, and the ward staff supervised students. Teaching in the classroom was mainly through lectures and laboratory skills and was teacher-centred (Kannusamy, 2005).

In 1990, the Ministry of Health was concerned with improving Singapore's nursing education to attract students into the profession. The Singapore Nursing Board and the Ministry of Health formed a working committee to study the feasibility to upgrade nursing education in Singapore (MOH, 1995).

In 1990, the Ministry of Health and the Ministry of Education called for an additional 1,000 nursing students. Following the recruitment exercise for students from China, Myanmar and Malaysia, the number of undergraduate nursing students in Singapore increased from 500 in 2001 to 1,000 in 2004. The additional 500 students were absorbed within the existing polytechnic, or by another polytechnic, and by the National University of Singapore.

Due to the transformation of nursing education and the policy of "Teach Less, Learn More," changes occurred in the pedagogy used in nursing education. My institution introduced PBL in the curriculum in 2008 to encourage teachers to facilitate critical thinking and support the students in self-directed learning (Tan, 2006).

Like other professionals, nurse educators face many challenges in adapting to the changes. They need to update their knowledge, skills and subject matters, including pedagogy methods to enhance their teaching skills (Benner, 2012; Darling-Harmond, 2012).



The traditional teacher's role is to provide information during teaching. However, in learning, it is the students' role to acquire knowledge actively. It is the students' responsibility to participate actively in learning by using their critical thinking skills, self-directed learning, curiosity and experience in acquiring knowledge and skills (Consul-Giribet & Medina-Moya, 2016). Indeed, the outcome of learning is mapped by the students themselves. This concept of student-centred learning is based on teachers teaching less and students learning more.

According to Freeman et al. (2014) and Savin-Baden (2003), the shift from teacher-centred learning to student-centred learning requires teachers to change their teaching methods to improve students' learning. Teachers employ student-centred learning by using different approaches such as collaborative learning, blended learning, project-based learning and problem-based learning to ensure that student learning is effective. Moreover, they need to improve their knowledge and keep abreast of the latest teaching strategies to improve their professionalism. However, teachers face many challenges in adopting learner-centred pedagogies, as learners are distinctive in their background, the emotional state of mind, learning styles, development stages, abilities and academic attributes (McCombs, 2001).

The need for more nurses is due to external factors such as rapidly changing technological developments, the growing older population, the shift of care of patients from the hospitals to community settings, and the building of new hospitals, leading to a shortage of nurses (Chan & Morrison, 2000; Fang, 2001). Nursing education in Singapore needs to critically evaluate the curriculum to meet the increased needs of training nursing students in critical thinking skills and making decisions for patient care to meet patients' high expectations for care delivery.

Nurses' education has changed, along with changes in the nursing education curriculum. The previous emphasis on the acquisition of knowledge has changed. There is a greater emphasis on the learning process instead of emphasising learning defined as a product. The emphasis on learning process focuses on assessing patients, identifying problems, making clinical decisions and developing self-directed learning and interactions with patients and colleagues (Weitzel et al., 2012). Russel et al. (2007) pointed out that educators should shift their teaching from teacher-centred to student-centred learning, whereby students are actively involved in the learning process, which has a significant impact on nursing education.

### **Preparing Nursing Students for Registration**

The preparation of registered nurses in Singapore was moved to polytechnics in 1992. In 1994, the University of Sydney conducted and implemented a part-time conversion degree programme, aimed at registered nurses with diplomas and certificates at the Singapore Institute of Management. Although the intake was small, only 60 students a year marked a significant change in the way nurses were to be educated in the future. In 2004, Ngee Ann Polytechnic responded to increasing nursing courses demand by commencing a diploma programme. The master's in nursing was started at the National University of Singapore in 2006. The baccalaureate nursing programme was started in 2006, and 50 students were recruited at the National University of Singapore.

Graduate nurses are expected to adopt the changing roles required by the nursing profession and the Singapore Nursing Board. They are expected to identify patients' actual and potential problems, deal with complex problems professionally

and safely, update their knowledge, be responsible for self-directed learning, personal development, and life-long learning. Therefore, nurse educators have adopted PBL for the students to be self-directed learners, solve problems using their critical thinking skills, and identify their own learning needs (Choi et al., 2014; Shahin and Tork, 2013).

### **Critical Thinking and Clinical Decision Making**

A survey was done in 2006 on nursing students' critical thinking skills and decision- making skills by the nurse educator. According to the study, 30% of students were not effective in their critical thinking and problem-solving skills (Chow, 2006). If students are ill-equipped with critical thinking skills, it impacts on patient care and clinical outcomes. Students should be well equipped with critical thinking skills to ensure they can make assessments of their patients accurately and make decisions in managing patients. Oermann et al. (2000) add that students need to use critical thinking skills to provide care to different types of patients and in multiple settings. Moreover, they need to make clinical decisions and to take action to prevent complications.

### **Rationale for the Study**

My interest in PBL first occurred when I observed the problems faced by my institution when it introduced PBL in 2006. Lecturers who predominantly used didactic methods, such as lectures, found it difficult to relinquish their role from teacher-centred to student-centred learning (Lekalakala-Mokgele, 2010). Hence, they would give their students information rather than stimulate their thinking. In 2014, 30% of the lecturers were new, and they only attended four hours of PBL workshops. Moreover, the students were not used to self-directed learning as they

were taught in secondary schools by lecturers' traditional teaching method. They were used to being spoon-fed by the teachers during their secondary education.

The other issue is that arose from my early experience was that nursing students were quiet and passive learners. This is due to cultural preference in educational and learning styles that deters students from interacting with PBL tutorials' facilitators (Khoo, 2003). Asian students are brought up to respect their elders and authority figures and less outspoken. These students feel uncomfortable when they encounter an authority figure, such as a teacher, as they fear losing face and violating their community rules (Cheng, 2000). This point is emphasised in studies by Khoo (2003) and (Remedios et al., 2008), who found that Asian students were not participating verbally during PBL tutorials for cultural reasons.

Cheng (2000) also noted that the majority of Asian students find the social rules operating in Western classrooms "incomprehensible," and they are often constrained by the fear of embarrassment or ridicule because of saying something foolish before teachers and peers. Students in Singapore come from various backgrounds and ethnic groups, including Chinese, Malay, Indians, Burmese and Vietnamese. This also leads to communication problems, as the students from China and Myanmar have limited English. The language barrier is one of the issues that may affect students' learning in PBL (Khoo, 2003).

As a result of my experience, I started to read the PBL literature by Howard Barrows (1986; 1988, 1994), who has written extensively on PBL, and Savin-Baden (2003), who emphasises the facilitator's role in PBL. I noticed that PBL facilitation in Singapore differs from what was stated in their books. Barrows' (2000) model of PBL lies in the core principles of medical education. He highlighted that the first principle of PBL is that the physician must be effective,

efficient and knowledgeable. Doctors need an in-depth understanding of the human body and physiology principles to assess and diagnose the patients. Similarly, nurses need knowledge of anatomy and physiology to assess the patients, noting the patients' complaints and using critical thinking skills to make nursing diagnoses and clinical decisions (O'Shea, 2003). Secondly, Barrows' (1986) principle of PBL is that students must be self-directed in the learning process of PBL. Self-directed learning motivates students to learn independently and seek resources from the library, journals and websites. The third principle of PBL is life-long skills. Students must continue learning even after graduation to keep up with the rapid changes in medical sciences, care given to the patient and technological advances. It encourages them to be more responsible for their learning (Savin-Baden, 2003).

The last principle of PBL is that facilitators play an essential role (Ahmed et al., 2015; Barrows, 1994; Savin-Baden, 2003). Ahmed et al. (2015) stated that the facilitator's role is to structure the tutorials and guide the students in PBL to enable students to construct their learning. Jones (2006) emphasised that the success of PBL depends on the facilitation skills, knowledge and the ability of the teacher.

### **Problem Statement**

The shift from teacher-centred learning to a student-centred approach is intended to improve students' learning. One example of student-centred learning is PBL. In PBL, the teacher serves as a facilitator in guiding students to learn (Hmelo-Silver, 2004; Yew & Goh, 2016). Previous research has shown that a successfully implemented teaching and learning approach, such as PBL, improves students' participation level (Wiznia, 2012), improves

students' learning outcomes (Preethi et al., 2013), and increases students' motivation levels. However, this approach provides many challenges, especially for lecturers (Lekalakala-Mokgele, 2006; Pourshafie & Murray-Harvey, 2013).

Azer (2009, 2011) and Park and Ertmer (2008) point out that the implementation of PBL is challenging and depends on several factors. First, it depends on tutors or teachers (Park & Ertmer, 2008). The teachers need to have knowledge, critical thinking skills, communication skills and skills in facilitation (Thomas, 2010; Yee et al., 2006). However, some studies have reported that teachers and lecturers often found difficulty acquiring these new skills (Kang et al., 2008; Lekalakala-Mokgele, 2010). Teachers employing a student-centred learning approach must use different strategies to make a difference in students' learning.

However, previous research on PBL has shown many benefits for students than for teachers or facilitators. Several studies show that PBL improves students' attitudes towards learning (Dehkordi & Heydarnejad, 2008; Rideout et al., 2002), improves problem-solving skills (Sangestani & Khatiban, 2013), improves critical thinking skills (Carvalho et al., 2017; Shin et al., 2015), and increases motivation, promoting teamwork and critical thinking (Chan, 2012; Yardimci & Bektas, 2017).

Most studies of PBL are on students' learning, with less focus on the role and practice of facilitators (McLean, 2003; Savin-Baden, 2003). Hence, this research shifts the perspective from students to lecturers.

There is no in-depth study on the teaching practices and guiding the students in PBL in the classroom (Goh, 2014). Goh mentioned that in her study, she only explored the attributes of the exemplary facilitators in

facilitating PBL. She argued that studies that have investigated PBL demonstrate that it is possible to identify and observe the brainstorming process of groups during PBL. However, these studies have analysed and described only part of the tutorials. They argue that there is a need for further research on how facilitators conduct PBL in the classrooms.

There were also specific problems to address in the case study institution regarding the facilitation of PBL. There appeared to be a lack of consistency among the nursing lecturers in facilitating PBL. For example, some facilitators appeared to be assisting the students in solving the problems instead of guiding them. A survey conducted on nursing students' clinical attachment found that 30% of the students could not use critical thinking skills in making clinical decisions (Chow, 2006).

There is also very little research on PBL in the Singaporean context (Goh, 2014; Yew & Yong, 2013). The few existing studies have focused on students' learning in PBL and the students' perception of PBL (Goh, 2014; Yew & Yong, 2014). However, two studies addressed tutors' congruence and what good facilitators do in PBL (Goh, 2014; Yew & Schmidt, 2007). There are no studies investigating the role of facilitators in PBL on nursing students in Singapore. However, there is just one study (Goh, 2014) on PBL facilitators in PBL in the School of Engineering at Republic Polytechnic. The current study, therefore, fills a gap in the literature.

### **Conceptual Framework**

PBL is aligned with the constructivist framework that views learning and teaching as the active and meaningful inquiry and knowledge-building for learners (Simone, 2009). It also fosters critical thinking and knowledge-based approaches

to problem-solving. English and Kisintas (2013) state that PBL is an inquiry approach that assists students to work on authentic real complex problems. The authentic, complex PBL cases stimulate the students to think critically in decision making by choosing appropriate solutions and reflecting on decisions (Applin et al., 2011, Carriger, 2015).

In PBL, facilitators prepare students to understand the issues in the problem case or case studies to learn how to apply principles to problems of different complexity. The lecturer or tutor guides the group members in identifying the problems in the case scenario in the initial phase of PBL.

According to constructivist theory, the learners construct their own knowledge through their interactions with other learners from their current knowledge, previous knowledge and experience (Kalpana, 2014). Learners actively participate in their learning by processing information and creating their own knowledge. They also used their previous knowledge and clinical experience to construct new knowledge.

According to Simone (2008), PBL helps students use inquiry and knowledge-based approaches when solving problems. PBL focuses on helping the students to work through authentic, complex problems or cases (Sproken-Smith, 2012). Walker et al. (2015) add that PBL focuses students on solving complex cases that simulate real-life decision-making in the classroom by considering multiple perspectives and assessing consequences by reflecting on their decisions.

Furthermore, PBL prepares the student to understand the problems in the case scenario to learn to apply their critical thinking skills in solving problems of varying complexity instead of just addressing easy problems (Salinitri et al., 2015). With the guidance of a facilitator, the students work in small groups to



identify the main issue in the case scenario, which is the initial phase in the problem-solving process (Yew & Schmidt, 2012).

PBL also requires the group members to identify learning issues and what needs to be learnt in solving the problems. The students engage in their groups by seeking information from many sources and justifying their decisions to choose a viable solution. These skills and processes are vital in helping the students to construct their knowledge.

The facilitator has a vital role in ensuring that groups work through their learning issues (Loyens et al., 2007). The students in their individual groups engage in questioning, discuss the issues, and consider various solutions to solve the problems with the lecturers' guidance. Thus, PBL allows the students to solve complex problems in the classroom and prepare them for their future learning.

The constructivist theory emphasises learning rather than instruction, whereby the students actively engage with the teacher and peers to construct knowledge. In constructivism, the learning environment is student-centred rather than teacher centred. Student-centred learning is a major element in constructivism. The learner is actively engaged in learning with their teachers or peers in constructing knowledge. Also, constructivism requires a learning environment that is conducive and learner-centred.

### **Aims of the Study**

This study explores nursing lecturers' role and practice in facilitating PBL in the classroom to second-year nursing students. It also aims to conduct an in-depth study to identify the specific challenges faced by nursing lecturers and issues in facilitating the nursing science module.

The specific objectives are:

1. To assess what facilitators understand by PBL in Singapore.
2. To explore the practice of nursing lecturers in facilitating PBL in a classroom.
3. To understand the challenges and problems faced by facilitators of PBL within Singapore
4. To identify the strategies used by nursing lecturers in delivering PBL.

### **The Research Questions**

#### ***Research Question 1: What do facilitators understand by PBL in Singapore?***

In facilitating PBL, the tutors should have adequate knowledge about the complex problems given to the students to guide them in their learning process. According to Hussain et al. (2007), tutors need both expert knowledge and expertise in facilitating PBL to the students. Without adequate knowledge, the facilitator cannot effectively guide the students (Hmelo-Silver & Barrows, 2006; Hussain et al., 2007).

#### ***Research Question 2: How do the nursing lecturers facilitate PBL in the classroom?***

In PBL, nursing lecturers are expected to guide students' learning and help them solve problems. The lecturers should scaffold the students in their learning process until they can be left independently to work independently or in a group. The lecturer's other role is to ensure that the group is learning collaboratively and resolving any issues facing the students.

***Research Question 3: What challenges and problems do nursing lecturers face in facilitating PBL?***

The nursing lecturers face many challenges and problems in facilitating PBL, including the transition from didactic approaches to facilitation. One of the major aims of his research is to explore these challenges and problems. The outcomes should also help the nursing lecturers to address their problems and improve their PBL facilitation skills, thus improve students' learning outcomes.

***Research Question 4: What strategies are used to facilitate PBL effectively?***

The research explores the strategies used by the facilitators in the study context. The issues or problems identified should assist the lecturers in planning and implementing strategies for effective facilitation of PBL, leading to improved student learning outcomes.

**The Anticipated Contribution of This Study**

The study's findings will contribute to the existing knowledge in the field of PBL. There is limited literature on facilitators' roles in PBL (Mete & Yildirim Sari, 2008; Moore, 2009). Moreover, most previous studies conducted related to PBL were designed to examine the effectiveness of PBL (Savin-Baden, 2001; Yew & Goh, 2016). Notably, no research has investigated the role of the lecturers in PBL within Singapore. This study aims to develop knowledge to inform the facilitators' role in PBL. Specifically, it is intended to assist the nurse educators and nursing lecturers in their roles and practice in PBL to improve the students' learning.

**Operational Terms*****Problem-Based Learning***

Problem-based learning (PBL) is an instructional learner-centred approach that empowers learners to integrate theory and apply knowledge and skills. In PBL, the students work in a group to solve authentic problems by developing a viable solution.

***Constructivism***

Constructivism is an approach to teaching and learning where students use cognition to construct knowledge. They construct their own understanding and knowledge of the world through experiencing things and reflecting on those experiences.

***Scaffolding***

Scaffolding occurs when the teacher guides the students closely and when the students are independent---the students are left on their own in learning.

**Overview**

Lecturers play an important role in PBL. The changes in the Singapore education system and pedagogy can impact students' learning outcomes. Therefore, to ensure that lecturers facilitate PBL effectively, we need to know the facilitators' role and the challenges and issues they are experiencing.

This is to implement appropriate strategies to improve students' learning outcome. The study should increase awareness of the lecturers' PBL practices and their problems in facilitating PBL. The study's aims and research questions are intended to explore the facilitators' roles and the strategies implemented in guiding

the students in PBL. The research outcomes should help the lecturers improve their facilitation skills to promote student learning.

## **Chapter Two: Literature Review**

### **Introduction**

This chapter builds on chapter one by critically discussing some of the main characteristics associated with PBL, such as its origins and underpinning learning theories. The chapter will also explore the extant literature on group formation and how students work in groups, and the potential issues for students when working in groups. It will also explore extant research on group facilitation and the facilitators' power and authority to guide the students.

### **Search Strategy**

A systematic method was used to review the literature, which involved electronic and manual searches to fully understand the topics underpinning the study. Although some papers emanated from Singapore, the bulk of the empirical literature related to the research questions, were based on western contexts. Some of the literature, including some discussion papers, were from unpublished sources. In nursing education, literature exploring the roles of facilitators in PBL is limited (Haith-Cooper, 2000; Moore, 2009; Turan et al., 2009).

The literature on PBL is extensive and continues to expand. However, most of the PBL literature published before 1990 is descriptive, rather than research-based, and is mostly grounded in medical education (Neville, 2009). Studies from other disciplines, such as engineering, dentistry, physiotherapy, and management, appeared from the 1990s onwards (Boud & Feletti, 2013; Solomon, 2005). However, there is still a relative dearth of literature that concentrates on facilitation, particularly on the facilitator's role and practice.

Despite the facilitator's role being considered complex, it is taken for granted, especially concerning independent learning (Watkins, 2000). Within

nursing education, studies on the tutor's role in PBL have been undertaken in Australia (Creedy et al., 1992) and the United Kingdom (Haith-Cooper, 2000; Moore, 2009). No such studies have been undertaken in the Singaporean context, underlining the significance of the current research.

### ***Database Searches***

A wide range of electronic databases was used within the University of Nottingham library database as presented in Table 2.1.

**Table 2.1**

#### *Electronic Databases Accessed*

|   |
|---|
| Science Direct                          |
| Medline                                 |
| Educational Resource Information (ERIC) |
| Taylor and Francis                      |
| Routledge Wiley.                        |
| BMC Medical Education                   |
| Google Scholar                          |
| CINNHL                                  |

### ***Keywords Used in the Literature Search***

Keywords were used with Boolean operators to search for literature to ensure that it was undertaken systematically (see Table 2.2).

**Table 2.2***Keywords used in Literature Search*

|                        |
|------------------------|
| Problem-based learning |
| Constructivism         |
| Self-directed learning |
| Facilitator            |
| Learning               |
| Nursing students       |
| Motivation             |
| Small group learning   |
| Critical thinking      |
| Culture                |
| Pedagogy               |
| Learning theories      |

***Inclusion and Exclusion Criteria***

The inclusion and exclusion criteria used to search the literature are shown in Table 2.3.



**Table 2.3***Inclusion and Exclusion Criteria*

|                          |  |
|--------------------------|--|
| Inclusion Criteria:      |  |
| <input type="checkbox"/> | Peer reviewed primary research related to the topic            |
| <input type="checkbox"/> | Unpublished doctoral theses related to the topic Editorial     |
| <input type="checkbox"/> | Papers directly related to the topic                           |
| <input type="checkbox"/> | — — — — —  |
| Exclusion Criteria:      |  |
| <input type="checkbox"/> | Primary research not directly related to the topic             |
| <input type="checkbox"/> | Unpublished doctoral thesis not related to the topic Editorial |
| <input type="checkbox"/> | Papers which are not directly related to the topic             |

As PBL started in the 1960s, papers published from that time were deemed relevant and subsequently accessed using the criteria identified in Table 2.3. According to Greenhalgh and Peacock (2005), electronic searches of electronic databases can produce limited results. Hence, they advocate using “snowball sampling.” Some literature related to the research aims and questions were obtained by searching manually using journals and books.

**Defining Problem-based Learning**

PBL is a learner-centred approach to teaching and learning in which the teacher gives students problems for analysis (Gewurtz, et al 2016; Seibert, 2020; Zhou, 2018). According to Miner-Romanoff et al. (2019), the problem in PBL activity should be a work-related issue or a situation that includes unclear answers such as ill-structured case studies given to the students to stimulate their thinking. Students learn in small groups and work collaboratively and are guided by the

teacher (Caesar et al., 2016).

According to Barrow (1996) there are six characteristics of PBL, which are:

1. Learning is student-centred
2. Real-life or ill-structured problems given at the starting point of learning
3. Self-directed learning
4. Learning is in small groups
5. The tutor guides the students in learning
6. Skills and knowledge required to solve the problems depending on the context.

## **Learning Theories**

There are many definitions of learning (Schunk, 2012). According to Roger and Harrods (2005), learning is a process where there is an interaction between the learner, the context and the kind of learning assignment or task involved. Knowles (1984) defined learning as a process where there is a change in behaviour. There are three learning stages: task-related activities, personal activities, and conscientisation (Freire & Macedo, 2000).

Several learning theories have been developed to assist students in learning. The learning theorists are categorised as behaviourist, cognitivist, social learning and humanistic learning.

### ***Behaviourist learning theory***

Behaviourist theories were developed in the 20th century through the work of Pavlov (1927), Skinner (1938), Thorndike (1931) and Watson (1930). Skinner's approach was to investigate how learning occurred by observing individuals' behaviour and how they adapted to the behaviour to survive. Steward (2012) argued

that behaviourist theory focused on the change of behaviour but did not consider the individuals. In stimulus response theory, behaviourists argue that learning is the product of the stimulus and the response. Pavlov (1927) approached learning as respondent conditioning and Skinner (1938) as operant conditioning.

In behaviourist learning theory, the stimulus for learning is selected by the teacher, and the individual's responses are reinforced. Learning occurs when the responses are associated with reinforcement (Alqurashi, 2018). Alqurashi (2018) states that the teacher's role in behaviourism theory is to form the learner's behaviour by positive or negative reinforcement. Reinforcement is used to increase the probability of eliciting a specific behaviour by delivering a stimulus immediately after a response/behaviour. For example, if the student can answer a question correctly, the teacher will praise the student.

Behaviourist learning theory is teacher-centred, where the teacher is responsible for imparting knowledge to the students (Stewart, 2012). According to Taylor and Hamdy (2013) that this theory focuses on a stimulus in the environment which leads to a change in behaviour. Taylor and Hamdy (2013) states that applying behaviourist learning theory usually results in learning that promotes standardisation of the outcome. Behaviourist theories are commonly used in combination with cognitive theories in education and healthcare, which links to problem-based learning.

There are implications for nursing education, especially for students' learning. This theory is simple to use as it encourages clear objectives of the stimulus environment and the learner's response, and the effects of reinforcement on people's actions. However, behaviourism did not consider the aspect of mental processes or understanding and therefore, does not prepare students for critical thinking and problem-solving skills. This is important for nursing students as they

have to use critical thinking skills to make clinical decisions for the care of the patients.

The teacher plays an active role in teaching by creating a conducive learning environment, using positive and negative reinforcement to mould the learner's behaviour (Arghode et al., 2017; Clark, 2018). For example, in learning psychomotor skills, students must follow the steps that are tabulated in the nursing procedure manual. Secondly, behaviourist theory emphasises intrinsic rewards and incentives, which encourages students to be materialistic instead of enjoying learning. According to Pritchard (2014), that reward can evoke the feeling of unfairness or competition among students, who may become distracted from completing their assignments or learning new material. Behaviourist learning theory does not encourage students to use their critical thinking skills.

### ***Cognitive learning theory***

Cognitive learning theories comprise various approaches: information processing, human development, social cognition and constructivist (Aliakbari et al., 2015). According to Stewart (2012) cognitive theory focuses on the role of mental activities, which include actions such as thinking, remembering, perceiving, interpreting, reasoning and solving of problems. Bastable (2019) critiqued that, unlike behavioural theory, cognitive theory does not consider humans to respond to stimuli but rather that individuals can think rationally and learn by active participation.

Cognitive theories emphasise content, learner interactions, and the learner's ability to synthesise information based on students' prior knowledge and experiences (Khalil & Elkhider, 2016). Bastable (2019) mentioned that in cognitive learning perspective, learning is achieved through students' cognition, which

includes thinking skills, memory and processing skills to analyse information. Bandura (2011) suggests that in cognitive theories, learners are accountable for their own learning and are independent learners. They analyse and interpret information based on their own knowledge to form new knowledge (Bandura, 2011). In cognitive learning theory, the teacher's role is to organise the contents so that learners enhance their cognitive capacities (Kim, 2014).

In nursing education, the cognitive theory emphasises making instruction meaningful and assisting learners in organising and relating information to existing knowledge. Cognitive theory is well suited to problem-solving, especially with PBL where concepts are complex. It must be linked to prior knowledge, which helps the learner develop critical thinking skills. Nursing itself is complex, and teachers can provide detailed explanations and discussions to assist learners in processing new information. For example, nurse educators use mnemonics to teach cardiopulmonary resuscitation (CPR). Furthermore, they use concept mapping to help learners know how new information is connected to their current understanding (Clark, 2018).

### ***Constructivist learning theory***

Constructivist learning theory is rooted in constructivist psychology, which emphasises that humans construct knowledge from their experience (Bada, 2015). In this theory, learners are active and do not passively receive information. Instead, they process or construct it in their own way. The teacher, therefore, needs to know more and have knowledge on how students think and learn.

In Barrows' (2000) model of PBL, students are given authentic problems to solve and stimulate their thinking. The problems posed to students are clinical problems related to patients' symptoms to foster application of prior knowledge,

active engagement and collaborative learning (Seibert, 2020). In PBL, students work in groups whereby they acquire new knowledge built on existing knowledge and experiences to solve ill-structured problems (Yew & Schmidt, 2007, 2012; Zhou, 2018).

In constructivism, knowledge can be both personally constructed and socially mediated. Constructivist theory is influenced by two well-known psychologists, Piaget and Vygotsky. Piaget stressed the cognitive aspect of learning in terms of learners' developmental stages, which depend on the age, biological development and intrinsic motivation (Schunk, 2008). Piaget (1962) is a famous cognitive theorist known for his work on studies on children's intelligence. Piaget believes that cognitive development occurs in four stages of child development: sensorimotor, preoperational, concrete operational and formal operational. This involves three principles: organisation, adaptation and equilibration.

Organisation involves the integration of knowledge to make sense of reality. Children create mental images by using their reflexes, senses and motor abilities. As the child grows older and acquires information, their schemes become more complex (Piaget, 1962).

In adaptation, the child is adjusting to new information that involves accommodation and assimilation. In accommodation, the child acquires new information based on the existing knowledge while in assimilation, the child uses existing information to acquire new information. Piaget believed that children have an inborn ability in adapting to their environment by taking in information and communicating with others.

Assimilation is the organisation of experience, which depends on an individual's own logical structure of understanding the meaning of the

environment (Fosnot, 1996). For learning to occur, a state of disequilibrium needs to occur to accommodate new learning.

Disequilibrium is a state where learning is facilitated, and as such, errors are perceived as a result of learners' conceptions. Learners should be encouraged to explore and generate many possibilities in a challenging environment and be creative in realistic, meaningful contexts (Fosnot, 1996). Tutors are encouraged to provide a conducive and relaxed learning environment for students to explore meaning through experimenting.

Vygotsky's theory focused on the learners' social interactions that emphasised zone of proximal development (ZPD). Vygotsky describes this as a level of understanding achieved when learning with an experience or expert peer or working together collaboratively with competent peers (Vygotsky, 1978). In ZPD, the learners are initially scaffolded until they become independent learners. In this context, scaffolding refers to providing a framework for the student to make associations and draw conclusions.

Furthermore, instructional scaffolding functions as "providing support, functioning as a tool, extending the learner, permitting the tasks not otherwise possible or use selectively as needed" (Schunk, 2008, p. 247). Constructivism can be applied in education, especially in PBL as reciprocal teaching where interactions and discussions occur between the teacher and the small group (Azer, 2009). Moreover, collaborative learning occurs between the students and the teacher as it encourages the learner to work together with their peers on their assigned work, thus learning from each other (Knight, 2016).

There are differences between Piaget's and Vygotsky's theories. Piaget's theory is based on the cognitive development of a child related to age and development of the learners. However, Vygotsky's constructivist theory

emphasises the learners' social interaction, which is not according to the individual's age (Pritchard, 2005). Piaget focused on the importance of perception based on his observations of children, while Vygotsky (1986) emphasised that guidance and social interactions are vital in learning.

According to Vygotsky (1978), social constructivist learning is situated in a social-cultural environment where the learner plays an active role in co-construction of new knowledge by interacting with others. In this learning environment, the learner is provided with an authentic activity that provides a learning experience that is as realistic as possible and includes the context and the task that learner performs in a safe environment. Vygotsky's social constructivism theory suggests that experienced teachers should communicate knowledge to those less experienced (via instructed learning), leading to higher mental functions such as problem-solving (Bentham, 2002).

Social constructivist teachers also encourage students to work with their peers to discuss issues and questions they must solve. With the support and guidance students acquire from their peers and teachers in the PBL learning process, they can confront real-life challenges. Moreover, the teachers, peers and others will assist students in their cognitive development. It emphasised the importance of students to work together as a team and work collaboratively in solving problems.

Vygotsky (1978) stressed the importance of the teacher in facilitating and directing the learning of students and providing scaffolding through language or other means to assist students in their learning process. In facilitating the students in PBL, the teacher can provide hard copies of instruction on how to solve the problems. The teacher should focus on learning and not on the performance of students. The relationship between students and teachers is built upon the idea of



guidance but not instruction.

### ***Humanistic learning theory***

Savin-Baden (2003) stated that the humanistic theory plays a role in PBL. This theory identified a hierarchy of needs ranging from biological and psychological needs, safety needs, sense of belonging, esteem needs and self-actualisation. In PBL, students' individual needs are recognised, respected and developed in the process. The nurse educator should have knowledge and understanding of the learning theories and be able to apply these theories into the learning process.

Rogers and Freiberg (1994) pointed out that emotions, feelings, and the individual's right to make decisions are important factors in humanistic theory. This can be applied in the classroom during PBL, especially through the nurse educator respecting the students' ideas and not making negative comments to avoid affecting students' esteem needs. Even if the students make some mistakes when answering the questions, the facilitators should acknowledge the students' contributions and guide them patiently.

Bastable et al. (2019) stated that the humanistic theory is compatible with nursing, which focuses on caring. In PBL, the facilitators ensure that the students are learning in a supportive and conducive learning environment whereby the students are not fearful to ask questions and are encouraged to clarify issues related to their learning.

Professional socialisation, self-actualisation, self-fulfilment, and self-concepts are affected by interpersonal relationships, interactions with others, and the nursing instructor's ability to meet the students' learning needs. Caring attitudes, demonstrated by an admired, respected instructor who acknowledges

students' strengths and weaknesses, are significant to students' lives and learning. Caring is as central to the teacher-student relationship as it is to nursing. Caring must be enacted for it to be experienced and learned. Munsinski (2007) supported that facilitators should be caring and kind to the students for them to learn.

### ***Situated learning theory***

Lave and Wenger's (1991) study of situated learning focuses on an apprenticeship model that states that learning occurs when students participate and interact with one another. In PBL, students learn in small groups where they interact with one another in working on the problems. Situated learning occurs where the learners work together in communities of practice, which is known as legitimate peripheral participation situations. In this learning theory perspective, students learn discourse, attitudes, values and practices. Lave and Wenger (1991) argue that "learners inevitably participate in communities of practitioners and, mastery of knowledge and skills requires newcomers to move toward full participation in the socio-cultural practices of a community" (p. 29).

In the community's social practice, the classroom's learning culture changes from knowledge dispenser or gatherer to a learning community whereby teachers and learners work collaboratively to achieve learning goals. In PBL, students come from different backgrounds, experiences and expertise to share their knowledge. For example, in PBL, students engage and attempt knowledge building by working in small groups to problem-solve within a learning community. In PBL, students discuss the problems and find out the gaps in their knowledge in solving them. They are responsible as a group to identify the gaps. Then, they will individually identify suitable resources from the library, books, journals and websites. In the PBL model, students are expected to be self-directed and independent learners

(Soliman & Al-Shaikh, 2015).

Metacognition is defined as higher-order thinking, which involves using cognitive processes in the engagement of learning. The simplest definition of metacognition is "thinking about thinking" (Flavell, 1979, p. 906). It involves reflection and analysis of how to draw conclusions and apply it to practice what has been learnt. According to Downing (2010), students need to use the cognitive process to solve problems effectively. This is by remembering the concepts, learning and applying them when solving problems.

According to Biggs (1999), education aims to ensure that students' knowledge is developed to assist them in integrating academic knowledge (declarative knowledge), skills required for the profession (procedural knowledge), and the context for using them to solve problems (conditional knowledge). Hmelo-Silver (2004) argued that PBL needs a different way of using knowledge to solve problems using "functioning" knowledge that involves the metacognitive process. The metacognitive process in PBL involves students assessing their knowledge of what they need to learn and evaluating the reasons for their achievement and the actions taken when their learning goals are not achieved. Barrows (2000) pointed out that this approach is consistent with the techniques used in problem-solving.

## **Andragogy**

Andragogy was discovered in Germany 150 years ago in the late 1920s by Eduard Lindeman (Davenport and Davenport 1985; Knowles, 1984). Knowles (1984, p. 351) defines andragogy as the "art and science of helping adults learn based on certain crucial assumptions about the differences between children and adults as learners." Knowles (1984) further emphasised that, in andragogy, adults have unique and distinctive characteristics as learners. Specifically, in andragogy,

adults have different learning characteristics and needs compared to children. Therefore, adult learning method must be different from the pedagogical methods used in teaching children.

In andragogy, learners use the techniques of acquiring knowledge based on problem focus and mutual strategies compared to traditional lecturing that focuses on a didactic model. Pedagogy emphasises teacher-directed learning compared to andragogy, where students are actively involved in learning. In andragogy, there are active interactions between the teacher and the students, and the students are self-directed in their learning (Bright & Mahdi, 2010).

In PBL, students are recognised as adult learners. Matheson and Hass (2010) emphasised a close link between PBL processes and the principles of adult learning theory or andragogy.

According to Knowles et, al (1998) there are six characteristics of an adult learner:

**The need to know.** The first assumption of andragogy is that adults need to know the value and utility of the material before they embark on the course.

**The learners' self-concept.** The second assumption of andragogy is that the self-concept of the adult learner is self-directing and autonomous. Adults also are responsible and have autonomy in the learning process.

**The role of experience.** The third assumption of andragogy focuses on the role of the learner's previous experience. Adults need to know the purpose of learning before they learn. They set their goals very clearly and plan the activity in which they will be involved.

**They have vast experience and knowledge.** An adult who has experience will be able to use their experiences to construct knowledge.

**Students are interested in learning to solve real-life problems.**

Learning needs to be relevant. If students understand the relevance of learning both in the present and future contexts, they will participate actively in learning.

**Motivated learner.** An adult learner is a voluntary learner, and their motivation to learn is related to their immediate needs. If learning is imposed, an adult learner will not benefit. However, adults respond more to intrinsic than to extrinsic motivation.

The PBL learning process uses this innate drive of adult learners whereby the students are involved emotionally and socially, which Ronis (2008) labelled as the “brain-compatible style” of learning. Matheson and Hass (2010) stated that, when adult learners face difficult problems, they search for knowledge and skills knowing that the result helps them be competent practitioners. Matheson and Hass (2010) point out that when students are faced with complex problems which require them to develop knowledge, skills and strategies, learning becomes relevant and meaningful.

According to Knowles (1995), the andragogical design process has eight steps that can enhance students’ learning:

1. Preparing learners for the programme
2. Establishing a conducive learning environment
3. Involving learners in diagnosing their learning needs
4. Involving learners in planning
5. Involving learners in setting their learning objectives
6. Designing the learning plan
7. Carrying out the lesson plan
8. Evaluating learning outcomes

Knowles (1995) states that the facilitator of adult learning should create a conducive learning environment for learners to learn. Merriam and Caffarella

(1999) add that in andragogy, the learner participates actively in the learning process and that each learner has a learning contract to carry out the process.

The roles of educators in andragogy are challenging (Hussain, 2013). According to Hussain (2013), the educator's role in andragogical approach is that of a facilitator and mentor, with the educator supporting the learner to develop self-directed learning. Similarly, Abraham and Komatil (2017) emphasise that the teacher's role in andragogy is to facilitate learning and support the learner in self-directed learning. McAuliffe et al. (2008) mention that in andragogy, the facilitator guides the students to find information, relate the information to the learner's experience and focus in problem-solving within the real world. This is similar to PBL, where the teacher facilitates the students in the learning process by identifying problems from a given real-life case scenario.

Blaschke (2012) shares that the facilitator establishes objectives and curricula based on the learners' input and guides the students, while the responsibility for learning lies with the learner, which is consistent with PBL. Moreover, in andragogy, students are self-directed in learning which is also one of the principles of PBL.

In summary, andragogy has been applied in a wide variety of settings and educational institutions. The concept of self-directed learning in andragogy has been successfully implemented. Of all the strategies implemented in andragogy, a conducive and supportive learning environment is essential in learning.

### ***Heutagogy***

Heutagogy (based on the Greek for self) is defined as the study of self-determined learning (Hase & Kenyon, 2001). Hase and Kenyon (2001) described heutagogy as an educational approach that was first used in education. Blaschke

(2012) stated that heutagogy allows students to participate actively in the learning process to gain knowledge, as opposed to pedagogy, where the students are passive recipients. Educators need to consider the learners' ability and their activity in the classroom, such as the ability to reflect knowledge transfer and the communication process. In a heutagogy approach, the learners are required to set their own goals, reflect, and evaluate their learning experiences (Kenyon and Hase, 2010).

Hase and Kenyon (2000) added that the central concept of heutagogy is that of double-loop learning and self-reflection. In double-loop learning, the learner solves the problem and considers the resulting actions and outcomes. Furthermore, the learner reflects on the problem-solving process and its effects on the learner's own beliefs and actions.

Halupa (2017) mentioned that in heutagogy, students share their knowledge with their peers and teachers rather than hoarding it. The emphasis in heutagogy is on students' self-directed learning, which is based on andragogy principles. The learners have power and autonomy over their learning. Abraham and Kommatil (2017), and Blaschke and Hase (2019) also emphasised that in heutagogy, the learner has power over their learning. Lecturers need to entrust the students with skills of the process of learning and let them learn independently which is similar to PBL.

In PBL, students are given case scenarios and they work in groups to the problems. After the discussions, they work independently and are self-directed learners. The students have the power and autonomy over their learning which is similar to heutagogy.

In heutagogy, students choose their own learning strategies to give the students a sense of autonomy, or independence from the teacher's control, which

increases their cognitive engagement in the topic. Schmidt et al. (2011) stated that in PBL, students have the freedom to choose their own learning strategies, learning resources, either collaboratively or individually, an approach which is similar to heutagogy.

Heutagogy emphasises nurturing learners' capability. Capability is defined by Hase and Kenyon (2013) as the ability of the learners to use competence in unique and unpredictable situations. In heutagogy, students are expected to use in-depth cognition whereby they go beyond being competent in their self-efficiency, adaptability and problem-solving (Hase and Kenyon 2013).

According to Hase and Kenyon (2007), heutagogy applies a holistic approach to developing learner capabilities whereby they participate actively in their own learning that occurs due to personal experiences. As in the andragogical approach, in heutagogy, the facilitator's role is to facilitate learning and support learners to become more self-directed, which is similar to PBL. The teacher establishes the course content and learning objectives, whereas the student or learner decides how to learn the content (Blashke, 2012).

Abraham and Kommatil (2017), and Blashke (2012), critiqued that the andragogical approach may not empower learners prepare for life-long learning. Abraham and Kommatil (2017) mentioned that the andragogical approach has been criticised because training learners aims mainly to achieve milestones but not excellence. Hase and Kenyon (2007) add that competencies cannot thrive in the workplace as healthcare professionals work in a complex context.

When the learners experience maturity in their cognitive thinking during their training, they are expected not to depend on the teacher but to accomplish more autonomy in their learning (Abraham & Kommatil, 2017). Learners are also expected to know how to learn and reflect on their learning before self-efficacy.



Blaschke (2012) supported that both competencies and capabilities are needed to train learners to assist them in working effectively in the real world.

Kenyon and Hase (2010) suggested that in heutagogy, the facilitators should involve learners in designing their own learning contract or learner-generated contexts. Abraham and Kommatil (2017) stated that in heutagogy, the teacher involves the learners to set their own goals, reflect on their learning experience and make necessary changes to revise their learning experience. Salinitri et. al (2015) emphasised that a PBL facilitator's cardinal role is to develop learners' capability.

Heutagogy has been used for adult learners in assisting the students in learning independently. A heutagogical learning environment facilitates the development of both learners' competencies and capabilities for them to learn. Self-directed learning and self-efficacy motivate students to learn independently and participate actively in learning.

### **PBL Principles**

Barrows (2000) stated that there were three principles of PBL. The principles of PBL are that students must understand bioscience principles, self-directed learning and learning in groups.

### ***Understanding Bioscience Principles***

According to Barrows (2000), the first principle of the PBL model within medical education is for students to understand bioscience principles. This will help the students apply bioscience knowledge to patients' signs and symptoms to make an accurate diagnosis. This can also be applied to the nursing students in that they need knowledge to develop their clinical reasoning skills if they are to effectively solve patients' complex problems. Clinical reasoning involves

generating possible hypotheses, gathering data by history taking, health assessment and assessing the patients' history, analysing and synthesising data to make a nursing diagnosis to plan the patient's treatment (Barrows, 1986).

### ***Self-directed Learning***

The second principle of PBL is self-directed learning. This is vital as knowledge in both medicine and nursing is continually evolving (Barrows 2000). Barrows described self-directed learning as skills that define learning needs, evaluate the applicability of the resources, recording the information for future use and application of what has been learned. Knowles (1975) defined self-directed as when the individual takes initiatives, with or without others' help, to assess their learning needs. Engaging students in the process will cause students to learn more quickly and take responsibility for their learning, developing skills and insights into their learning processes (Barrett & Moore, 2011).

Kocaman, et al (2009) undertook a longitudinal study to investigate undergraduate student nurses' readiness to undertake self-directed learning. The findings revealed that readiness to engage in self-directed learning increased with the time in the programme, the level of tutor support and clear expectations of students' perceptions of self-directedness.

In PBL, students' self-directed learning skills should be developed to be able to make decisions and learn independently. Students learn in their groups, set their learning objectives, and discuss what they still need to learn (Barrows & Tamblyn, 1980). Students are given time to find library resources such as books, websites and journals necessary for learning. They return to their group and discuss what they have researched and evaluate their learning.

Learning environments that foster self-directed learning in PBL promote a deep level of processing due to learners having the freedom to choose what they want to learn and how they learn it (Candy, 1991). Learner control is, therefore, essential to have an effective learning strategy.

In self-directed learning, students are motivated to learn when they are given problems to solve. There are two aspects of motivation, extrinsic and intrinsic (Deci et al., 2000). In extrinsic motivation, students are driven to work hard to achieve good results in their PBL assessment. According to Barrows (1980), students should be given learning opportunities to motivate them to develop self-directed learning skills.

Harun et al. (2012) argue that focusing on students' motivational effect in PBL during group discussion and realistic case studies stimulates students' intrinsic interest in the subject matters. Students in their own groups discuss and analyse problems with their peers and become engaged as they discover that they did not fully understand the subject during the discussion (Harun et al., 2012). In other words, the discussions stimulate their thinking, and they are motivated to learn.

Norman and Schmidt (1992, p. 557) suggested that PBL "enhances intrinsic interest in the subject matter" and self-directed learning. Similarly, Bandura (1977) stated that students are more intrinsically motivated when the problems given to them are concrete and can solve the problems using their knowledge and are under the students' control.

Self-directed learning is difficult for students to adopt especially when they have not been exposed to learning independently during their secondary school days. Failure to guide the students adequately can be a major source of problems. Evenson and Hmelo (2000) stated that students experience self-directed learning issues, such as conflicts among group members during their discussion. Moreover,

Savin-Baden (2003, p. 29) pointed out that "individual students came in with different stages of readiness for self-directed learning," giving rise to some disagreements on learning issues, finding resources, and meeting the discussion deadlines. Indeed, the facilitators should provide students with adequate time to prepare self-directed learning to avoid conflicts as self-directed learning needs guidance and nurturing initially, especially students who are new to PBL (Evenson & Hmelo 2000).

Another issue is whether the facilitators are ready to let go and let the students learn independently. According to Savin-Baden and Major (2004, p. 14), "learning should empower students to become free, mature and authentic self." Therefore, students should be encouraged to learn independently and take the initiative to learn and set their own goals, choosing learning strategies related to the problems and evaluating their learning outcomes.

In self-directed learning, students were unsure whether they had covered the course contents expected by the tutors. The tutors were also fearful that the students could not learn independently. Therefore, in some cases, the students were guided to find resources and provided with the main literature resources (Loyens et al., 2007). Mifflin et al. (2000) and Hung (2011) suggested that guidance should be provided for the teachers and the students to assist them in PBL.

### ***Group Work***

Jacques (2000) highlighted how groups work. There are three issues that the group must address, namely content, process and structure. Content refers to the task or function where the individual members are given responsibilities and a formal or informal job. Jacques (2000) further pointed out that process is the

group dynamics and how the group performs the work. In group dynamics, group harmony and interactions are essential. The learners need to have good interpersonal skills for them to relate with each other and become an effective team.

Structure relates to how the group organises its activities. In the group process, every student in the group should participate actively and learn from each other. They should work cooperatively and help each other and respect their individual differences.

Elwyn et al (2001) defined the term process where the group members must participate in their group work, assign specific tasks and reflect. Every group member should participate actively to focus the group's attention. They also learn from each other's experience.

In PBL, one of the group members is assigned as a leader. The leader's role is to ensure that every member of the group contributes actively and assign each member a task. The leader also nominates another member as a scribe.

### **PBL Process**

Many medical schools and nursing schools worldwide have implemented PBL in their curricula. Hak and Maguire (2000) argue that little research has been undertaken on PBL practice and the student learning process. Hak and Maguire (2000) also suggest that the researchers need to find out what happens in the PBL process, including how facilitation takes place.

Several studies have been conducted on the process of PBL (Hmelo-Silver & Barrows, 2006; Visschers-Pleijers et al., 2004). Visschers-Pleijers et al (2004) examined students' interactions in the analysis of the problem and the phases of the PBL process. The findings showed that elaboration and construction of

knowledge were more frequent during PBL phases. However, the explanation of knowledge in detail was less frequent than students' construction during the PBL process.

Hmelo-Silver and Barrows (2006) examined the way students construct knowledge in PBL tutorials. The interactions between the facilitators and students were observed to assess how both groups collaborated and worked together to construct knowledge. The expert facilitator used open-ended metacognitive questions with the student to facilitate discussion

Similarly, Khoo (2003) found that Asian students are rather passive and quiet in the classroom. This may be due to their cultural background as they were brought up to respect the elders without questioning their authority. Khoo (2003) further pointed out that,

Asian students are enculturated from a young age not to be outspoken in front of any authoritative figures. They, therefore, feel extreme discomfort at any perception of confrontation with the authority figure of the teacher as they "fear" loss of face when they did not answer the questions correctly (p. 402).

The tutor is responsible for the group process and is expected to guide the students and be a role model to the students. The tutor should respect the students' views or suggestions and maintain good relationship. Similarly, Stoddard & Borges (2015) stated that the tutor is responsible to create an optimal learning environment for students' learning and guide them in learning.

### **The Lecturer Knowledge on PBL**

PBL is a demanding learning method for students, especially in the early stages of nursing. Therefore, students are facilitated in the learning process by a

tutor or a lecturer (Wang et al., 2016). The facilitator is an expert learner who models good metacognitive strategies and thinking rather than provide or disseminate content knowledge (Hmelo-Sliver, 2004).

Lecturers facilitating PBL need to have basic knowledge and skills of the principles of teaching and learning of young adults (Moust, 2010). Furthermore, they should know the curriculum, assessment, subject, and content they are teaching, pedagogical knowledge and clinical knowledge (Al-Sheik et al. 2017). Al-Sheik et al. (2017) emphasised that this knowledge can also assist the lecturers in developing curriculum and assessment.

### ***Implementation of PBL***

As facilitators, the lecturer must know the PBL process (Hmelo-Silver & Barrows, 2006; Schmidt et al., 2011). The lecturer has to guide the students in the PBL process rather than giving information (Dole et al., 2016). According to Tan (2003), without adequate knowledge of the PBL process, the lecturers will not effectively guide the students on the right track. In the group facilitation process in PBL, the lecturer should know the students' background and educational background to ensure that they can pitch their teaching according to the students' knowledge.

In facilitating the students in PBL, the lecturer should guide the students to ensure that the students are on the right track. Moreover, the facilitator has to trigger students' metacognitive thinking. In an empirical review, Masek and Yamin (2011) suggested that several critical elements have to be considered, such as a well-designed problem-based learning curriculum and the facilitator's role is to stimulate the students' critical thinking skills. Hung (2011) emphasised that self-directed learning is another essential element of PBL. The lecturer's role is to

model problem-solving and reasoning processes that may be difficult for the students.

### ***Pedagogical content knowledge***

Pedagogical content knowledge is another crucial aspect that will help the lecturer facilitate PBL (Savin-Baden, 2013). Savin-Baden (2013) states that pedagogical and subject knowledge are evident, while pedagogical content knowledge draws upon a specific subject's knowledge. Shulman (1988) adds that pedagogical content knowledge includes an understanding of what makes the topic easy or difficult and depends on the students' conceptions or preconceptions that they bring to their learning of frequently taught topics. Pedagogical content knowledge may draw knowledge from other disciplines. For example, in nursing, the lecturer can use psychology to manage the patient who is feeling stressed due to the disease process.

The other aspects of knowledge that lecturers should have is content knowledge. Without content knowledge, the lecturer cannot follow the students' groups discussions during the analysis and synthesis stage (Moust, 2010). Moreover, without content knowledge, the lecturer will not guide the students on the right track. Moust (2010) pointed out that subject content knowledge is essential for effective performance as a lecturer.

There are many debates among researchers on content expert tutor in PBL (Chng et al., 2011; Dahlgren et al., 1998; Moore, 2009; Woltering et al., 2009; Yew & Goh, 2016). Studies on facilitators having content expertise by Schmidt and Moust (1997) found that content expert tutors could enhance the student learning process. Similarly, Schmidt (1983) found that content expert tutors could apply more process-effective behaviours, such as asking questions and seeking clarifications.



### ***Content expert or non-content expert facilitators***

Several studies have been conducted on content expert and non-content expert PBL facilitators (Ates & Eryilmaz, 2010; Gilkison, 2003; Schmidt et al., 1993; Yew & Goh, 2016). These studies indicate that facilitators' adaptation to problem-based learning, content expertise, and quality of the problems, were the main factors affecting the students' learning during tutorials.

Ates and Eryilmaz (2010) conducted qualitative research using a case study design to explore factors that affect nursing tutors' performance during PBL. The study was conducted at Dokuz Eylul University in 2006–2007. Four tutors and 14 students participated in the study. The data were obtained using interviews and audiotaping PBL sessions. The researchers found that the tutors' level of adaptation and content expertise affected the tutors' performance in PBL. The students preferred content expert tutors who have expert knowledge and experience and can guide them in PBL. Additionally, the tutors gave the students feedback regarding their learning process (Ates & Eryilmaz, 2010).

This view was also supported by Schmidt et al. (1993), who researched the impact of different levels of facilitators' subject matter expertise on the performance of students in PBL. They found that the students guided by the subject expertise spent more time on self-directed learning and achieved a better outcome than those guided by a non-expert facilitator. Furthermore, they found that the effect of subject expert facilitator on the students' achievement was strongest in the first-year students. This was due to the novice students who depended on their facilitator's expertise compared to advanced students. However, there was no difference in student performances guided by content expert facilitators compared to non-experts in studies done by Schmidt et al, (1993) and Schmidt & Moust (1995).

Gilkison (2003) explored the approach used by a PBL facilitator to facilitate learning at the University of Liverpool, Faculty of Medicine. The study aimed to discuss different methods used by the PBL tutors and find out whether there were any differences between PBL conducted by the medical personnel and the facilitator with humanity backgrounds. The participants included one facilitator with a medical background and the other participant was a facilitator with a humanity background. The data were obtained through observation and audiotaping of PBL Sessions 2 and 3. Students and the facilitators were also interviewed. Gilkison (2003) pointed out that the students appreciated the facilitators' contributions in their learning process even though there were individual differences. This was partly due to questions raised in the debate among researchers on tutor expertise in PBL. Although the report of this research was descriptive, the study results showed that the tutors' behaviours were complex (Gilkison, 2003). Moreover, the findings showed that both tutors were able to stimulate the students' critical thinking. However, the content expert facilitator used her knowledge and metacognition but the facilitator from social sciences focused on the group process by asking the students questions. The students acknowledged the tutors' facilitating skills and the ability to achieve students' learning outcomes. It would have been better if the different contributions made by the tutors from different backgrounds were valued instead of comparing expert and non-experts because after graduating, the students would work in different disciplines such as surgical, medical, obstetrics or intensive care.

Schmidt et al. (1993) did a comparative study on facilitators using content experts and non-content experts. They found that content experts used their subject matter knowledge more frequently than the non-content expert tutors. Similarly, De Graves et al. (1998) investigated different intervention methods in

PBL between expert and non-expert tutors. They found that content expert tutors were involved in group discussion while non-content tutors evaluated the tutorial group process.

Barrows (1988) argued that, preferably, it would be best to have content expert as well as process expert tutors facilitating PBL:

Tutors should be experts in the subject matter they teach and they should be experts in facilitating students' learning as well as in guiding tutorial process. There is no question that the ideal situation is for the tutor to be expert both as tutor in the discipline being studied by students (Barrows, 1988, pp. 43–44).

However, if there is no content expert facilitator, the non-expert facilitator would be adequate (Barrows, 1988). Savin-Baden (2003, p. 27) described the role of the facilitator as “necessarily ambiguous because facilitation is not about procedures or rules but about creating different possibilities of learning particularly one that resist reductionist accounts and techniques for being”. Thus, a good facilitator is not only able to guide but also to help in in the classroom and able to respond to the need of the students. The facilitator has to tailor PBL according to the complexity of the case study, the type of students, and their learning needs.

In summary, the studies on the content expert and non-content expert tutors on students' achievement showed mixed results. Two studies on content-expert and non-content expert facilitators guiding students in PBL, by de Grave et al, (1990) and Schmidt et al. (1993), revealed no differences. However, there are different opinions of tutors in defining subject matter expertise.

### ***Pedagogical knowledge***

The pedagogical knowledge, using the theory of teaching and learning, is vital as this assist the lecturers in engaging the students in learning. Teachers'

pedagogical knowledge base refers to all the required cognitive knowledge for creating effective teaching and learning environments for the students (Guerriero, 2013). For example, using pedagogical learning theory such as cognitive theories, constructivist theories and Kolb's experiential learning theory in PBL helps the lecturers apply this knowledge to assist the students in learning. Constructivist learning theory postulates that knowledge acquisition is structured by experiences, and new experiences add or modify one's understanding (Pelech & Pieper, 2010). The lecturer must also have knowledge derived from their clinical experiences and practical experiences in the classroom in the application of PBL. The clinical experiences that the lecturers acquire help to guide the students by relating theory to practice to enhance students' understanding.

### **The Practice of Nursing Lecturers in Facilitating PBL in the Classroom**

The lecturer plays a vital role as a facilitator in the PBL learning process to improve students' learning outcomes (Cober et al., 2015). However, research has highlighted concern about the development they receive as a PBL tutor (Lyberg Åhlander, 2014). According to Cober, et al. (2015), the effectiveness of a facilitator role can impact the success of the teaching strategy and, therefore, the students' learning outcomes. Therefore, it is crucial that the lecturers' function in this learning process in a way that is effective for learning.

Many attempts have been made to address teachers' role in the PBL context (Savin Baden, 2003; Ertmer & Simons, 2006; Connolly & Silen, 2011; Li & Du, 2015). As PBL is widely conceived as a student-centred learning approach (Ali, 2019), which means PBL should be student-directed, PBL teachers should change their role from traditional instructors to facilitators. It also points to transforming

the teacher's role from traditional instructor to a facilitator (Barrows & Tamblyn, 1980; Li & Du, 2018).

There are many ways that nursing lecturers practise PBL in the classroom. This includes providing a conducive learning environment, facilitating and guiding the students in their learning process, scaffolding, working collaboratively with the students and giving feedback.

In PBL, the lecturer facilitates the students in the learning process. According to Hussain (2013), in PBL, the teacher's role is more of a facilitator who guides the students in learning than a sole information provider. The learners' motivation to learn is triggered through a case scenario. The step-wise learning process involved in identifying unfamiliar terms, formulating learning issues, generating hypotheses and deriving learning objectives, as a collective group effort, guided by a facilitator makes the relevance of meaningful learning to students.

### ***Providing a conducive learning environment***

Providing a conducive learning environment for students to learn in PBL is essential to ensure they are comfortable and have good learning outcomes (Murray-Harvey et al., 2013). There are various ways the lecturer can provide a conducive learning environment. The lecturer should ensure that the classroom is well lit, and the temperature of the room is about 24 Celsius. Tables and chairs should be arranged in a circle for smooth conversation flow among students (Che Ahmad et al., 2015). Moreover, this arrangement allows good eye contact between members of the group. In the group discussion, the seating arrangement is important to encourage communication. According to Elwyn et al. (2001), the environment where the group is meeting also affects the students' learning process and impacts facilitation.

### ***Guiding students***

Facilitating and guiding the students is another role of the lecturer in PBL. The lecturer's role in PBL is transformed from a provider of information to a facilitator of information. In PBL, the lecturer's role is to guide and facilitate the students' self-directed learning, coaching and facilitating to maximise their potential (Vithayaporn et al., 2019). The lecturer ensures that the students work collaboratively in their groups and participate actively in group discussions.

The main reason is that, in PBL, learning is a constructive social process (Li, 2013) in which students' learning process should be best facilitated only if teachers guide students in a proper manner. Li & Du (2013) argued that effective learning outcomes cannot be secured without the teacher or lecturer's presence. Therefore, a tutor or a lecturer needs to guide the students in PBL.

Hmelo-Silver and Barrows (2006) pointed out the importance of facilitation skills for all lecturers, regardless of their experience level. They stated that facilitators need skills such as supporting students' self-directed learning, questioning techniques, and supporting hypothesis generation. Young and Papinczak (2013) supported that lecturers need to focus on open-ended questions, involving synthesis, analysis, and evaluation to develop students' critical thinking skills. Similarly, Moust (2010) echoed that the lecturer's responsibilities are to ask probing questions, assist students in the clarification of doubts and, when the need arises, assist and guide the group processes.

Krischner et al. (2006) criticised the concept of tutors as facilitators and argued that it is in direct conflict with what is required to acquire knowledge. Similarly, Savin-Baden and Willkie (2004) pointed out that Barrows (1986) posited, "inadequate tutoring of PBL groups would affect the effectiveness of PBL

as a strategy" (p. 65). Furthermore, Savin-Baden (2003) stated that the teacher's competence in PBL is vital for the students to have good learning outcomes.

Many variables may affect the students' learning outcomes. The lecturer has to plan and prepare case scenarios according to the curriculum. The case scenario should be authentic and complex for the students to solve the problems using their critical thinking skills. The lecturers need to set clear objectives for the students for them to be on the right track (Bradshaw et al., 2019).

The lecturer should give the students autonomy to learn but guide them in the process of learning. In guiding the students, the lecturer should be patient and provide adequate, appropriate academic and environmental support. In academic support, the lecturer should ensure that the students can find reliable resources from the Internet and library (Bate et al., 2014).

Savin-Baden (2003) pointed out that good facilitators should not control students in their learning process; instead, they should offer adequate and appropriate academic and infrastructure support. The support could take various forms such as lectures, tutoring, consultation, instruction and academic resources (Schmidt & Moust, 2000, p. 47).

In addition to the basic agreement on PBL facilitator, there are many studies categorising PBL teachers' different roles. For instance, Dahlgren et al. (1998) note two different views on the PBL teachers' role through an empirical analysis: a supportive PBL teacher, who focuses on the group process and the students' learning activities, and a directive PBL teacher, who concerns more on their influence on teaching method and students.

Donnelly (2013) discusses the complexity of the PBL teacher's role and Lyberg-Åhlander et al. (2014) state that PBL facilitator should balance requirements from different sources. There are still theoretical disputes on issues

such as what could be counted as good PBL facilitators and how they develop. For instance, although PBL shifts the focus from the teacher to the student, Mascolo (2009) argues that positioning a PBL lecturer as a facilitator somehow weakens the function of the teacher and is thus detrimental for student learning. Major and Palmer (2006) note that the teacher's existing knowledge and the intervention from the institute influence the formulation of the facilitators' role to some extent. The lecturers who are new to teaching are likely to experience difficulties in acting as PBL facilitators (Spronken-Smith, 2012), partly because they are not familiar with the principles and the process of PBL.

### ***Scaffold students' learning***

In scaffolding, the students are guided initially by the lecturer by providing structure and slowly stimulating the integration of knowledge and application of knowledge. Many researchers debate how much guidance lecturers should give students in PBL (Kirschner et al., 2006; Simons & Klein, 2007). According to Kirschner et al. (2006) in PBL, students need minimal guidance than other instructional approaches that need close guidance. However, other researchers argued that PBL does provide extensive guidance and scaffolding to assist students in learning (Hmelo-Silver, 2007).

According to Tawfik and Kolodner (2016), in scaffolding, students are given resources such as books or computers to refer to when solving the problems. There are two types of scaffolding in PBL, hard and soft scaffolds. In soft scaffolding, the teacher guides the students in response to the learner needs. For example, the teacher or the lecturer is the soft scaffold.

On the other hand, Saye and Brush (2002) define hard scaffolds as static supports that can be developed when the learner has difficulties before they are



assigned a task. Examples of hard scaffolds are worksheets and computers. Process worksheets can assist the students in solving problems.

Simon and Klein (2007) studied the impact of scaffolding and students' achievement levels in PBL. The findings revealed that students who were given access to scaffolds performed better than students who were not given access to scaffolds. Choo et al. (2011) investigated the effects of worksheets as a scaffolding tool on students learning in a PBL environment on 241 polytechnic students. The researchers also obtained the students' perceptions of factors that impact their learning. The results revealed that the strongest factor perceived by students to impact their learning in a PBL environment is the tutor, followed by team and class dynamics. At the same time, the influence of the worksheet was rated lowest.

In scaffolding, interactions between the students and the lecturer involve asking questions and clarifications to ensure students are self-directed learners (Hmelo- Silver et al., 2019). In PBL, the lecturer should not transmit his expert knowledge to the students but should probe by asking them questions. In scaffolding the students in learning, the lecturer should guide and support the students and slowly let them learn independently (Hmelo- Silver et al., 2019). This is supported by Smith and Cook (2012), who say that implementing scaffolding in PBL helps the learner understand how the problem is structured and helps them solve the problems.

The facilitator has to be consistent in scaffolding the students in learning. Research suggests that effective facilitation can occur even when the facilitator rotates between teams with proper guidance. According to Scott (2017), the lecturer's effectiveness in facilitating PBL can be gauged by their use of question techniques to develop metacognitive and collaboration skills and by how well they encourage team members to contribute and share their knowledge (Hmelo-Silver

& Barrows, 2006). Moreover, the lecturers have to ensure a conducive learning environment whereby the students have ownership in learning and working together as a team.

### ***Relationships between the lecturer and students***

The facilitator is expected to use soft skills in motivating the students to learn. The lecturer's interpersonal skills in interacting with the students are important in guiding the student to learn. The lecturer should establish good rapport and develop teacher-student relationships, motivating students to learn (Li & Du, 2015).

Beser et al. (2004) suggested that frequent interactions between the teacher and the students help the students learn and promote individual responsibility. Similarly, Hwang and Kim (2006) and Chan (2014) reported that students interacted more often with the teacher in PBL than in a lecture teaching method.

McLean (2003) found that students needed a friendly lecturer who is supportive of students' learning. Bowman and Hughes (2005) stated that frequent communication between the facilitator and the students is encouraged to cause less anxiety to the students. Similarly, Bate et al. (2014) showed that students preferred lecturers who have an open mind and are positive and caring towards them. Hmelo-Silver and Barrows (2006) examined the way students construct knowledge in PBL tutorials. They observed the interactions between the facilitators and students to assess how both groups play a role in collaboration and working together to construct knowledge. The expert facilitator used open-ended metacognitive questions with the students to facilitate discussion.

### ***Managing group dynamics***

There are three main lecturer roles in group learning: managing group dynamics, activities and learning. The facilitator's role is to lead the group during facilitation, asking questions and facilitating learning. In managing the group dynamics, Tuckman's (1965) framework---forming, norming, performing---is recommended. During the forming stage, when the groups are meeting for the first time, the facilitator can introduce the task, the groups and the purpose. Tuckman model's next stage is "norming" whereby the group share their ideas, thoughts and beliefs to develop shared norms. The facilitators can assist by clarifying the group's ideas and ground rules and helping to move the group in the right direction towards achieving their goals.

During the third stage of Tuckman's model, the group is actively carrying out the task. However, at certain times, there may be conflicts between the group members. The facilitator can help by clarifying, reflecting and moderating conflicts and smoothing the situations.

The performing stage is where the group works together and focuses on working together on the assigned task. The lecturer's role is to encourage and facilitate learning. The last stage is the closure stage. This stage is adjourning, for example, after each session and after the group has successfully worked together.

During the introduction of PBL, the lecturer takes on the role of dividing the students into groups and briefing them on the case scenario. Group members are encouraged to help each other and be supportive of the PBL learning process (Azer, 2011). In teaching small groups, the teacher has to plan and prepare the structure for group learning. According to Jacques (2000), there are three stages of structuring the group's learning: planning, preparation and doing. First, during the

planning stage, the facilitators have to draft what they want to achieve. Planning is an important stage whereby the facilitator has to plan the content and the process.

There has been a debate on the process of PBL on content expert and process expert facilitators (Ahmed et al., 2015; Couto et al, 2015). In content expert, the lecturer is an expert in the subject. For example, in nursing, the lecturer who is trained in medical surgical nursing has significant knowledge of the topics related to the patients' medical and surgical conditions.

During the preparation stage, the facilitators need to prepare the number of students in each group and their roles and responsibilities. The facilitator must anticipate the external factors that may influence the group process such as the learner characteristics or previous learning, culture, attitude, beliefs, and religions (Elwyn et al., 2001). The facilitators also need to know the contexts of the group such as the personal or professional baggage, the culture of the organisation in which the groups are to function, and the issues that the group faces in PBL.

Lastly, the facilitator needs to organise the group's activities by preparing the materials for learning, explaining the task, and monitoring the task's timing and agreement on submission of the task. The facilitators need to be aware of the issues that may affect students' learning process in PBL to understand their behaviour.

The other factor that impacts students learning is the allocation of the students to a group. As far as possible, the facilitator should ensure an equal number of male and female students, different races and educational background in a group (Jacques, 2000). This is to ensure that students from diverse backgrounds can share their knowledge and work together cooperatively to achieve their learning outcome.

The last process of structuring the group is by doing. This is the process where the facilitators are facilitating PBL, which Jacques described as the tutor's role.

### ***Feedback***

Feedback is the key role of the lecturer in facilitating PBL. The purpose of giving feedback is to identify students' strengths and weaknesses to improve their learning (van de Ridder et al., 2008). In PBL, the lecturer gives formative and oral feedback.

According to Mubuke et al. (2016), giving formative feedback is to identify student strengths and learning gaps that need improvement. This is supported by van Ridder et al., (2008) and Motley and Dolansky (2015), who state that feedback can promote learning if it is given effectively. When giving positive or negative feedback to the students, the lecturer should allow adequate time for the students to conceptualise the feedback given. When giving feedback, lecturers should be consistent and focus on students' knowledge, interactions with group members, and involvement in group work.

There is also a challenge for content expert and non-content expert facilitators when giving feedback. Content-expert lecturers elaborate on the feedback, while non-content facilitators cannot provide detailed feedback (Yew & Yong, 2014). This is because the non-content expert does not know the subject.

A study was done by Muurbukke et al. (2016) on students' feedback on the delivery of PBL tutorials. The findings revealed that lecturers did not give comprehensive feedback on knowledge concepts. The participants suggested that the lectures give comprehensive feedback on concept knowledge, including non-cognitive generic skills such as communication skills, interpersonal skills,

teamwork, and collaborative learning.

### **The Challenges and Problems Faced by Facilitators**

In teaching PBL, one must realise that PBL is not a pedagogy that suits both the students and the lecturers' perspectives. Lecturers face many challenges and problems in facilitating PBL. The challenges the tutors faced were change of the role of the lecturers, implementation of PBL, learning in small groups, lack of resources and loss of power. One of these challenges is the change in the facilitator's role as they are used to being lecturers.

#### ***Change of the role of the lecturer***

The other issue was on an inadequate understanding of the change of a lecturer's role to a facilitator. Mifflin and Price (2001) found that the students were left independently to solve the problems due to the facilitator's perception that students can learn independently and are self-directed learners. Students who were unable to solve the problems were labelled lazy, arrogant or stupid by teachers who were not supportive of PBL or lacking confidence in PBL.

Maudsley (1999, p. 658) stressed that the tutor may feel "threatened" in adjusting their role as a facilitator. This is due to that the tutor is used to giving instructions to the students instead of guiding them.

#### ***Implementation of PBL***

Lecturers face many challenges when implementing PBL, especially in respect of the course and the curriculum. These issues include the design of the curriculum and human factors. According to Hung (2011), the effects of these factors are likely to be established in the PBL students' problem-driven, self-

directed learning and small group learning behaviours.

The design of PBL curriculum is another potential problem, which is time-consuming and a research-intensive process. Moreover, according to Hung (2011), the effect of the PBL problems in guiding the students to study the intended content knowledge is debatable.

### ***Self-directed learning***

Another challenge relates to students' uncertainty about the PBL emphasis on self-responsibility and self-directed learning. Students are uncertain about self-directed learning, as they may be more familiar with teacher-centred learning. They feel uncertain about whether their hypothesis and listing of the problems are adequate and whether they are on the right track (Hung, 2011; Mansor et al., 2015).

A study was done by Mansor et al. (2015) on the challenges faced by the facilitators on facilitating PBL. The findings revealed that the students found that PBL was difficult and were not familiar with self-directed learning. They needed more guidance from the facilitators.

### ***Learning in Small Groups***

Some research suggests that students from various disciplines view PBL more positively than traditional curricula (Wells et al., 2009). However, according to Rowan et al. (2008), a small number of students do not appear to thrive in a PBL environment due to uncertainty and anxiety related to group cohesion, lack of course structure and difficulty in finding resources (Azer, 2011; Rowan et al., 2008).

One of the challenges for PBL lecturers is to ensure that each member of

the team participates in the learning process and contributes to the discussion (Yang & Yang, 2013). Yang and Yang (2013) emphasised that the PBL lecturer should observe whether there are issues with the group members, especially with the inability of the group members to get along with each other or whether they are either overly assertive or not contributing to the group discussion. All these issues may affect group dynamics.

The other problem faced by the group is that members may be fearful of upsetting and challenging others' views (Das Carlo et al., 2003). Azer (2011) also pointed out that students' problems in the group include negative attitudes towards each other, poor communication skills, lack of support for one another and unresolved complex behaviour. Another challenge faced by the lecturers is students who are quiet and not participating in the classroom (Huang, 2011).

Kindler et al. (2009) conducted a study on the incidents that tutors experienced with medical students, with 30 tutors participating. Semi-structured interviews were used to identify difficult issues that the tutors were experiencing in PBL. The type of incidents that affected individual group members' participation were that students were shy and felt uncomfortable communicating with the group, frequent absences, personal matters, relying on anecdotal information, lack of focus, and challenging the tutorial process.

The other difficult issues included the involvement of individual students, the entire group and, on several occasions, the tutors (Moust, 2010). The incidents were tensions between student groups and tutor in which the students demanded the tutors to change their teaching styles and insisted that tutors start tutorials up to 30 minutes late (Moust, 2010).



### ***Resources and workload***

The issues of resources and workload by tutors in PBL have been long subject to criticism (Colliver, 2000). Barrows (2000) stated that the ideal group size of PBL is six to eight students. To achieve this size for the group to function effectively, the institution needs more facilitators. However, in reality, the cost of hiring more lecturers increase the institution's burden. As observed by Moust (2005), some schools increase the number of students in each group. Vardi and Ciccarelli (2008) reported that the number of students in each tutorial group ranged from 10-30 due to the limited number of facilitators and time constraints.

Vardi and Ciccarelli (2008) reported that students spent about 10 to 50 hours per week searching and analyzing information for their study. Some studies reported that students who are newly exposed to PBL experience anxiety and stress due to unfamiliarity with the PBL process and self-directed learning (Mansor et., al 2015, Sandra and Goncalves, 2014; Yuan et., al 2011).

In a study done by Mansor et al. 2017, the tutors faced in facilitation of PBL were lack of resources such as computers and reading materials. The students have to share the computers. Moreover, at times, the computers were malfunction and needed upgrading. The reading materials were not easily available and misplaced.

### ***Power and authority***

The other challenges that lecturers faced in facilitating PBL is the fear of losing their power to the students. Savin-Baden (2003) suggested that facilitators may fear losing their power to the students in PBL. In the lecture method of teaching, which is teacher-

centred, the teacher is used to having power over the students. However, in PBL, where the emphasis is on student-centred learning, power is equally distributed between the teacher and the students. The teacher's challenge in facilitating PBL is the need to revise their assumptions of what is needed to teach in higher education. This means that the teacher has to accept that they have to lose power and control over the students. According to Savin-Baden (2003), the change of role from teacher to facilitator can be daunting, especially in letting the students learn independently and accepting that students will learn even without giving them lecture or handouts. Savin-Baden (2003, p. 10) further argues that there is a conflict between allowing students to manage their own learning and keeping their previous role as a teacher in maintaining relationships with the students as a "controller or patroller of knowledge."

Similarly, Lekalakala-Mokgele (2010) explored the experience of the lecturers and nursing students in PBL on an undergraduate programme and found that the lecturers were anxious and found it difficult to relinquish their power to the students. Lekalakala-Mogele (2010) added that the facilitators found it difficult to facilitate PBL as they were used to controlling the class in the traditional teaching method and felt that the students would take their teaching responsibility. The fourth-year students found the facilitator domineering and felt that their learning was hindered. The first-year students felt frustrated as they were not guided properly and perceived the facilitators as lazy and assigned all their work to them. She suggested that a complete paradigm shift was necessary for the facilitators to guide students in PBL. Furthermore, facilitators need training in PBL and support to empower them in their new roles (Lekalakala-Mogele, 2010).

### **The Strategies used by Lecturers in Delivering PBL**

Lecturers use many strategies in delivering PBL. This includes instructional

interventions, improving group learning, scaffolding and motivating students to be responsible learners.

### ***Instructional interventions***

The strategies used by lecturers to make groups function effectively in PBL could be remedied through instructional interventions, students' mindsets, and study habits. According to Moust (2010), students' transmission is difficult because they are accustomed to traditional teaching and learning modes. These students have to adjust their study habits and behaviours from passively being told to what to study. They also take responsibility for the need to study and take the challenge in changing their mindset.

The other way is to change the students' study behaviours. This is through a computer-supported PBL environment whereby students can have access to online resources, e-learning, pose questions, discussions and use performance-based assessments (Verstegen et al., 2016).

### ***Group Learning***

The lecturer needs to intervene early if the group members cannot get along with one another and are not participating in group work (Azer, 2011). This is by meeting the group and discussing the issues or problems they face openly. The lecturer should observe closely and ensure that all the group members are participating in the group discussion.

Lecturers should also encourage students who are quiet and are not participating in PBL discussion by engaging them actively in class discussion. This is by asking them questions and acknowledged them even if they give wrong answers (Nariman & Chrispeels, 2016). The lecturer can also involve

quiet students by encouraging them to share their clinical experiences related to the case scenario.

According to Bate and Taylor (2013), groups can be dysfunctional in PBL, whereby the tutors are unable to recognise the problem or deal with it appropriately. Therefore, training is needed to improve the tutors' facilitation skills. Azer (2011) suggested that regardless of the tutors' background, they should be aware of the case content and the PBL process and have the skills to facilitate the case discussion and engage their students. This means that PBL tutors, regardless of their background training, should be trained in workshops emphasising facilitation skills needed in small group learning. They should attend briefing sessions covering the objectives and content of each case (Azer, 2011).

### ***Appropriate scaffolding***

Another aspect of helping students to learn effectively is by scaffolding. Studies have shown that there are three main weaknesses in learners' problem-solving skills, using the problem-solving process, using critical thinking skills in reasoning, and evaluating the quality of solutions (Pourshafie and Murray Harvey, 2013). First, according to Simons and Ertmer, (2005), students find it challenging to initiate the problem-solving process because they have inadequate knowledge of how to ask the right questions. Secondly, most students tend to use naïve rather than critical thinking skills using scientific reasoning in the problem-solving process. Thirdly, students tend to be unable to see that evaluating the quality of solutions is not important. Moust (2010) commented that this might be due to the demands of the students' final examination for that particular subject.

Scaffolding is necessary to help the students develop habits in performing the role that is expected in PBL environments. Simons and Ertmers (2005) suggested that it is important to cultivate the students' interest in problem-solving and engage the students in the scientific learning process. It is vital that the lecturers provide environments conducive to participation and mutual support through scaffolding and group work that promote students' reflective thinking critical thinking skills in reasoning, and evaluating the quality of solutions (Pourshafie and Murray Harvey, 2013).

### ***Motivating students***

The lecturer can motivate the students by developing the mindset of taking responsibility for their own learning. Schmidt (2000) described self-directed learning in PBL as when a student is prepared to engage in learning activities defined by the student but not the teacher. When students are actively engaged in researching for solutions to the given problems, and trying to formulate learning objectives, the lecturers should guide them and direct them to achieve those objectives (Moust, 2005; Laforce et al., 2017). Motivation is another strategy that the lecturer can use to involve the students in participating PBL, encouraging them to share their knowledge with other members of the group and work as a team (Pyle and Hung 2019). The lecturer should praise the students when they can answer the questions, and encouragement is given to increase their self-esteem. Furthermore, the challenge of solving a problem also motivates students to take initiatives in the problem-solving process and the learning process (Huang, 2011; Laforce et al., 2017).

## **Theoretical Framework**

Educational principles associated with PBL are rooted in the instructional approach, influenced by the learning theory of constructivism (Kantar, 2014; Kemp, 2011). This section presents the theoretical framework underpinning PBL and my theoretical framework that critiques how the assumptions within a learning theory have been applied to the teaching approach underpinning PBL.

According to Philips (1995), constructivism follows the view that knowledge is constructed by individuals within social communities to create bodies of knowledge within a specific discipline. For example, in nursing, it is the active role humans play within this health professional community that advances nursing knowledge and evidence-based nursing practice.

Loyens et al. (2007) identified the following assumptions of constructivism for learning:

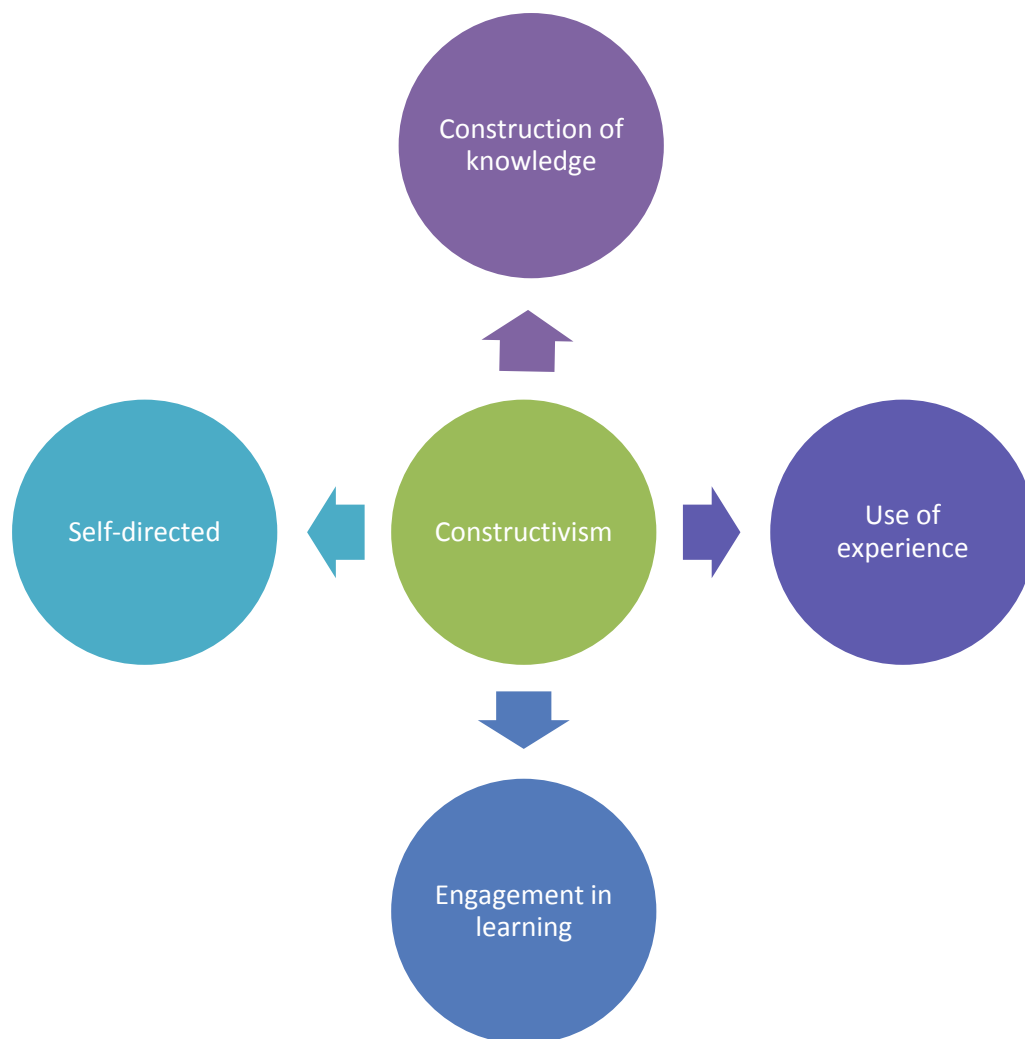
- The learner is actively involved in the construction of knowledge
- Prior knowledge guides the learner to relate new information to existing knowledge
- Through social interactions with peers, teachers and others enhance the construction of knowledge
- Self-regulation engages the learner in self -directed learning so that they are responsible for the acquisition of knowledge, autonomy and empowerment
- Learners prefer learning situations which resemble real-life or authentic situations.

In constructivism, the focus is on how students construct knowledge. The principle of constructivism assumes that learning is a dynamic process whereby the facilitator facilitates learning. In advocating constructivism, the facilitator

should engage students in various activities such as discussion, projects and simulations. Loyens et al. (2007) proposed that elaboration can be achieved by discussion, asking critical questions, answering questions and giving explanations.

Problem-based learning is underpinned by constructivist assumptions, with its roots in Dewey (1990), Brunner's 1961 discovery learning and Piaget's (1978) intelligence. PBL challenges students to engage in learning by interacting with their peers, using prior knowledge, formulating assumptions and doing advanced searches to arrive at solutions. Students are given autonomy over their learning and are self-directed learners. Self-regulation and social interaction are also elements of PBL.

PBL principles underpinned in constructivism include 1) engagement in learning, (2) generating interest in problem-solving, 3) reflection on prior knowledge, 4) construction of meaningful knowledge and 5) self-evaluation (Dzerviniks & Poplavskis, 2012). Application of Constructivism as my theoretical framework is shown in Figure 2.1.

**Figure 2.1**

*Constructivism: Adapted from (Dzerviniks, & Poplavskis, 2012).*

## **Overview**

PBL is a pedagogy that provides nursing students with a deep-learning approach in identifying problematic issues or situations by using their critical



thinking skills. In PBL, students work in groups collaboratively using their knowledge in solving problems. Facilitators play essential roles in guiding the students in PBL. The facilitators' role in PBL is rather complex, and there is limited data about consistent practices of facilitation. In practice, facilitation varies due to ill-structured problems, and variable levels of knowledge and experience among facilitators.

Most studies on content-expert and non-content expert tutors concluded that the content-expert tutor leads to teacher-directed activities rather than student-directed activities. Content-expert tutors seem to play a more directive role, and fewer students engage in student interactions. Although most studies have shown that the content-expert tutors used their expertise more to help the students, the non-content expert tutors maintain their facilitator role and initiate more activities in the group to stimulate group dynamics.

A few studies on PBL have been conducted in Singapore polytechnics and universities, with teachers and students in engineering, science and medicine (Goh, 2014; Yew & Goh, 2016). However, there is limited literature on PBL for nursing in Singapore, and no research has been conducted on the role of facilitation in nurse education in this context. This provides the warrant for the current research.

The next chapter explains and justifies the research design and methods used in my study.

## **Chapter Three: Methodology**

### **Introduction**

This chapter evaluates nursing lecturers' role and practice in facilitating problem-based learning (PBL) in Singapore. The chapter focuses on the research design and methods, including a justification for using a multiple case study design. The discussion covers qualitative methods research, selecting cases, selecting participants, data collection and data analysis. The chapter also examines the ethical aspects of this study and discusses measures taken to ensure quality and rigour in the research process.

### **Justification of Research Design**

Patton (2002) states the importance of the research design process. The broad aim of the study is to examine how nursing lecturers enact PBL. This leads to four research questions:

1. What do facilitators understand by PBL in Singapore?
2. How do the nursing lecturers facilitate PBL in the classroom?
3. What are the challenges and problems faced by the nursing lecturers in facilitating PBL?
4. What are the strategies used to facilitate PBL effectively?

### **Philosophical Underpinning**

The paradigm underpinning this research philosophy is predominantly interpretivist. From the positivist paradigm perspective, the world is viewed as reality (Creswell, 2003). Positivists define theory as external to the actual social environment, and any statement can be real if verified empirically within the social environment. According to Friedman (1999), this theory is known as the

verifiability principle, which is the main element of the philosophy of logical positivism.

In contrast, interpretivists focus on the objectivity of understanding the phenomenon from those who have experienced it (Schwandt, 1994). From the interpretivist perspective, a positivist scientific study of social reality is not possible because all social activities include beliefs, values and goals incorporated to give them meaning. However, understanding meaning to be assigned to activities requires meaning to be placed in a social context.

According to Guba and Lincoln (1994), the ontological interpretivist perspective focuses on the contextually bound reality, a local and specific reality. The researcher can provide meaningful findings and interpretation that are bound to the particular subjects, settings and context. Epistemologically, the interpretivist perspective views the observer as interactively connected to the participants being observed in constructing meaning and the involvement of the participants in the study (Schwandt, 1994).

Creswell (2013, p. 3) points out that a paradigm is seen as "world view" that refers to the conceptual framework for viewing and making sense of the social world. Creswell (2013) states that there are two paradigms used in research: positivism and interpretivism. It is crucial to differentiate between quantitative and qualitative research to choose the research paradigm (Patton, 2002).

According to Creswell (2003), quantitative research is based on the positivist paradigm in which there is a perception that the world is real and can be measured using an instrument. In quantitative research, the researcher focuses on scientific observation by imposing a degree of control to minimise bias and maximise the research's reliability and validity (Polit & Beck, 2003, p. 6). Creswell (2003) adds that in quantitative research, the variables and hypothesis are

defined at the start of the study, and constant revisions are made throughout the study.

In contrast, Patton (2002, p. 96) argues that qualitative research is based on the interpretivist paradigm where perceptions of reality are not fixed but arise from "generating knowledge and meaning from perceived interactions with another person in a social context." In a constructivist paradigm, the participants' view of their everyday lives is sought. Furthermore, the methods used in qualitative research may be varied. The focus is on increased participation in the specified communities of practice, such as the relationship between educators and students in the learning process.

Strauss and Corbin (2003) state that there are many reasons why researchers prefer qualitative research. This is linked to the nature of the research problem or issue under study. This may include analysis to understand the role of the teacher in classroom management. Furthermore, qualitative methods are used to obtain information about how participants experience the problem under study. The researcher talks to the people directly and observes their behaviour, feelings, thoughts and emotions, which are difficult to gather through quantitative research (Creswell, 2013). This study is based on the views and experiences of nursing lecturers who were involved in facilitating PBL.

However, despite its potential subjectivity, qualitative research is an ideal approach for exploring the practice of PBL because the researcher can observe the participants' behaviour and feelings in their natural setting (Creswell, 2003). Another reason for this approach relates to how questions are constructed. For example, "What are the facilitators' practices in PBL?" and "What do facilitators do to guide students in the learning process?"

This research focuses on how the lecturers facilitate PBL for the nursing

students. The research design is qualitative. Denzin and Lincoln (2008) state that qualitative research is used in examining "things in their natural setting, attempting to make sense of or to interpret phenomena in terms of the meanings people bring to them." It also provides a contextual understanding of how people behave (Bryman, 2004; Creswell, 2013).

Qualitative research is the appropriate method for exploring the roles and practice of PBL facilitators using questions such as "What are the PBL facilitators' practices in the classroom?" and "What do facilitators do to guide students in the learning process?" It provides "detailed and in-depth knowledge" on how the facilitators and students behave during PBL sessions.

### **Justification for the Research Approach: Multiple Case Study Design**

There are many different types of research designs in qualitative research: grounded theory, ethnography, phenomenology and case study (Creswell, 2007). Yin (2003) states that a case study is a qualitative design used to describe a phenomenon using various data sources. Case study design also allows the researcher to examine a case as individuals or organisations, simple to complex (Yin, 2003). The case's boundary is that the issues being studied are limited by time, place or event. Therefore, according to Creswell (2007), it is necessary to indicate the case's boundary as it helps the researcher make clear statements about the research objectives and the extent of the research.

Yin (2003) pointed out three criteria in choosing case study as a research methodology. The first criterion is that people use case study to answer the "how" and "why" questions (Yin, 2003). The second criterion is to study the context of the phenomenon. The last criterion is to study the phenomenon that cannot be

separated from the context and study the phenomena that the researcher cannot manipulate.

Yin (2003) states that using multiple case studies is important as it helps the researcher gather data from more than one source. Yin points out that it is unnecessary to use all five potential data sources: archival records, interviews, direct observation, participant observation and physical artefacts to ensure the data are convincing.

In line with these reasons, case study research methodology was chosen as the preferred design to address this study's aim and answer research questions. The objective is to know how the lecturers facilitate PBL in a classroom with nursing students and the challenges and difficulties in facilitation. Savin-Baden (2003) argues that understanding PBL and facilitators' role must be grounded on various contextual processes, including the complexity of the case study, the type of students, and the resources available. To understand these practices, there was a need to study them in their natural environment. Based on these reasons, a case study approach was an appropriate method to explore how the lecturers facilitate PBL in nursing students.

Yin (2003) states that case studies may be single or multiple. Stake (1995) notes three types of case study: intrinsic, instrumental and collective. The intrinsic case study is used when the researcher wants to study an interesting case to understand it well. In contrast, according to Crowe et al. (2011), the instrumental case study uses a particular case to gain a broader appreciation of an issue or phenomena. Collective cases can be used to explore the differences between cases.

This case study design was chosen based on Stake's (2000) work by using instrumental and multiple cases types. The instrumental case type helps to

understand the topic and understand what is being studied by exploring the issue as a case in the natural environment.

In summary, this study is a multiple case study based on an interpretive paradigm to understand nursing lecturers' roles and practice in facilitating PBL for nursing students in the classroom. I explore the phenomenon (nursing lecturers' role and practice in PBL) within its context (classroom setting in an educational institution in Singapore).

## **Methods**

### ***Selection of Cases***

According to Yin (2003), it is important to select the case study cases, although there is no agreement on how many cases are required. Miles and Huberman (1994) mention that the choice of the number of case studies depends on the context and the research questions. It is important to select the number of cases from the start of the research. Yin (2003) suggests that three to four cases are adequate to produce similar results. However, five to six cases will generate robust results and different contrasting data patterns (Yin, 2003).

Similarly, Eisenhardt (1989) suggests that four to ten cases are adequate to generate enough data. However, if more than ten cases are used, it will be difficult for the researcher to manage the data to analyse the findings. Miles and Huberman (1994) proposed that a researcher not select more than 15 cases as it will be challenging to handle and analyse massive amounts of data. Given the time frame, four cases were selected for this research.

### **Sampling**

The cases were nursing lecturers working in a polytechnic. Care was needed in selection to avoid bias by approaching all the lecturers for the study. This was done

using “experience in PBL” and nursing experience as the selection criteria from each nursing speciality (see Table 3.1). Using experience in nursing as one of the criteria is important. Benner (1984) stated that the more experienced a nurse is, the more skilful and expert they are in knowledge. The institution provides diploma and advanced diploma in nursing courses. All 50 nursing lecturers facilitating PBL were considered for the study, and the participants were chosen through purposive sampling. The main objective of purposive sampling is to collect information from information-rich participants who are easily accessible to the researcher. Moreover, according to Etikan et al. (2016), purposive sampling is easy, flexible and facilitates the purpose of the study.

In this study, the criteria for purposive sampling were:

1. Nursing lecturers teaching the second year of the diploma in nursing.
2. Nursing lecturers who have experience in conducting PBL.
3. Nursing lecturers with at least 5 years of clinical experience.
4. Nursing lecturers who specialised in critical care, trauma, medical-surgical or midwifery.

Lecturers were grouped according to their educational background, nursing speciality and years of experience in PBL. Although seven lecturers consented to the study, only the four who met the sampling criteria participated in the study (see table 3.1).



**Table 3.1***Number of Lecturers*

| Nursing Speciality | Lecturers Available |                         | No of Lecturers Invited | No of Volunteer Lecturers | No of Participating Lecturers |
|--------------------|---------------------|-------------------------|-------------------------|---------------------------|-------------------------------|
|                    | No                  | Years of PBL experience |                         |                           |                               |
| Medical Surgical   | 12                  | 8                       | 4                       | 2                         | 1                             |
|                    |                     | 4                       | 4                       | 0                         | 0                             |
|                    |                     | 2                       | 4                       | 1                         | 1                             |
| Midwifery          | 10                  | 15                      | 5                       | 1                         | 0                             |
|                    |                     | 10                      | 4                       | 0                         | 0                             |
|                    |                     | 2                       | 1                       | 0                         | 0                             |
| Critical Care      | 8                   | 8                       | 6                       | 1                         | 0                             |
|                    |                     | 2                       | 2                       | 1                         | 1                             |
| Oncology           | 4                   | 8                       | 2                       | 0                         | 0                             |
|                    |                     | 6                       | 1                       | 0                         | 0                             |
|                    |                     | 2                       | 1                       | 0                         | 0                             |
| Trauma             | 3                   | 12                      | 2                       | 1                         | 0                             |
|                    |                     | 8                       | 1                       | 0                         | 0                             |
| Psychiatry         | 5                   | 15                      | 3                       | 0                         | 0                             |
|                    |                     | 1                       | 2                       | 0                         | 0                             |
| Orthopaedics       | 3                   | 12                      | 1                       | 0                         | 0                             |
|                    |                     | 8                       | 1                       | 0                         | 0                             |
|                    |                     | 1                       | 1                       | 0                         | 1                             |
| Operating Theatre  | 5                   | 12                      | 3                       | 0                         | 0                             |
|                    |                     | 5                       | 1                       | 0                         | 0                             |
|                    |                     | 2                       | 1                       | 0                         | 0                             |

The facilitators working in the School of Health Science (SHS) were graduates from different health professional backgrounds. They included nursing lecturers, doctors, psychologists, sociologists, physiotherapists and nurses. Within the SHS, all teaching staff were be categorised into two groups of facilitators: full-time lecturers and adjunct lecturers. Each facilitator conducted 16 hours of PBL in one semester.

### Participants

The four facilitators who met the criteria and volunteered to be participants are introduced in Table 3.2.

**Table 3.2***Facilitators' Backgrounds*

| <b>Facilitators</b> | <b>PBL Groups</b> | <b>Designation of lecturers</b> | <b>Educational Background</b> | <b>Speciality</b>                           | <b>Years in PBL</b> | <b>Years of Clinical Practice</b> |
|---------------------|-------------------|---------------------------------|-------------------------------|---|---------------------|-----------------------------------|
| Fac A Aini          | A                 | Senior Lecturer                 | BN<br>Med                     | Medical and<br>Surgical<br>Health Promotion | 5                   | 9                                 |
| Fac B Devi          | B                 | Lecturer                        | BN                            | Medical and<br>Surgical<br>Orthopaedics     | 2                   | 12                                |
| Fac C Ivy           | C                 | Lecturer                        | BN                            | Medical and<br>Surgical<br>Community Health | 4                   | 9                                 |
| Fac D Junita        | D                 | Lecturer                        | Masters<br>Critical Care      | Critical Care                               | 2                   | 7                                 |

All the facilitators had medical and surgical backgrounds, with different clinical specialities: medical and surgical, critical care, orthopaedics, health promotion and community health. The facilitators were experts in their speciality. Two of them were PBL experts (Aini, facilitator A and Ivy, facilitator C), but the other two facilitators (Devi, facilitator, B and Junita, facilitator D) had limited experience of PBL.

### ***Background of facilitator A (Aini)***

Aini is a 40 years old female lecturer. She is from a middle-class background, and she is Malay. Aini has a Bachelor of Nursing (BN) from an Australian university. She qualified as a registered nurse in 1996, working in the intensive care unit of a hospital in Singapore. After four years' experience, she returned to her Australian university to study for a Master in Health Promotion while also working part-time in various hospitals, in surgical, orthopaedics and neurology clinical settings. She was employed by a polytechnic as a part-time clinical supervisor in various hospitals in Singapore from 2004 and became a full-time lecturer in 2007.

Aini completed her Master's in Education (MEd) at a university in Singapore in 2014. With a total of nine years' teaching experience and nine years' clinical experience, she has five years of experience in PBL. Her teaching experience is mostly on the Diploma in Nursing, with three years teaching the Advanced Diploma in Nursing (Community Health). She taught nursing science, ethics and research. She specialises in health promotion and medical-surgical nursing and is involved in many research projects, especially in health promotion and smoking cessation programmes for students.

Aini (facilitator A) taught three classes of PBL on nursing science this semester (23 November 2016, 5 December 2016 and 13 December 2016), with 24 students in each classroom. The students came from three different ethnic groups: Chinese, Malay and Indians. There were four male and 20 female students. The students were divided into four groups by their mentor—Groups 1, 2, 3 and 4, with six students each. Aini was conducting

PBL with four groups of students at the same time.

### ***Background of Facilitator B (Devi)***

Devi is a 48-years-old female lecturer and has been in the School of Health Science for two years. She has a Bachelor's in Nursing (BN) and has no previous teaching experience. She qualified as a registered nurse in 1990, working in the medical and surgical units of a hospital in Singapore.

Devi has two years' teaching experience and 12 years' clinical experience in Medical and Surgical nursing. Her teaching experience is on the Diploma in Nursing. She has been teaching PBL for two years. She teaches nursing science, laboratory skills and research. She specialises in orthopaedics and neurological nursing. She is the co-ordinator of Module HS2230—Adult Nursing 2—that uses PBL as a teaching strategy in the Diploma in Nursing. Devi planned and constructed PBL scenarios with her assistant co-ordinator, who guided her and is an experienced PBL facilitator.

Devi taught three classes of PBL on nursing science this semester—on 24 November, 6 December and 15 December 2016. There were 23 students in each classroom. The students came from five different ethnic groups: Chinese, Malay, Indians, Burmese and Vietnamese. There were four male and 19 female students. The mentor divided the students into four groups of five to six students each. Devi was conducting PBL with all four groups of students at the same time. Devi only had a total of 16 hours of teaching PBL. She has attended four hours of PBL workshops since joining the School of Health Science two years ago.

### ***Background of Facilitator C (Ivy)***

Ivy is a 42 years old female lecturer and has been in the School of Health Science for six years. She has a Bachelor's in Nursing (BN) and recently received her Master's in Education. She qualified as a registered nurse in 1998, working in the community health

setting in Singapore. She also has clinical experience working in the medical ward for three years.

Ivy has eight years' teaching experience and ten years' clinical experience. Her teaching experience is on the Diploma in Nursing. She teaches nursing science and laboratory skills, specializing in community health nursing, which uses PBL as part of the teaching strategy in the Diploma in Nursing.

Ivy taught four classes of PBL on nursing science this semester—on 23 November, 25 November, 5 December and 12 December 2016. There were 23 students in her classroom from four different ethnic groups: Chinese, Malay, Indians, and Vietnamese. There were four male and 19 female students. The mentor divided the students into four groups consisting of five to six students. Ivy conducted PBL with four groups of students at a time, teaching four hours of PBL each week. Ivy has attended four hours of PBL workshops since joining the School of Health Sciences ten years ago.

### ***Background of Facilitator D (Junita)***

Junita is a 35 years old female lecturer and has been in the School of Health Science for three years. She has a Bachelor's in Nursing (BN) and has no previous teaching experience. She qualified as a registered nurse in 1990, working in the medical unit and surgical unit of a hospital in Singapore.

Junita has three years' teaching experience and seven years' clinical experience. Her teaching experience is on the Diploma in Nursing and Advanced Diploma in Nursing. She teaches nursing science, laboratory skills and research, specializing in critical care nursing. She is one of the lecturers of Module HS2238, Adult Nursing 2, which is cardiovascular and respiratory.

Junita taught three classes of PBL on nursing science this semester: on 26 November, 3 December and 10 December 2016. Each classroom had 23 students—five male and 18 female students—from three different ethnic groups: Chinese, Malay and Indians. The

mentor divided the students into four groups of five to six students each. She was conducting PBL with all four groups of students at the same time. Junita only had a total of 16 hours of teaching PBL. She has also taught Post Conversion Programme (PCP) students in PBL. PCP students are mature students with previous working experience and attended Diploma in Nursing for two years instead of three years. She has not attended any PBL workshops or training since joining the School of Health Science three years ago.

### **Briefing on the Role of the Facilitators**

As part of the preparation, the lecturers were also briefed on the role of the PBL facilitator. This was particularly important as some new lecturers were unsure of the role of the facilitator, especially Junita. Junita and Devi are new to teaching and were more experienced with the delivery of lectures. They are expert in the subject, but they are novice in facilitating students in PBL.

There were many questions asked regarding the expectation of the students' role in PBL. This were discussed in depth during the briefing. Aini highlighted the importance of scaffolding the students in PBL. The lecturers were given guidelines on how to scaffold the students' learning and case scenarios.

### ***Case scenarios***

The case scenarios were written by Aini and Devi, to show what the learners faced in real life situations, linked to the curriculum. Azer et al. (2012) suggested that case scenarios should be linked and integrate knowledge to clinical situations, based on students' prior knowledge. According to Azer et al. (2012), writing a case scenario in PBL is not easy and it requires staff who are expert in creating case scenarios and a dedicated writing team who are willing to spend time. However, in my study, only Aini and Devi were involved in writing the case scenarios for PBL in this module. There

was no dedicated team appointed by the faculty to create case scenarios, as recommended by Azer et al., (2012).

Aini briefed all the eight facilitators, including Devi, Ivy and Junita, on the case scenarios; a client with cholelithiasis undergoing cholecystectomy, bleeding from gastro intestinal tract, haemorrhoids and diabetes mellitus. It is important that lecturers were briefed on all the four case scenarios that were to be used so that any uncertainties could be clarified in order that they could guide the students effectively.

### **Research Methods and Instruments**

The data collection methods included document analysis, observations and interviews, applied sequentially (see Figure 3.1).

**Figure 3.1**

*Data collection methods*



### ***Document Analysis***

Documents in case study research refer to written materials relevant to the case being studied. Documentary data are a rich source of data for educational and social research (Punch, 2009). There are many types of documents that could be useful, including diaries, letters, policy document, institutional memoranda, articles and newspapers (Yin, 2003). In this study, documents on how PBL started in the polytechnic and those on the subjects that the lecturers taught using PBL were used to analyse whether the lecturers specialised in the subjects they taught.

The type of training that was being conducted for facilitators and the notes of

meetings were examined. Permission to obtain the information was granted by the gatekeeper, Director of Nursing, School of Health Science. Using documentary analysis in conjunction with observation and interviews required triangulation (Denzin, 1989).

### ***Observations***

Observation aims to see what is happening related to the research phenomenon (Merriam, 1998; Yin, 2003). This study aimed to explore the role and practice of nursing lecturers in the classroom. The approach helped the researcher to observe the nursing lecturers' practice and behaviour within their natural environment (Yin, 2003). Merriam (1988) states that observations enable a researcher to gain insights into the phenomenon being studied and how people function and interact.

Data was gathered through observing the facilitators within the natural environment, including facilitating PBL groups, staff briefings and meetings. The tutors were also observed during the facilitation of PBL to the second-year nursing students in the classroom. The researcher took notes during the actions and interactions of the facilitators with the students.

Observation can be conducted by using structured participant observation or unstructured observation. In a structured observation, the researcher uses an observational checklist or guideline to observe the specific aspects of phenomena (Polit & Beck, 2003). In an unstructured observation, the researcher observes natural behaviour without using a predetermined observation schedule regarding PBL and the problems (Polit & Beck, 2003). This study aimed to observe the facilitators facilitating PBL in the classroom using structured observations to observe the lecturers' natural behaviour.

However, there are also disadvantages in using observations. For example, participants are aware that they are being observed and may alter their behaviours (Bryman, 2004; Polit & Beck, 2003). The researchers may lose the observational data due to their inability to remember the details they have observed (Polit & Beck, 2008). Guidelines can be used to assist the researcher in observing and recording the details as soon as possible



to aid the researcher in remembering the details of the observation (Polit & Hungler, 1999). A checklist was used to document the observation (see Appendix 3.4).

The other aspect of observation is to use time sampling for example, the researcher used one hour to observe the phenomena. The other method is to use event sampling. In an event sampling, the researcher selects a specific event that they would like to observe. The researchers should also be aware of their presence and be unobtrusive in the setting.

This study aims to understand the facilitator role and practice in PBL on the nursing students in a classroom using observations and through event sampling. The event sampling relates to the facilitation process between the lecturer and the students.

Observation of the lecturers in this study was carried out in three PBL sessions. First, the observations were carried out when the lecturers briefed the students regarding PBL and the problems. These included students having group discussions and the way they interacted with their colleagues and the facilitator. Secondly, the observations were carried out when the lecturers were facilitating PBL in the classroom and giving feedback to students. The third session was on how the lecturers asked questions and raised reflection issues during the students' presentation, as Maudsley (1999) mentioned. Hak and Maguire (2000) emphasised that PBL facilitation should be done in-depth.

The observation aims to view what is happening in the phenomenon of interest. This method was chosen due to its suitability to the objectives of the study. According to Patton (2002), qualitative methods using observations have been considered as one of the appropriate methods in data collection. This approach allowed the researcher to observe the facilitators' role and behaviour in a real natural setting. This observation also enabled the researcher to gain insights into the phenomenon where people function and interact in the real setting (Merriam, 1998).

The observations also helped the observer watch and monitor people's behaviour and interactions first hand in live situations (Cohen et al., 2011) and in their natural settings. In contrast, interviews and questionnaires generate second-hand data (Patton, 2002) by asking

participants to tell us about or reflect their experiences, views or behaviours after the event. In observation, the researcher can see what the participants do rather than what they say they do; therefore, the validity or the creditability is guaranteed.

Observation can also help discover insights that the researcher might not think to ask about, which research participants might not have otherwise volunteered via other data collection methods (Creswell, 2003). The observational method is relatively flexible, allowing the researcher to follow up on the issues as they arise. Observations also help improve the content of subsequent data collection instruments. The researcher can gain a deeper understanding of the phenomena being observed and have more idea of what pertinent question to ask (Creswell, 2003).

The observations were made when the facilitator arrived in the classroom. After the introduction, the researcher before gained entry to research a non-participant observer. Merriam (1998) suggests that the researcher must maintain a good rapport with the students by being respectful, pleasant and courteous.

During the observation, the researcher was positioned at the back of the classroom from where they could see the actions and hear the conversations between the lecturer and the students. How the lecturer on facilitated PBL, interacted with the students, the activities and the content of the conversations were all observed. The researcher had no direct input into the interactions between the facilitator and the students. When the lecturer introduced the problem, the researcher made notes on the method the nursing lecturer used to introduce the problem and the students' responses. The way the groups assigned their leader and the scribe and the students' interactions within the group were also observed. Each observation lasted for about 50 to 60 minutes, after which the researcher concluded when the lecturer had finished their PBL guidance.

After the facilitator and the students left the class, the researcher recorded the notes

on the observations using Spradley's (1980) observational guidelines to ensure that the data obtained were accurate and minimise bias (Polit & Hungler, 1999). The researcher thanked the lecturers and the students after the observations and made an appointment to conduct the interviews. Once the teacher and the students left the classroom, the researcher went to a quiet place to the observational notes.

The researcher used Spradley's nine dimensions of social situations—space, actor, activity, object, event, time, goal, relationship, and feelings (emotions shown and expressed by the participants) to record observational data. They summarised the main points of the observational data and checked with the lecturers to verify the accuracy of the data.

### ***Interviews***

The purpose of an interview is to explore issues from the participants' perspective, which may include details of events, situations, and feelings. This method is suitable for the current case study research as it allows exploration of the phenomenon in detail.

According to Barbour (2014), interviews have been assumed to be a standard for qualitative research, and there is sometimes an assumption that using this method needs no justification. However, (Robson, 2011, p. 280) stresses that it is important to justify choosing interviews, such as flexibility and adaptability. The other reason is that one can compare responses from these lecturers with different experiences of PBL using the same questions. In contrast to structured interviews, semi-structured interviews allow open-ended questions for the interviewee who can respond in more depth, while the interviewer can use prompts to search for explanations (Gubrium & Holstein, 2001). Interviews serve several functions, such as providing data for the researcher to explore the critical issues for further analysis and guidance in interpreting the data. Interviews also provide the researcher with insights to compare with observational data (Silverman, 2000). Another difficulty in observational research is the potential for participants' behaviour to be influenced by the act of observation (Conroy, 2017). This may be reduced in situations where the observer is

known to and friendly with the research participants.

Conducting the interview helped the researcher gain insights into how the participants feel about a facilitator's role. An interview room was booked so that the interviews could take place in a private and quiet setting to avoid external noise, which may affect the quality of the recording. The researcher maintained good relationships with the participants during the interview to help them be more comfortable.

The interview began by seeking general information about the participants. Open-ended questions were used to allow the participants to talk about their experiences and how they felt and explore related issues or situations. An interview guide was prepared to allow the participants to speak freely on the topics and their own experiences in PBL (Polit & Beck, 2003). The participants were able to relate their experiences about facilitating PBL in response to the questions.

Finding time for the interviews was a challenge as the lecturers were occupied with their teaching. However, the researcher managed to schedule the interview a few days after observing the participants.

The researcher chose a semi-structured interview to ask about the issues or topic the researcher wanted more information on and allow the interviewees more time to reply. During the interview, I also could ask questions about the issues raised by the participants. I listened attentively and allowed the interviewee to communicate and build on the response. The interviews were informed by the interview guide (see Appendix 3.4).

During the interviews, the researcher listened attentively to what the participants said and prompted them to explain their experiences by using phrases such as "please explain further" and "please give examples." At the end of the interview, the researcher summarised the main points and verified the accuracy of the data with the participants. The interviews were audio-taped using two recording devices. It was important for me to have two recorders in case one of them malfunctions.

Besides making transcriptions from the interviews, the researcher also prepared notes to record my perceptions of the interview and the participants' behaviours and feelings. The notes included whether the interviewee was talkative, cooperative, or nervous, and the interview setting, including whether it was quiet or noisy.

**Data collection to answer research questions is shown in table 3.3**

*Table 3.3*

| <b>Research Questions</b>  | <b>Methods of data collection</b>               |
|--|---|
| 1. What do facilitators understand by PBL in Singapore?                        | Interviews and observations                     |
| 2. How do the nursing lecturers facilitate PBL?                                | Documents analysis, observations and interviews |
| 3. What challenges and problems do nursing lecturers face in facilitating PBL? | Observations and interviews                     |
| 4. What strategies are used by nursing lecturers to facilitate PBL?            | Observations and interviews                     |

**Pilot Study**

A pilot study is carried out before the main research to check the feasibility and validity of the methods and techniques proposed for the main study but with a smaller sample (Jin, 2017). In this research, the interview guide was piloted with two lecturers who were not involved in the main study but had experience of PBL in the case study institution. These lecturers were approached to participate in the pilot interview to assess whether the semi-structured questions were clear and likely to produce valid responses. The pilot study participants found the questions straightforward to answer and, therefore, no changes were required to the interview guide (Appendix 3.3).

The same two lecturers who agreed to be interviewed were approached to participate in my pilot study's observation phase. An observation guide (Appendix 3.4)

was used to observe the participants facilitating PBL in the classroom.

### **Ethical Considerations**

In carrying out research that involves human beings, one must consider specific issues in research ethics. These comprise:

1. Informing the participants in detail of their involvement in the research and seeking their informed consent.
2. Avoiding any physical or psychological harm to the participants.
3. Allowing the participants to have a free choice to participate in the study.
4. Ensuring the participants' privacy, confidentiality, and anonymity (Patton, 2002; Polit & Beck, 2003).

The researcher sought special permission from the Head of Department of School of Health Science to conduct the study. The researcher also sought the informed consent of four nursing lecturers and the 90 second-year nursing students who participated in the study.

All participants were asked for their written consent. They were given a detailed explanation regarding their role in the study. An information leaflet about the study was given to the participants. Following this, the participants were asked to sign the consent forms and return them to the researcher.

The researcher ensured that there would be no physical harm or potential psychological harm to the participants (Munhall, 2007; Patton, 2002; Polit & Beck, 2003). For example, during the observations, the researcher did not comment or interfere when the facilitator was teaching. The researcher quietly observed the learning process, adopted a courteous and non-intrusive manner, and wrote the field notes after observations. The researcher was also vigilant for any signs that their presence may have influenced participants' interactions. Before the interview, the researcher ensured that the participants were interviewed in a private room. Before each interview, the researcher also

spent a few minutes getting to know the participants to allay any anxieties.

The participants were advised that their participation was voluntary and that they had the right to withdraw from the study at any time. All information was kept strictly confidential and anonymous. Each participant was assigned a code number that was used in the transcripts and field notes, for example, facilitator A. The researcher also ensured that the participants would not be identifiable within the thesis or any publication. The data were stored in a locked cupboard and were password protected on the researcher's computer. All data will be destroyed after five years. The ethics research application was approved by the Research Ethics Committee of the University of Nottingham and the institution where the study was conducted.

### **Timing of the Study**

The researcher started this study after the research was approved by the University of Nottingham and the host institution. It was conducted during the second semester, which began in November 2016. The rationale for collecting data in the second semester was that, by this time, the students would have completed their medical and surgical posting and experienced three semesters of PBL.

The second semester, which was 17 weeks long, influenced the data collection as it provided sufficient time for the researcher to finish observing and interviewing the participants. During the second semester, there would be enough lectures to conduct PBL as the final year students were on clinical attachment to various Singapore hospitals.

The researcher collected data from the facilitators during observations on three sessions of PBL. Collecting data on three sessions helped the researcher to explore the issues in each session of PBL. The first session involved the lecturer introducing the problem and setting the students' learning objectives the students. Session 2 related to the difficulty's students experienced in finding solutions for the problems. In session 3, the researcher observed the students' presentation on the case study using PBL and how the

facilitators were giving feedback to the students. Each facilitator was observed for 50 minutes. Maudsley (2002) stressed that reflection is vital in facilitating PBL. Table 3.4 summarises the schedule for data collection.

**Table 3.4**

*Schedule for Data Collection*

| <b>Participants</b> | <b>Case A</b> | <b>Case B</b> | <b>Case C</b> | <b>Case D</b> |
|---------------------|---------------|---------------|---------------|---------------|
| <b>Date</b>         | 23/11/16      | 24/11/16      | 25/11/16      | 26/11/16      |
|                     | 5/12/16       | 6/12/16       | 5/12/16       | 3/12/16       |
|                     | 13/12/16      | 15/12/16      | 12/12/16      | 10/12/16      |

### **Data Analysis**

A body of literature provides guidelines on qualitative data analysis (Braun & Clark 2006; Miles & Huberman, 1994; Stake, 1995). According to Stake (1995), the analysis includes probing the issues and categorising the data. In line with these issues, the researcher analysed the data to make sense of it, then presented the findings from each case. To choose the most appropriate data analysis, the researcher needed to consider the qualitative data analysis methods and then the case study research's analytical framework.

Thematic analysis is one of the approaches that facilitate the development of patterns within the data and is often used in a case study (Braun & Clarke, 2006; Casey, 2007). Thematic analysis helps the researcher condense the data and describe the phenomenon being studied, giving rise to categories or themes (Schilling, 2006). Miles and Huberman (1994) and Braun and Clarke (2006) state that thematic analysis is flexible.

Miles and Huberman (1994) state that there are three phases of data analysis: data



reduction, data display, and drawing and verifying conclusions. Data reduction is the process of coding, summarising and the identification of categories and themes. Data display is used in seeking meanings within data by displaying the visuals. Using networks or matrices can also display coded data or a category of data to establish relationships between data, provide comparisons, and enable the researcher to draw conclusions. Lastly, drawing and verifying conclusions is the stage where meanings and concepts emerge from the raw data. It includes interpreting the results and writing up the findings.

Miles and Huberman (1994) state that there are nine steps in the process of data analysis. These include sketching ideas, taking notes, summarising field notes, working with words, and counting the frequency of codes and categories. Braun and Clarke (2006) offer six main steps of thematic analysis. The researcher needs to be familiar with the data, generate initial codes, identify themes, review themes, define and naming them, and produce reports.

In qualitative case study data analysis, Stake (1995) states that the analytical framework focuses on triangulation and data comparison as a case study uses multiple data sources to ensure that phenomena of interest are explored. Stake (1995) adds that there are four steps in data analysis: categorical aggregation, direct interpretation, the establishment of patterns, and naturalistic generalisation.

The researcher analysed data by combining elements from the methods recommended by Braun and Clarke (2006), Mills and Huberman (1994) and Stake (1995). To analyse the multiple case study data, the researcher used two stages of case study analysis—within-case analysis and cross-case analysis, as recommended by Creswell (2007) and Yin (2003). Within-case analysis involved a detailed analysis of each case for emergent themes or categories where each case study is “first treated as a comprehensive case in and of itself” (Merriam, 1988, p. 194).

The researcher analysed the data in each case separately. I started to analyse each case by analysing the documents, followed by observational notes and interview

data. After conducting within-case analysis, the researcher began the process of cross-case analysis. The case study analysis is described as follows:

### ***Stage 1***

After transcribing the data, the researcher familiarised with the raw data by listening and repeated reading to gain an overview of the data and look for early key ideas and possible meaning. The researcher also wrote notes on the transcripts' margins to return to these notes at a later stage.

### ***Stage 2: Coding***

In this stage, initial codes were identified from key data (Braun & Clarke, 2006) by coding the observational data first, followed by the interview transcripts. The researcher read through the data line by line and then reduced the phrases to one or two meaningful codes. The researcher also included data segments related to the codes to maintain the participants' actual spoken words. Any data that was not coded was also read to ensure that no information was missed (Braun & Clarke, 2006). The initial list of codes concerning the list of key issues, ideas or themes that were emerging were also generated.

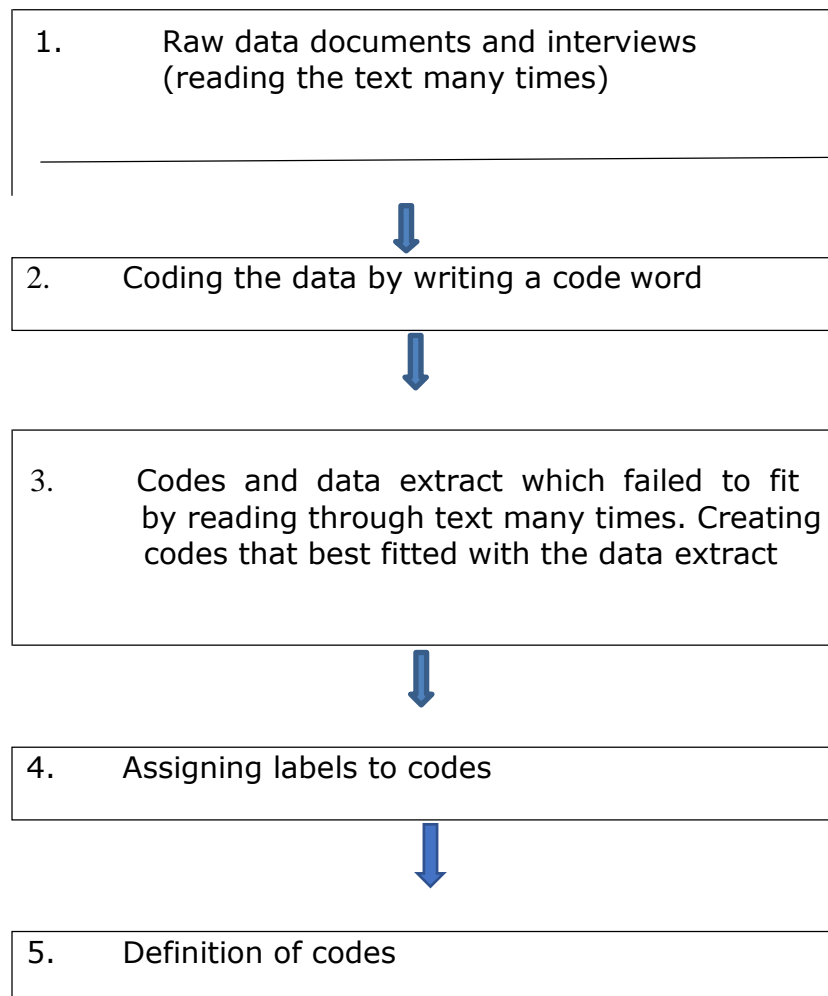
Bryman (2004) recommended that, during the coding process, researchers should develop the code words in two phases to establish codes that best fit with the content of the segment of the text. During the first coding, the researcher developed a basic code that emerged from the participants' words or from the summary of what the participants referred to. During the second phase of coding, the researcher re-read the segment of text related to the preliminary codes. Some basic codes fitted well with the segment of text, while those codes that did not fit were changed to more appropriate codes. The coding example is presented in Table 3.5.

**Table 3.5***An Example of Interview Coding*

| Data extract  | First phase of Code       | Second phase of Code                      |
|---|---------------------------|---|
| <p>It is important to ensure that the students are learning effectively in a good learning environment.</p> <p>You need to know the students well by communicating and make them feel at home</p> <p>(Facilitator A, p 1)</p> | Good learning environment | Non-threatening and conducive environment |

It was difficult initially to establish the terms in coding that best represented the meaning of data in the text segment. Thus, there was a need to read through the text several times to ensure that the code developed was accurate. The researcher also discussed with the supervisor how to develop an accurate code.

The process of coding is presented in Figure 3.2

**Figure 3.2***The Process of Coding****Stage 3: Displaying Codes from Three data sources—documents, observations and Interviews***

The third stage of coding involves displaying codes after coding all the data from the documents, observations and interviews. Codes from documents, observations and interviews were combined, as suggested by Casey and Murphy (2009). All the data were compared using a table to display the data (Miles & Huberman, 1994), as shown in Table 3.5.

**Table 3.6***Matrix Table of Three Data Sets from Case A*

| Codes across three data sets                                   | Documents analysis          | Observations  | Semi-structured Interviews  |
|--|-----------------------------|---|---|
| Providing a non-threatening and conducive learning Environment | Student-centred development | <ul style="list-style-type: none"> <li>- Greet students with a smile</li> <li>- call students' names.</li> <li>- checking room Temperature</li> <li>- concern about students</li> </ul> | <ul style="list-style-type: none"> <li>- Good learning environment</li> <li>- Make them feel at home</li> <li>- Respect the students</li> </ul> |

***Stage 4: Grouping and Classifying***

After developing the key codes across the three data sets, the initial thematic map was developed representing the relationships between nodes across three data sets to form an overarching theme.

***Stage 5: Themes and Sub-themes***

In this stage, a theme was generated with sub-themes. The theme was named and checked by considering the coded data extracts to ensure that the themes fitted with coded data, and the initial thematic map was defined. The researcher reviewed and refined the thematic maps with the entire dataset to ensure that the themes were satisfying and signified the nursing lecturers' role and practice in facilitating PBL.

***Stage 6: Reporting the Results Within-case Analysis***

After defining the themes and sub-themes of a case, the researcher proceeded to report each case's findings. The researcher began reporting Case A before proceeding to

Case B, followed by Case C and D. The findings of each case were used in the next stage of cross-case analysis.

### ***Stage 7: Displaying Themes and Sub-themes of the Four Case Studies***

The seventh stage of reporting results was a cross-case analysis. During this stage, identification of themes and subthemes was accomplished. The researcher used the listed themes, sub-themes and codes generated from each case. This was achieved by comparing the four cases to look for within-groups similarities and inter-groups differences. This stage helped to establish themes and sub-themes about the nursing lecturers' roles and practice in PBL.

### ***Stage 8: Themes and sub-themes across four cases***

The last stage of multiple case study analysis was developing and refining themes and sub-themes across four cases. The themes were developed by comparing all four cases with respect to similarities and differences.

## **Quality and Trustworthiness**

It is vital to maintain rigour and quality in all research (Yin, 2003). the criteria developed by Lincoln and Guba (1985) was used to ensure trustworthiness. These are trustworthiness, credibility, dependability, conformability and transferability of the research.

### ***Credibility***

Lincoln and Guba (1985) define credibility as the researcher's confidence in the "truth" of the findings. This means that the researcher has to describe what they observe and accurately report the findings.

I sought credibility by using multiple sources of evidence (triangulation) through documentation analysis, observation and interview. Using observation as one of the methods helped me to understand how the lecturers facilitate PBL, and this was cross-

checked with interviews to address any self-reporting bias. Credibility was also achieved by confirming interview transcripts with the participants.

### ***Dependability***

Dependability relates to the consistency of the findings (Guba and Lincoln, 2006). Cohen et al. (2011) states that dependability involves participants evaluating the findings and the interpretation and recommendations of the study to make sure that they are all supported by the data received from the study informants. This can be achieved by using the most appropriate methods of data collection, analysis and interpretation (Cohen et al., 2011). To achieve dependability, I ensured that observation and interviews were used to provide methodological triangulation. Dependability can be achieved by two independent researchers examining the data (Lincoln & Guba, 1985) and supporting documents. In this study, this was achieved by involving the supervisors to scrutinise conclusions and supporting documentation.

### ***Conformability***

According to Denzin and Lincoln (2008), conformability is the degree of neutrality or the extent to which the study's findings are shaped by the respondents and not by *researcher* bias, motivation or interest. Conformability can be achieved by using an audit trail and the researcher's reflexivity. Three techniques were used to achieve confirmability. First, an audit trail was developed, as suggested by Macnee and McCabe (2008), which provides a detailed description of the research process through the study stages. The details of data collection were clarified so that other researchers could judge my findings. Secondly, I addressed my own reflexivity to make my epistemological and ontological position known to the readers. I also kept field notes to document my feelings, expectations and motivation (Tobin & Begley, 2004). Lastly, I used triangulation by using three data collection methods and cross-case analysis (Merriam, 1998).

### ***Transferability***

Transferability is the transfer of research findings to other contexts or groups (Denzin & Guba, 1988). According to Yin (2003) and McGloin (2008), the findings of a case study are difficult to apply to other types of cases. This is due to the uniqueness of the specific case and time and a small sample size that cannot be generalised to other populations. However, Yin (2003) argues that case study findings can be applied to other situations through analytical generalisation. Stake (1995) agrees that case study findings can provide naturalistic generalisation. In this study, transferability was achieved by detailing every step of the methods used to design the study, select participants, data analysis process and reporting. It was also achieved by providing a detailed description of the study findings to enable other researchers to replicate the study in other contexts. Moreover, as the data were similar across the four cases, transferability to other similar contexts is feasible.

### ***Reflexivity***

Reflexivity refers to the continuous self-reflection process that researchers engage in to generate awareness about their actions, feelings and perceptions (Hughes, 2011). Leung (2015) defines reflexivity as the researcher continually reflecting on their values and beliefs while taking account of participants' values and beliefs. In this study, the researcher's values were that the lecturers' roles in PBL is to construct knowledge and guide the students effectively in their learning process. I recognised these beliefs and attempted to approach the research process with minimal influence from them.

The researcher also followed the same checklist for all the observations and used the same interview guide for all the interviews. They wrote down reflective notes during the research process to ensure reflexivity. The researcher was complicated because they also acted as a facilitator and senior lecturer in the study setting, which provided insider knowledge of the research. The researcher was aware that, being an experienced PBL



facilitator at the School of Health Science but a novice researcher, they might have subjectivity that could influence the relationship with the students and colleagues, ultimately affecting the data interpretation. To minimise this, I explained to the lecturers and students that the purpose of the study was to improve the PBL process. The participants were also asked to be as honest as possible.

## **Overview**

This chapter discusses the research design and methods linked to the research questions. Choosing a research paradigm was challenging initially, but the qualitative approach helped the researcher explore nursing lecturers' roles and practices in PBL. The research approach was qualitative, using document analysis, observations and interviews to collect data about the nursing lecturers. Four nursing lecturers with experience in medical-surgical nursing, intensive care, and community health nursing were chosen from 50 lecturers. Three methods of data collection were used to ensure rigour and validity. Using a multiple case-study design, qualitative research method, documentary analysis, observation and interviews, the researcher developed a deep understanding of nursing lecturers' role in facilitating PBL.

## **Chapter Four: Research Findings: PBL Facilitator (Aini)**

### **Introduction**

As described in Chapter Three, the main aim of the study is to understand the role and practices of nursing lecturers in PBL in Singapore. This chapter aims to identify ways in which Aini facilitated PBL in the classroom and the challenges she faced when conducting PBL. Aini's data analysis began with document analysis followed by the observational data and the interview data. A discussion of the findings was based on how Aini facilitated PBL for nursing students.

Thematic analysis of the data was applied. Themes and sub-themes were presented, together with extracts from the four data sets: PBL curriculum documents, observational data of classroom interactions between the facilitators and the students, and the interviews with Aini. These sub-themes were developed from a matrix, reflecting the evidence reflected in the raw data. The data collectively provided a full picture of the lecturer's practice of and attitudes towards PBL.

### **Findings**

Three themes and nine sub-themes were generated from the data collected on the facilitators' role and practice in PBL (see Table 4.1).

**Table 4.1***Themes and Sub-Themes*

| <b>Themes</b>                                | <b>Sub-themes</b>   |
|--|---|
| 1. Providing a conducive and non-threatening | 1.1 Building rapport and relationships with students<br>1.2 Setting guidelines  |
| 2. Managing group dynamics                   | 2.1 Managing conflicts<br>2.2 Collaborate with the students<br>2.3 Ownership of learning                                  |
| 3. Engaging in PBL learning Process          | 3.1 Motivating students<br>3.2 Knowledge sharing<br>3.3 Effective Communication<br>3.4 Feedback<br>3.5 Assessing students |

***Theme 1: Providing a Conducive and a Non-threatening Environment******Sub-theme 1.1: Building rapport and relationship with the students.***

During the first PBL session, Aini arrived early at about 8.30 am, to prepare her class for PBL. She arranged some reference books on a table at the front of the classroom. Before PBL began, she introduced herself to the students cheerfully and smilingly.

Aini (Fac A): Good morning? I am facilitator Aini. I'm your class tutor and facilitating PBL for four case scenarios. I am also the Assistant Coordinator of module HS2120, and I also deliver lectures related to gastrointestinal and renal. I have also taught Advanced Diploma in Nursing for the past two years. This is my fourth-year teaching PBL, and I really enjoy interacting with students. I have six years' experience

working in the medical and surgical settings in a restructured hospital (semi-government hospital). If you do not understand any issues on PBL, please ask me and do not be shy. I'm here to facilitate you all in learning, and we'll learn together. Please introduce yourselves to me.

Student A: I'm Helen. I was previously working in a restructured hospital for eight years.

Fac A: Okay, next student

This excerpt was recorded when the facilitator was introducing herself to the new group of PBL students. She was assigned to teach gastrointestinal and renal care and conditions on a nursing science module. She was happy and motivated and looked forward to teaching the students. She also highlighted that she facilitates a module related to her speciality. Aini encouraged students to introduce themselves to understand their backgrounds and maintain good relationships with them.

Students talked and laughed with each other while sitting in their groups. There were sweets and drinks on the table. The students balloted among themselves to appoint a leader and a scribe. They talked to each other about their outing to Sentosa the previous Sunday. Aini had to tell them to stop talking and listen attentively on the case scenario that she was about to present. The students sat in a circle, and Aini read the case scenario. They were quite relaxed and appeared motivated to learn. The students were discussing the case among themselves as Aini walked around to ensure they were participating actively and to see whether they needed any guidance during the PBL learning process.

Aini tried to know the students' names. On the first session of PBL, students had to introduce themselves in the class. She was always smiling and went around to guide the students whenever they needed clarification.

During the first session of PBL conducted by Aini, she tried to check with students if the learning environment was conducive. She asked the students whether the classroom temperature, set at 24 degrees Celsius, was comfortable for them. She asked this question

because it was a hot day, at 35 degrees Celsius, and she was concerned about their well-being. In doing so, she demonstrated a caring approach. She was concerned that the students were late for class and wanted to know the causes that could have led to them being late.

Aini began each day with a brief introduction where she would conduct a focused review and stress the lesson's expectations. This was followed by using concepts where she scaffolded the students through the PBL process. For the three lessons, students worked collaboratively in small groups of six students. At the same time, Aini went around the room to guide and mentor the students, giving support and encouragement when needed. She encouraged her students to ask questions and express concerns, if necessary, as part of the PBL process. She said she "need[ed] to guide them to ensure [they] are in the right track. [She] guided them by leading them and by asking questions."

This facilitator facilitated PBL and delivered lectures and taught in the laboratory. Aini was passionate about inspiring the students in PBL and stressing on critical thinking skills when solving problems. She also built relationships with the students through her introduction, and by highlighting her expertise in the subjects she taught and facilitated. She highlighted her extensive clinical experience, which helped facilitate PBL. Using her expert knowledge engendered confidence and respect among students. She was also caring and emphasised that if the students needed help or could not understand, they could approach her at any time.

The facilitator also provided a supportive learning environment. She appears to be friendly and genuinely wanting to assist her students. Students preferred a supportive and caring facilitator to help them to learn effectively. They felt that the facilitator could maintain a good relationship with them. The students' feedback suggests that Aini is patient, caring and knowledgeable, and that she guided the students effectively during the PBL process.

**Sub-theme 1.2: *Setting guidelines.***

This sub-theme relates to how the facilitator sets guidelines for the students. During the interview, Aini stressed the importance of the facilitator setting guidelines for PBL. She also set ground rules and emphasised that students should observe them. The ground rules were stated in the module workbook (SHS Workbook module HS2230 p. 8 (2016)). The rules are: i) Students need to respect each other's ideas or suggestions. ii) All students must be punctual. iii) Students should participate by contributing ideas during the group's brainstorming. iv) Students are encouraged to ask questions and reminded not to be passive.

Aini stressed these guidelines and the role of the students in PBL. With her hands folded in front of her chest and a firm tone, Aini stressed that students should help each other and work together as a team. She also highlighted that the students had to follow the guidelines stated in the HS2230 workbook. She also encouraged the students to help each other and desist from criticising their colleagues during PBL. These aspects were not stated in the HS2230 workbook. Aini made an effort to ensure that the students are learning together cohesively.

After setting the ground rules, Aini walked around the classroom and visited each group to see whether they needed any help or guidance. Aini ensured that each group was given equal attention and divided her time equally. She reminded the students when it was time to set their learning objectives, view each other's work and ask for suggestions.

On a few occasions in PBL Session 1, Aini reminded the students to spend their time in PBL-related discussions instead of talking about social issues. According to Aini, although PBL students have autonomy over their learning, the facilitator needs to control the classroom if they do not focus on their learning.

In one PBL session, Aini intervened to ensure that the group focused on the issue of a patient with cholecystitis. One Group 1 student was discussing with his team members the causes of cholecystitis. The discussion was very engaging, and they managed to list

four causes of cholecystitis. one of the students disagreed about the post-operative complications of a patient undergoing cholecystectomy. Consequently, Aini intervened and asked the student why they thought that the patient could contract pneumonia after surgery. Aini asked the question to ensure that the students focused and thought critically while analysing the post-operative complications. She encouraged the students to share information and discuss ideas together.

Aini intervened and reminded the students of the rules that she had set---to work together and respect each other's ideas. Students were also reminded that they must share the information and make decisions together. Aini had to intervene as the students did not follow the ground rules she had set earlier. Ground rules are beneficial for mediating misunderstandings between students and assisting them in being self-directed learners. "It's good to set some rules for students to comply to avoid misunderstanding and causing unhappiness between students" (Aini). Students were expected to participate actively in PBL discussions to learn from each other and the facilitator. With the implementation of rules, Aini was able to control the situation and mediate confrontation among the students. Aini commented that in setting guidelines for students, you also need to apply these rules consistently and that students should follow the rules.

## ***Theme 2: Managing Group Dynamics***

### ***Sub-theme 2.1: Managing conflicts.***

The facilitator had to ensure that the students respected each other's views during the discussion. In Group 1, Student B was unhappy with the group leader, who told him that he could not contribute with the answers he wanted. Student B approached Aini and complained that the group leader could not accept his group's contribution. Moreover, the group leader was seen to be leading and controlling the group. Aini reassured him that she would talk to the group leader and handle the situation. When handling conflicts in group learning, Aini was sensitive to the students' needs and feelings. She spoke to the

leader after the class regarding the issue and reminded the leader to respect group members' ideas and suggestions.

In the interview, Aini verbalised how she handled students' conflicts. She mentioned that she would allow students who wanted to control the group to participate first in the group discussion for the first PBL session and share their ideas with passive students. She would urge the passive students to participate, failure to which she would not award them marks on problem presentation. However, she pointed out that some students were shy and could not communicate due to low self-esteem. She also pointed out that these students feared talking in front of the groups. Nonetheless, Aini encouraged them to overcome their shyness and participate actively in group discussions. She even pointed out that cultural barriers, such as being an Asian, may affect students' confidence when answering questions due to fear of "losing face."

Aini used her positional power as a teacher to encourage the students to participate and ask questions. She mentioned that to be fair to active students, passive students would not be awarded good marks. As a facilitator, Aini made her expectations about what the students should achieve during PBL clear. However, it could be threatening to the quiet, passive students who did not participate in the discussion. These students could be reserved by nature, but they may be analysing the problems privately, by themselves.

### ***Sub-theme 2.2: Collaborate with the students.***

During the discussion on the pathophysiology of pain, the students collaborated actively with their peers and the facilitator. During PBL, students interacted with one another and engaged in constructing knowledge. They asked questions among themselves to stimulate their critical thinking skills. Aini sat in various groups, encouraging them to find more literature on managing cholecystectomy patients. The students seemed to be happy as Aini encouraged teamwork. They were motivated by her style of facilitation. She mentioned that she needed to ensure that the students worked together and collaborated



with each other.

The students were well prepared before their group discussions. Aini was a good collaborator and blended well with the groups. She could resolve discrepancies and directed the actions the group would take. She ensured that the students worked cohesively and respected each other's ideas.

### ***Sub-theme 2.3: Ownership of learning.***

Aini stressed the importance of students' ownership of learning. Aini's classroom was organised, and the classroom culture emphasised students shared self-directed learning. Aini pointed out that, once the students got the problem, they needed to take responsibility and ownership for solving it. During the observation, Aini allowed her students to own their learning and assisted them in PBL. She also encouraged them, stating that they should try their best to find the resources to solve the problems. During the interview, Aini stated that to facilitate a smooth flow between groups during the discussions, she would guide the students and let them own their learning. "I only guided them most of the time and left the groups to work in their own. If I help them to answer the questions, then they would neither be thinking nor doing their own work" (Aini, personal communication). Aini also stressed the importance of telling the groups that "students own their learning."

## **Theme 3: Engaging in the PBL Learning Process**

### ***Sub-theme 3.1: Motivating students.***

In PBL, the facilitator guides the students and motivates them in the process of learning. Aini encouraged students by telling them that they can do well if they persevere. For example, when Aini introduced her students to PBL, she noted that "PBL is complex; however, if you learn this, your critical thinking skills will improve. It also helps you to make clinical decisions related to patients' care. The students would get many answers

right but with many right possibilities" (Aini, personal communication).

Aini believed PBL would engage students to learn and improve their thinking skills. She was very encouraging and motivated the students to solve complex problems. She reassured students that they could solve the problems as long as they were motivated to learn.

During PBL facilitation, Aini asked students questions in a non-threatening manner and helped them think by probing to build their confidence. Whenever the students attempted to answer questions during group discussions, Aini praised them by using motivational words such as "good contribution" and "I am pleased the questions are well answered."

During the discussion, one student suggested that obesity is one of Mr Gary's problems (i.e., the focus of the PBL case), which drew laughter as other students thought that this idea was inappropriate. Aini did not laugh at the student; instead, she pointed out that every idea contributed was important, which means that Aini respected all opinions in the discussion. Furthermore, she probed the students on why women who have had multiple pregnancies have a greater risk of developing cholecystitis. By probing, Aini helped the students to think critically and deeply.

Aini appreciated the students' active participation and contribution by praising them with "Each point contributed is important" and "good" followed by a question which made the students think about what they have suggested. Aini's appreciation of her students' contributions and follow-up questions motivated her students extrinsically.

In the second PBL session, Aini still showed how she motivated her students. She asked them whether a patient with severe pain can undergo gall bladder surgery. One of the students suggested that a pain score needs to be done, and the doctor should order an analgesic to relieve pain.

In most of Aini's facilitation, she prompted and probed using questions to build the students' confidence in PBL. It was common to observe her praising the students if they

answered questions. In most of her PBL facilitation, she prompted the students to think. Aini did not give the students the answers but preferred to ask them open-ended questions to stimulate their thinking. She believed that students could apply their knowledge in solving the problems. She allowed her students to be responsible and accountable in solving the cognitive aspects of the problems. She also encouraged them to think deeply. She also helped them develop cognitive thinking abilities and derive satisfaction from solving the problems.

### ***Sub-theme 3.2: Knowledge sharing***

The facilitator's role also involves share knowledge with the students. This occurred, for example, when Aini responded to the students' questions about how stones are formed in the gall bladder:

**S2:** (*Student stands up, looking at the facilitator*). In cholecystitis, do the stones block the gallbladder?

**S5:** Yes, it blocks the gallbladder.

**Fac Aini:** What happens when the gall bladder is blocked?

**S6:** There will be pain.

**Fac Aini:** What happens to the gall bladder if the stones block it? (*Students were quiet, looking at each other*).

**S5:** We need to find out and learn.

**Fac Aini:** In cholecystitis, the stones block the common bile duct. Obstruction increases pressure, which may lead to ischaemia. Ischaemia causes necrosis and perforation of the gall bladder's wall. (PBL Group A, Session 1, 10: 10:40)

In this extract, when the facilitator asked the students questions, they were quiet as they were unable to answer. In this instance, the facilitator shared knowledge with the students.

The facilitators may share their knowledge with the students using various

methods. In PBL, students are supposed to find their own answers, not rely on the facilitator for an answer. In this example, Aini's actions contradict the aim of PBL, whereby students should be self-directed learners and the role of the facilitator is to guide the students. However, in this situation, the facilitator is more directive and uses a hierarchical approach in facilitation.

### ***Sub-theme 3.3: Effective communication.***

Communication skills are an essential aspect of PBL facilitation. Aini used effective communications skills while introducing PBL. She clearly stated the learning objectives and her expectations regarding the students' role in the PBL process. She used non-verbal cues to communicate to the students, such as good eye contact and gestures, to get their attention. She listened attentively to their inquiries and guided them. During the interview, Aini stressed the importance of questioning the students to stimulate their thinking. She mentioned that using open-ended questions helped ensure that students are learning in-depth and think critically. She also highlighted that a few students had difficulties communicating, especially those from China. Students with poor communication skills were coached in English to help them improve.

Aini also uses humour in facilitating PBL. She made the students laugh, and they really enjoyed her sessions. On the third session of PBL, after the students' discussion and presentation, Aini rewarded them all with a chocolate bar for participating.

### ***Sub-theme 3.4: Feedback.***

One of the challenges that Aini had to address was to give feedback to Group 1 after their presentation on cholecystitis. Her voice was soft, and she was calm when she gave the students positive feedback. The following extract illustrates how the facilitator gave the students feedback after Group A's presentation.

"Your group has done well on the causes, pathophysiology and the management of a patient with cholecystitis. You all stressed the importance of health education to the patient, and you all have developed a well-planned nursing process. However, post-operative management could be improved if the care of T-tube is highlighted, for example monitoring the drainage for colour and consistency" (Aini).

(Field notes, Facilitator A, 24 Nov 2016)

Feedback plays a vital role in PBL facilitation, and it was challenging for Aini. Before Aini gave feedback, the students reflected on their presentation. The students felt that they could to focus on patient management, but they did not discuss the pathophysiology of cholecystitis in detail. They worked together to solve the problems identified and found PBL useful.

During the interview, Aini explained that it was challenging to give negative feedback as she was concerned about hurting the students' feelings. While giving feedback, Aini stated the positive aspects of the presentation, including cholecystitis pathophysiology, signs and symptoms, and patient management. She praised the students who managed to identify the problems and the patient's management. She believed that she should be sensitive to students' feelings when giving negative feedback to avoid hurting their self-esteem.

That means communication because when you relay your feedback to the students, it has to be in a soft, non-judgemental manner because feedback can be very sensitive and be very critical. It's how you put it across. that comes with the tone of your voice, with some empathy inside. Without empathy, the students will say, 'This teacher is always criticising. This teacher is always condemning.' We do not want to be labelled by the students (Aini, personal communication).

She further stressed that, while giving feedback, the facilitator should be gentle and open-minded. The lecturer should empathise with the students. She

further suggested that she used reflection to assist the students when they did well to help them overcome their weaknesses in PBL.

### ***Sub-themes 3.5: Assessing students in PBL***

Two forms of summative assessments in PBL were conducted for the second-year students. First, each group was assessed in presenting the problems and issues related to the given case scenario during the third session of PBL. Second, every individual student had to submit 500 words of PBL discussion and report on the management of patients with the given case scenario. Students were given a guideline and format on presentation (see Appendix 4.1) and how to write the PBL report (see Appendix 4.2).

Students were expected to submit their PBL report one week after their PBL presentation. The lecturers used rubrics to rate the students. Students' group presentation of the case scenario and problem identification was worth 50 marks (40%) while case report writing and reflections were worth 50 marks (20%). Semestral examination contributed to 100 marks (40%) of the overall weighting. The lecturers assessed the groups' presentations of the problems using a comprehensive rubrics rating (see Appendix 4.3).

During the third session of PBL, Group A presented the problems that Mr Gary faced during cholecystectomy. All six students in each group participated in the presentation. During the assessment, Aini sat at the back of the classroom, listening attentively to the students' presentation with her left hand resting on her cheek. Before the students presented the problems of a patient with cholecystectomy, the laptop was not working. One student from Group B quickly came to help Group A to fix the screen's connection, which was loose. Aini reassured the students not to panic and to take their time to arrange their slides accordingly. While Group A was presenting on the aspect of the post-operative management of patients, one of the students from Group C raised his hand to ask a question related to the care of a patient with a T-tube in-situ, as to when the doctor should

be informed about the amount of bile drainage. Group A student Mike answered the question by stating that the doctor should be notified immediately if the bile drainage is about 200 millilitres.

Aini was impressed with the student's presentation. She praised them for a job well done, and the students highlighted the problems that patient experience and defined terms such as cholelithiasis and cholecystitis. The objectives set were clear, and the presentation was systematic. The students also engaged other students by asking questions. Aini commented that the students made efforts in describing early post-operative complications such as bleeding, which could lead to hypovolemic shock and pain. They listed the types of liver enzymes such as Aspartate Aminotransferase (AST) and Alanine Aminotransferase (ALT). However, they did not include the rationale of sending blood samples for liver enzymes to avoid liver damage. Monitoring signs of bleeding, such as low blood pressure and increased pulse rate, were also not mentioned.

Aini mentioned that she awarded Group A 'excellent' for their presentation. It was not easy for her to assess the students as this was the first time, she graded them in PBL. She mentioned that, in the previous semester, there was no summative assessment for PBL. The students worked hard, and some mentioned that the two PBL assessments on PBL stressed them.

In the assessment of the written PBL summary report, Aini commented that the students could reflect mostly on the positive aspects of their learning. Students found learning PBL interesting. They could research the topic, enhancing their understanding of the problems and the disease process. This also led to deep learning.

Group work was also another interesting finding from the reflective report. Students mentioned that they enjoyed working in groups, but they also needed to adapt to their group members' different learning styles. They needed to respect each other's ideas and not criticise but accept the ideas suggested by their peers.

One of the students in Group A commented on the reflective report:

Everyone has a different pace and level of understanding. With everyone contributing their ideas in PBL, I understood more in detail about the pathophysiology of cholecystitis and patient management after cholecystectomy. Working in groups made me understand how each individual works, learning from experience and the problems I faced in PBL presentation. Overall, it was not a bad learning experience (Student A 3).

Only one student commented that there was disagreement among her group members, initially regarding group work. The student mentioned that she was unhappy regarding the assignment given to her by the leader to determine the pathophysiology of cholelithiasis. However, they managed to settle their group issues and individual differences and work cohesively together as a team. In group dynamics, there were some disagreements which students did not raise with the facilitator. As a facilitator, one can observe disagreement and misunderstanding during group discussions. The facilitator would take necessary actions to solve the students' issues.

According to Aini, when facilitating PBL, one must have theoretical knowledge of PBL, pedagogical knowledge and practical knowledge to teach PBL in nursing. Nursing lecturers need a strong understanding and nursing knowledge to make an accurate nursing diagnosis. Moreover, they need to have a deep understanding of the subject matter they are teaching. Aini further mentioned that nursing lecturers should know the concepts of PBL and be exposed to teaching PBL to be competent. She also stressed that the concept of PBL in nursing is also similar to medicine.

Aini emphasised that a facilitator must know how to use scaffolding. The facilitator can enable students to learn and aid in the mastery of solving problems. She further elaborated that, once the students are independent, a facilitator needs to let them "stand on their own feet" and be self-directed in their learning process. According to her, scaffolding students is not easy. It took her about a year to learn how to scaffold students in PBL.



Aini also stressed that the facilitator needs to assess the students' learning needs and educational backgrounds. As a facilitator, Aini preferred to use Bandura's concept of social learning whereby students are encouraged to interact with one another, enhancing their learning. She believed that students learn from each other by role modelling. During PBL, Aini verbalised that a few students were not interested in the discussions but were taking down notes. However, most of the students were interested in the discussion and were keen learners.

### **Students' Reflective Report**

Reflection is an important purposeful activity in PBL whereby the students analyse their experiences to learn. It also assists them in improving their learning. The students had to submit a reflective report on their presentation, as a summative assessment, one week after presenting the case scenario.

In the assessment of the written PBL summary report, Aini commented that the students could reflect both on the positive and negative aspects of learning. Students found learning PBL enjoyable, and that they could apply the knowledge gained to clinical practice. They learnt independently, and PBL motivated them to ask questions and use critical thinking skills. Moreover, they felt they could apply the knowledge gained in the classroom to nursing the patients in a surgical setting.

The other aspect of learning PBL is that the students were happy working in groups. They helped each other and respected each other's ideas. Moreover, group work assisted them in working cooperatively as a team.

One student in group A commented,

The feedback given by the lecturer was helpful, that my group needed to discuss in detail on the nursing problems and the post-operative management of patients with haemorrhoidectomy. I took her feedback positively and will improve in future PBL

through self-directed learning. Overall, I enjoyed PBL and it was an interesting learning experience (Student A3).

The student appreciated Aini's feedback and found it helpful to improve and enhance her learning. The student seemed to be motivated to improve herself, find her own resources, and be a self-directed learner. She also commented that she enjoyed learning and found it was fun and an interesting learning experience.

The students commented that they faced difficulties in doing research initially as they did not know PBL. Although they followed the PBL guidelines, some students did not feel confident. However, with the facilitator's guidance and resources from the library, they were able to link to case scenarios and nursing interventions.

Student A3, who is from Myanmar, found PBL engaging, and it helped to improve her English because she communicated with her peers in group discussions. She also commented that PBL enhanced her knowledge of patient with cholecystitis. She enjoyed working in a group as she learnt from her peers through sharing ideas.

In facilitating PBL, Aini stressed that one must have clinical experience and pedagogical knowledge to guide students. With clinical experience and pedagogical knowledge, the lecturers can guide and teach students to make decisions and accurate nursing diagnoses. Moreover, they need to have cognitive knowledge in bioscience for clinical reasoning of the causal factors of clinical problems.

Aini stated that as a facilitator, one needs to be sensitive to students' feelings, especially when giving feedback. Using appropriate body language, such as proper tone of voice, eye contact, and smiling when communicating with students, is essential during feedback. Appreciating and commending the students' hard work, for example, by saying "you have done well," increases the students' motivation. Aini did not give negative feedback to the group after the presentation assessment as she prefers to give it to individuals.

## Overview

This chapter discussed how Aini facilitated PBL to the students in the classroom., Aini has good leadership skills displayed in the planning of her classroom activities. Aini's actions involved preparing resources, developing plans, and addressing factors that may affect the PBL process. She built a good rapport with her students and knew them well. She cared about the students and encouraged them to solve the problems collaboratively. Using her extensive clinical and pedagogical experience and knowledge, Aini actively engaged the students in the PBL process by integrating their previous knowledge, asking provocative questions and helping them own their learning. Her roles also included appreciating the students and building up their learning confidence.

Aini was an experienced PBL facilitator who could guide the students in the PBL learning process and ensure that they were on the right track. There was an alignment of the students' expectations of the facilitator's role and the expert facilitator's role in engaging them. During her introduction to the students, Aini mentioned that she teaches Advanced Diploma students in Continuous Education Training (CET), mainly through lectures. She even stated that she would assist the students, suggesting that she could use her specialist knowledge to facilitate PBL. This appears to conflict with the facilitator's role, which, as stated in the workbook, is to enable students to hypothesise and generate their own learning issues and develop. Aini carried out PBL facilitator functions, including asking questions, stimulating discussions, leading and guiding students, and empowering and motivating students (Savin-Baden, 2003). She displayed cognitive knowledge and was an expert in the subject she taught, making it easier for her to engage the students.

Aini also used reflection to improve her role in facilitating PBL. She reflected on her weaknesses in each PBL session and how she could improve her facilitation skills to help her students learn effectively. Although she has been using PBL for five years, she mentioned that she needs to update herself in PBL facilitation by attending more workshops to improve her facilitation skills. Aini suggested that there should be more

sharing on PBL among the staff, such as observing other lecturers' classes to learn from each other's experiences.

The main drawback is that Aini found was giving students negative feedback as she feared that this might affect the students' self-esteem. When giving feedback, the facilitator should be open and communicate in a non-judgemental and constructive manner.

The other issue was that one of the students did not pay attention when the group was having a discussion. Although Aini noticed the non-involvement of student Ali during PBL discussions, she just ignored the student. In PBL, all students should participate in group discussions to learn from each other. Aini should have engaged Ali by asking him some questions, involving him in the group discussions, or seeing him individually after the lecture. Aini should have given Ali individual feedback and find out why he was not participating in the group discussions.

As an experienced facilitator, Aini engaged the students actively in PBL discussions. She scaffolded their learning process and encouraged them to use their previous knowledge acquired during their clinical experience to construct new knowledge on the care of the patient with cholecystectomy. However, Aini should have been more proactive and open when giving students feedback.

Aini tried her best to help the students in PBL. She encouraged them to research the problems and was very supportive. However, on one occasion, she gave the students answers. In PBL, students should not be spoon-fed by the tutors or facilitators. Instead, the tutors should guide the students (Barrows, 2000). As a teacher or facilitator, Aini adopted a hierarchical facilitation approach.

## Chapter Five: Research Findings: PBL Facilitator (Devi)

### Introduction

This chapter discusses the research findings of Devi, who facilitated PBL in the classroom. Three themes were identified from the findings: providing a conducive, non-threatening environment, managing group dynamics and engaging in the PBL process.

### Findings

Table 5.1 provides an overview of the findings from this case, structured by themes and sub-themes.

**Table 5.1:**

*Overview of Findings*

| Themes  | Sub-themes  |
|---|---|
| 1. Providing a conducive, non-threatening environment | 1.1 Building rapport and relationships with students<br>1.2 Setting guidelines<br>1.3 Providing an open climate             |
| 2. Managing group dynamics                            | 2.1 Leading the group<br>2.2 Managing conflicts<br>2.3 Collaborating  |
| 3. Engaging in the PBL learning process               | 3.1 Communicating effectively with the students<br>3.2 Motivating students<br>3.3 Giving feedback<br>3.4 Assessing students |

## **Theme 1 Providing a Conducive, Non-threatening Environment**

### ***Sub-theme 1.1: Building rapport and relationship with students.***

In the first PBL session, Devi came to the classroom about 15 minutes before the class started. She ensured that the computer was working and that there were adequate problem-list sheets and whiteboard markers for the students to use in their discussions. She arranged chairs in rows for the students.

She also ensured that the classroom temperature was conducive by asking the students whether they felt comfortable with the temperature set at 20 degrees Celsius. When one student complained that it was cold, Devi adjusted the air conditioner temperature to 25 degrees Celsius.

Devi welcomed the students by greeting them, "Good afternoon." Before beginning her PBL class, she recorded the students' attendance. Student Johnson was five minutes late for class and apologised to her. She nodded her head and acknowledged Johnson's presence. She then introduced herself to the students as follows:

Fac B: My name is Devi. I am your facilitator for PBL. I have been teaching in the School of Health Sciences for two years. I only teach diploma students in nursing, and I am the module coordinator of module HS2230 Adult Nursing 2. I deliver lectures on gastrointestinal and renal nursing and teach laboratory skills. I have taught four classes of students in PBL in the last semester. I have 12 years' clinical experience working in the medical unit for six years, two years in a surgical setting in a restructured hospital and four years in a private hospital. Please ask me if you do not understand how to go about PBL, and I will assist you in the process of learning (Devi).

(PBL Group B, Session one, 11:10)

Devi's role as the in-charge of this module for the semester was an additional responsibility to her primary role in teaching. Devi was smiling and seemed enthusiastic and happy to describe her experience in the clinical setting, which she would use to

effectively facilitate PBL. During the interview, Devi mentioned the importance of knowing the students. A facilitator needs to create a positive PBL learning culture from the start. "It is vital that you go into the classroom with a positive outlook... I need to be aware what is going on in the classroom and ensure that every student is involved in the group discussion" (Devi).

She then introduced the PBL topic on bleeding haemorrhoids. She asked how many students have nursed patients with haemorrhoids. When three students raised their hands, she asked them if they would like to share their clinical experience in nursing patients with haemorrhoids. Annie volunteered to share her experience. She mentioned that she participated in giving a patient a sitz bath on the second post-operative day. It was challenging for her as she took the time to convince the patient to have the sitz bath, which helps to cleanse the anal region for healing and comfort. Devi praised and thanked Annie for sharing her clinical experience and helping the students construct knowledge.

Every student had to introduce themselves to the lecturer by stating their names and educational and working experience. This helped Devi build rapport with the students and maintain good relationships.

During the first session of PBL facilitation, Devi stated the learning objectives. She also read out the case scenario of a patient with bleeding haemorrhoids who had refused surgery. A few of the students who sat at the back were not paying attention and talked among themselves about their clinical attachment experience. Devi told them to shut up and listen attentively to the case scenario as they had to discuss this in their respective groups after the introduction. She briefed the students on the functions of a leader and the scribe before the students formed their groups. She instructed them to form four groups of five to six students each. Each group had to choose a leader and a scribe.

After introducing the case scenario, Devi told the students to discuss any terms in the case study they did not understand. As they discussed the case among themselves, Devi walked around, ensuring that students were participating actively. She commented,

"I'd be able to assist if you wanted me to give some ideas, especially with my surgical experiences." (PBL Group B, Session, 1, 12:15)

In offering assistance, Devi suggested that she use her clinical experience and specialist knowledge to guide the students during the discussion. However, this was contrary to the role of the facilitator as stated in the workbook, "to ensure students are to learn independently and to enable them to develop skills of life-long learning." Devi even offered students the opportunity to see her if they needed guidance during the PBL learning process.

Devi's statement could have confused the students about the facilitator's role regarding whether it is her role is to share knowledge or teach them when facilitating PBL. During her introduction, she stated that she teaches Diploma in Nursing students. The teaching method in the diploma is mainly lecturing, where Devi uses her expert knowledge to conduct her lessons. Therefore, Devi depended on her content expertise rather than process expertise to facilitate PBL. She had facilitated PBL for only two semesters and was relatively inexperienced.

During the interview, Devi remarked, "I really have to read a lot and prepare my lesson, especially as I have not much experience in teaching and sometimes, I feel stressed." She did not want to appear to the students as having inadequate knowledge to facilitate PBL.

Devi was aware of her inexperience in conducting PBL. She took time to prepare her lessons by reading on the topic she taught. She also did not want the students to belittle her, especially as she had inadequate knowledge and experience in facilitating PBL. She even asked Aini to guide her in developing the students' case scenarios.

The other issue was that the students expected the facilitator to use their knowledge to answer their questions. This occurred during PBL session one. The students were asking questions among themselves about the use of Anusol suppository for haemorrhoids.



**Std B2:** What is Anusol?

**Std B3:** Anusol is used to relieve pain.

**Std B1:** I think it contains ingredients such as lignocaine. Std B2: Are you sure?

**Std B:** I think the answer is right.

**Std B2:** (*Looking at the facilitator*) Is that right?

**Fac B:** I am not sure.

**Std B2:** Hmm... Ok. I'll find out.

In this excerpt, the student expected the facilitator to know about the Anusol medication. The student was unsure about the drug and looked to the facilitator for an answer. When the facilitator told the student that she was uncertain of the composition of Anusol, the student was surprised and took responsibility to find out the composition of Anusol suppository.

The facilitator should have expert knowledge of the subject for the students to learn effectively. However, facilitators with process expertise in facilitating PBL are also acceptable as they are skilful in guiding the students and can recognise conflicts and manage group dynamics.

This facilitator was not only facilitating PBL but also delivering lectures and teaching skills in the laboratory. She was committed to her work and aimed to inspire the students in PBL, stressing the importance of working together as a team and using critical thinking skills when solving problems. She also built relationships with the students through her introduction and by highlighting her expertise in the subjects she teaches and facilitates. She highlighted her extensive clinical experience, which helped facilitate PBL. Her expert knowledge enhanced the students' learning process and the application of clinical knowledge. Devi was also caring and supportive and emphasised that if the students needed help or could not understand, they could approach her at any time. Although she had past experience working in the surgical ward, she needed to improve her knowledge on pharmacology.

The facilitator also provided a supportive learning environment. She appeared to be friendly and genuinely wanting to assist her students. She was caring in her approach when students were late and reassured them not to panic and take their time. The students preferred a supportive and caring facilitator to help them learn effectively. They felt that the facilitator maintained a good relationship with them. The students' feedback suggests that Devi is patient, caring and supportive of students' learning. With her background as a professional nurse, her caring behaviour was evident to the students.

### ***Sub-theme 1.2: Setting guidelines.***

Devi read the guidelines after introducing herself, which are stated in the HS 2232 workbook. The rules include:

- i. Share ideas.
- ii. Provide a rationale to support views or suggestions.
- iii. Respect one another's views.
- iv. Contribute suggestions and participate actively in group discussions.

Devi expected the students to listen attentively and comply with the instructions. She stressed the importance of attending the tutorials regularly and punctually and expected them to participate in group discussions. She emphasised that, in PBL, students need to read a lot and find resources from the library. She further commented that most student nurses do not like to read, making it difficult for them to analyse various problems. Devi also encouraged the students to review the literature on managing patients with bleeding haemorrhoids after listing the issues.

During the PBL discussion, Devi observed that a few of the students spent little time analysing the case study. The example below shows how Devi intervened when students disagreed with each other's views and suggestions.

**Std B1:** Let's discuss the care of the wound after surgery.

**Std B2:** I think the priority is to manage a clear airway.

**Std B3:** No, monitoring vital signs is more important than airway management.

**Std B2:** If the patient's airway is blocked, there will be hypoxia.

**Std B4:** No, I disagreed that the priority is the maintenance of a clear airway

**Fac B Devi:** All of you gave good suggestions. You should share and discuss your ideas together and make decisions together.

Devi tried to resolve conflicts by telling the students that they needed to share their ideas and suggestions and make decisions together. She expected them to follow the ground rules she had set to avoid conflicts. The ground rules helped resolve conflicts and assisted the students to be independent learners.

During the interview, Devi mentioned that it is good to set ground rules for students to follow, especially when they argue or disagree with each other's views. She remarked that she needed to remind them to engage with one another following the ground rules they mutually set.

Devi organised the layout of students differently from Aini. Initially, the students sat in four rows, not in a circle. She assigned different groups to role-play as a doctor, a nurse, a patient and relatives. She appointed Group 1 as doctors, Group 2 as nurses, Group 3 as patients and Group 4 as relatives. She asked the students questions on the role of the doctor in obtaining a health history:

**Devi:** How do you assess the patient?

**Std D:** Is there any pain?

**Devi:** Yes, what will you do when the pain score is 8?

**Std D:** Administer analgesic as prescribed by the doctor.

Devi wrote the students' contributions on the whiteboard. This was puzzling as it is not a common method of conducting PBL. According to Devi, she uses this method of teaching PBL where the students are involved in role-playing, and their contributions are

acknowledged. Role-playing is one method of facilitating PBL. Observing the participants is another method.

Devi also made an effort to ensure that the environment was conducive for learning by asking the students whether they could see her writing on the whiteboard. She interacted with the students actively and stimulated their thinking skills. The following extracts show interactions between the students and Devi:

**Std A:** We need to define haemorrhoids.

**Std B:** Haemorrhoids are enlarged veins in the anus.

**Devi:** Tell me, why does a patient bleed from the rectum?

**Std A:** It is due to haemorrhoids.

**Devi:** Yes, good! Can you explain how haemorrhoids can lead to bleeding?

**Std C:** It is due to congestion of blood vessels.

**Std D:** No, the piles are fragile and can lead to bleeding.

**Std C:** If there is pain, what is the pain score?

Devi asked students stimulating questions and probed their knowledge or prompted their thoughts. For example, she asked, "Can you explain more about the pain scale? What do the rest of the students feel?" She involved the whole group of students in answering the questions. During the interview, she mentioned that conducting PBL using role-play was easy, and she maintained good eye contact. Moreover, with this classroom arrangement method, she could ensure that all the students participated actively in the discussions.

### ***Sub-theme 1.3: Providing an open climate.***

Devi established an open climate to engage her students. She told them that they were free to contribute their ideas regardless of whether the answer was right or wrong because some students were shy or worried about making mistakes when answering

questions. Devi mentioned that learning could not happen unless the students articulated their thoughts and ideas. She advised them to be genuine if they did not know the answer.

During the interview, she further commented that this was the same for the facilitator.

As facilitators at times, if we did not know the answers, we need to inform the students. It is the students' responsibility to speak up when they are in doubt, unsure, or are feeling uncomfortable about comments made by their group members. (Devi, personal communication)

Devi required the students to be open and ask for help if they were unsure of how to approach the problems. She also required them to speak up if they had problems with their group members. Indeed, Devi spent time with her students to analyse the issues arising from the case scenario.

## ***Theme 2: Managing Group Dynamics***

### ***Sub-theme 2.1: Leading the group.***

Devi managed the students' learning effectively. She believed that the tutor's role is as a leader, giving the students responsibility, and believing that they can do a good job. She instructed the students to work as a team and, if they had difficulty learning, consult her. She further commented that the tutor's role is to guide, asking questions instead of teaching. She argues that, as a facilitator, one needs to motivate and challenge the students to solve the problems.

In general, Devi believes that the tutor's role is to lead the group and give students time to learn independently. Giving students independence in self-directed learning motivates them to be independent learners and increase their learning satisfaction.

Devi guided the group leaders on how to organise the team and assign the members appropriately. She also ensured that each group was focused and on the right track. In one situation, Devi needed to control a conflict between two students as each

wanted their own way of solving the problems. During the interview, Devi mentioned that the facilitator's role is challenging and dynamic.

Devi used her leadership skills to guide the group leaders and ensure that the group discussions were on the right track. She mentioned that the facilitator's role is to walk around and observe the students learning together cohesively. According to Devi, the tutor's role is to give the students responsibility, and they must believe that they can do a good job.

### ***Sub-theme 2.2: Managing conflicts.***

Managing conflict is another role of a PBL facilitator. According to Devi, some students did not get along with their group members, making it challenging to solve the problems.

While Devi was guiding the groups, she observed that Group B leader, Alan, dominated the group discussion. Alan pointed his index finger at student C and told him that he must contribute to the group discussion. With a loud voice, Alan gave his group members instructions: "All of you are to list and discuss the problems in the case study, and I expect everyone to contribute your ideas. Follow the instructions please."

It took about five minutes for Devi to intervene and manage the conflict in group B. Instead of dealing with Group B, Devi walked around to share with other students. Devi preferred to see Alan in her office after her class. Devi emphasised the importance of working together and respecting each other's ideas. She said that they should divide their work equally and help each other.

Another problem was that one student was unhappy with the group leader, who mentioned that she contributed only two ideas in the case discussion. She was upset and went to see Devi for advice. Devi reassured her and advised her to read widely and try her best to participate actively in the case discussion. She arranged with the group leader

to discuss the conflict and urged the leader to assist his team members and acknowledge everyone's contributions during group discussion.

In general, Devi believed that the facilitator's role is to be a leader, whose responsibility is to lead the group and give them time to learn independently. She added that giving students independence in self-directed learning would motivate them to be independent learners and increase their satisfaction in learning.

### ***Sub-theme 2.3: Collaborating with the students.***

The students worked together in teams to discuss a patient with bleeding haemorrhoids. Devi sat with them, leaning forward. She was involved in discussion with the students. Devi seemed interested in the students' learning process and steered the group with non-verbal communication, such as agreeing with the students by nodding her head. She also allowed them to take time processing their thinking before answering questions. When she needed to clarify specific issues with the students, she used open-ended questions and gave them time to think. She encouraged students to maximise learning and share their ideas and resources.

During the interview, Devi stated that individual accountability exists when students are working together and when the group members assist, support and encourage each other in achieving the learning objectives. Devi also booked the tutorial room for the students to interact and share their ideas and information after the class. She also encouraged self-evaluation and peer evaluation to improve the learning process.

## ***Theme: 3: Engaging in the PBL Learning Process***

### ***Sub-theme 3.1: Communicating effectively with the students.***

Devi used non-verbal cues in communication, such as raising her hands to remind the students about assessment when introducing PBL. She mentioned that the facilitator's role is to keep the group focused on their tasks and guide them to achieve their goals in

their learning process. Her voice projection was clear, and she was able to gain the students' attention.

Devi had good listening skills and encouraged the students from China to speak slowly as they have difficulties communicating in English. She maintained eye contact and listened attentively during students' presentation. She commented that she must be fair to the students, use her observational skills, and listen attentively to the students' presentations to grade them.

Devi also used good questioning techniques, such as open-ended questions when asking the students why the patient refused to go for surgery. Open-ended questions stimulate the students' critical thinking skills and deep learning.

### ***Sub-theme 3.2: Motivating students.***

One of the facilitator's roles is to motivate the students in learning. Devi motivated her students in many ways, including probing during questioning to build their confidence and encourage them to think critically. Below is an example of how Devi used probes and questions to build the confidence of students:

**Fac B Devi:** Why do you think the patient has constipation? Tell us more about the causes of constipation?

**Alan:** The cause of constipation is due to lack of eating roughage and lack of exercise; especially Mr Gary is leading a sedentary lifestyle.

Devi praised the students by saying "good work" whenever they answered the questions. Students were pleased when Devi acknowledged and praised them. Student motivation increases when they receive praise from the lecturer.

Devi also motivated students by encouraging them to work hard, saying that they could do well if they put in concerted effort in their learning. This happened when Devi was orientating them to PBL, "All of you need to work hard and spend time finding



resources from the library, books and websites... It is satisfying if you can be independent learners" (Devi).

Devi encouraged her students to work hard, and she believed that they would succeed if they tried to find resources on their own. She also motivated them by commenting that they will feel satisfied when they manage to learn independently. In most of her PBL facilitation, Devi prompted the students to think. When the students faced difficulty answering questions, she helped them by asking leading questions, such as why you need to observe bleeding after surgery. She believed that students could apply their cognitive and clinical knowledge in solving the problems. She allowed her students to be responsible and accountable in solving problems. She also encouraged them to think deeply and helped them to develop cognitive thinking abilities and derive satisfaction from solving the problems.

### ***Sub-theme 3.3: Giving feedback***

Devi gave the students feedback immediately after the presentation. She believed that the facilitator should inform the students about their strengths and weaknesses when giving feedback when giving feedback. Before giving feedback, Devi asked the students to reflect on their group and the dynamics of working together. Group 2 students, who presented on bleeding haemorrhoids, felt upset that they could not explain the pathophysiology of how haemorrhoids can lead to bleeding. However, they were happy that they could work as a team despite the individual differences among group members. One group member felt that they needed more time for self-directed learning before the presentation.

Devi verbalised that the students discussed the problems and the post-operative care of patients after haemorrhoidectomy well. However, the group needed to focus on describing the causes and consequences of bleeding, and the perineum's care. Their presentation skills could have been better if they maintained eye contact instead of

reading the text. The students were receptive to this feedback. During the interview, she verbalised that it was easy to give the students positive feedback. However, it is difficult to give negative feedback, as she is worried that it may affect the students' self-esteem. She needed to think hard about communicating to the students openly and being sensitive to avoid upsetting their feelings and emotions. Devi reassured the students that they were learning through their mistakes and commented that, "none of us is perfect", after giving negative feedback.

Devi also encouraged active engagement and interactions among the students to learn collaboratively. She urged the students to activate their prior knowledge and experience to construct new knowledge. Reflection on learning is critical to facilitate engagement in PBL. The students asked questions and clarified among their group members if they did not understand and were actively involved in setting learning objectives.

She also fostered a mutual respect and collaboration culture as the students shared their strengths and limitations and encouraged members to support each other in learning. She urged them to verify with each other and ensure that they solve problems in the right way.

### ***Sub-Theme 3.4: Assessing PBL***

During the third PBL session, Group 2 arrived early at 8.30 before the class started at 9 a.m. because they were worried that the computer was malfunctioning. They discussed their roles in presenting the case study for assessment and agreed upon their roles. Before the assessment, the group leader handed over the marking criteria to Devi. Devi reminded the students to present clearly and slowly to grade the students accurately. Devi sat at the back of the classroom and observed the students' presentation skills. All the students were dressed in black and were well-groomed.

Before the presentation, three students stood at the corner of the screen. While one was sitting at the laptop, the leader was standing in front of the class. The leader introduced the group members, and they started their presentation by showing a video on the case scenario, which they created to enhance the students' understanding. During the presentation, one student from Group C asked why it is vital to monitor the dressing after surgery. Group B leader, Mike, answered the question confidently.

After the presentation, Devi asked the students whether they had questions for Group B. None had. Devi asked group B to explain the causes of constipation, which they had skipped during the presentation. The students answered the question superficially without a clear explanation. Devi probed them on why the patient has constipation. One student responded that the cause of constipation is a lack of vegetables and fruits. Devi was happy that the student answered the question accurately.

Devi praised the students for working hard on their presentation. She mentioned that the students listed the patients' problems accurately but were unable to hypothesise and use clinical reasoning skills to explain how the problems occurred. She suggested that the students should use their cognitive knowledge of pathophysiology, explain how bleeding haemorrhoids occurs, and enhance their understanding of the management of patient post-operatively.

### **Students' Reflective Report.**

Reflection is an important purposeful activity in PBL whereby the students analyse their experiences to learn. It also assists them in improving their learning. The students had to submit a reflective report on their presentation, as a summative assessment, one week after presenting the case scenario. Devi emphasised the guidelines for writing reflective reports using Gibbs' model of reflection (Gibbs, 1988).

In the assessment of the written PBL summary report, Devi commented that the students could reflect both on the positive and negative aspects of learning. Students found

learning PBL enjoyable, and that they could apply the knowledge gained to clinical practice. They learnt independently, and PBL motivated them to ask questions and use critical thinking skills. Moreover, they felt they could apply the knowledge gained in the classroom to nursing the patients in a surgical setting.

The other aspect of learning PBL is that the students were happy working in groups. They helped each other and respected each other's ideas. Moreover, group work assisted them in working cooperatively as a team.

One student in group B commented,

The feedback given by the lecturer was helpful, that my group needed to discuss in detail on the nursing problems and the post-operative management of patients with haemorrhoidectomy. I took her feedback positively and will improve in future PBL through self-directed learning. Overall, I enjoyed PBL and it was an interesting learning experience (Student B3).

The student appreciated Devi's feedback and found it helpful to improve and enhance her learning. The student seemed to be motivated to improve herself, find her own resources, and be a self-directed learner. She also commented that she enjoyed learning and found it was an interesting learning experience.

One student commented that she had no experience in PBL and was unsure of the expectations of the PBL learning process. Although she followed the guidelines stated in the workbook, she felt sceptical and was not confident. She further commented that "We worked very hard on our presentation and were proud of it. However, although we think our presentation is flawless, our lecturer may not be satisfied."

The students commented that they faced difficulties in doing research initially as they did not know PBL. Although they followed the PBL guidelines, some students did not feel confident. However, with the facilitator's guidance and resources from the library, they were able to link to case scenarios and nursing interventions.

The students preferred the lecture method, compared to PBL, as the latter involves a lot of homework. They also commented that the facilitator did not give them enough information during PBL. One student commented,

I was lost and fearful that I could not cope with PBL. I have no experience at all in PBL. I was not sure of the expectations of this learning and how many contributions to put into this project. Though I followed the guidelines, I was still feeling sceptical and doubtful.

The students could learn more effectively if the facilitator guided and coached the students initially and gave some examples of generating problems before asking them to do self-directed learning.

Student B4, who is from China, found PBL engaging, and it helped to improve her English because she communicated with her peers in group discussions. She also commented that PBL enhanced her knowledge of patients with different stages of haemorrhoids. She enjoyed working in a group as she learnt from her peers through sharing ideas.

In facilitating PBL, Devi stressed that one must have clinical experience and pedagogical knowledge to guide students. With clinical experience and pedagogical knowledge, the lecturers can guide and teach students to make decisions and accurate nursing diagnoses. Moreover, they need to have cognitive knowledge in bioscience for clinical reasoning of the causal factors of clinical problems.

Devi stated that as a facilitator, one needs to be sensitive to students' feelings, especially when giving feedback. Using appropriate body language, such as proper tone of voice, eye contact, and smiling when communicating with students, is essential during feedback. Appreciating and commending the students' hard work, for example, by saying "excellent work" and "you have done well," increases the students' motivation. Devi did not give negative feedback to the group after the presentation assessment as she prefers to give it to individuals.

Devi mentioned that after every PBL lessons, she will reflect on the way she facilitated PBL. She also mentioned that she is learning on how to facilitate PBL and it is not easy. She was trying her best to engage the students especially in asking the students questions.

## **Overview**

This chapter discussed Devi's facilitation of PBL for second-year nursing students. Her typical facilitation style was more teacher-centred than student-centred learning. Her specific teaching strategies included note taking, worksheets, and completing some questions from the workbook. In terms of PBL facilitation, Devi commented that she has limited experience guiding students. Devi viewed PBL as an instructional strategy for lecturers to guide students. Devi stated that lecturers should consider the students' level of knowledge, learning styles, and their educational background during planning, as these may affect their learning. Devi knew that PBL involved discussing with the students and goes beyond what the students need to know. It gives students an opportunity to collaborate with their peers and their facilitator.

Devi built a good rapport with her students and got to know them. She was caring about the students and supported them in their learning. She used her extensive clinical knowledge to actively engage the students in the PBL process. This was seen when Devi asked one student a question about the nurses' role in managing patients with hemorrhoidectomy. The student was able to integrate her previous clinical experience to construct knowledge during PBL. Devi also built students' self-esteem and confidence in learning by praising them when they answered questions.

Although Devi was aware that PBL emphasises on self-directed learning, she emphasised that the facilitator's role is to guide the students on how to analyse the problems because they in the second year. She found it tremendously challenging to provide support and control the learning environment, especially as she was inexperienced

in conducting PBL. She commented that, although she had observed one lecturer conducting PBL, she still needed more training.

Devi believed that the facilitator role in PBL is complex. A facilitator should be flexible, group-oriented, and interact with the students. She believed that facilitation could be achieved through experience in teaching and the ability to scaffold student learning about PBL. She had only four hours of PBL training since joining the institution two years ago. However, with her nine years of clinical experience, she felt confident and able to conduct PBL effectively.

After the assessment, Devi met the students individually to give them feedback. She was impressed with student B1, who clearly presented the objectives, was confident and maintained eye contact. She patted the student on her shoulder and told her to keep up her good work. She motivated the student to study hard and excel in her studies.

Devi commented that Student B2 explained clearly about the management of the patient with haemorrhoids. However, they did not mention the treatment recommended for haemorrhoids. Devi suggested that presentation could be enhanced if Student B2 emphasised the importance of monitoring the patient for bleeding.

Devi found Student B3's explanation of lateral haemorrhoids unclear. She stressed that relieving pain is another essential nursing action, which Student B3 did not mention. She further explained to student B3 the importance of giving analgesics, as ordered by the doctor, to relieve pain. Student B3 acknowledged the feedback by nodding her head and thanking Devi.

Student B4 seemed upset when Devi mentioned that she did not focus on the causes of haemorrhoids. She told Devi that she had tried her best. Devi reassured her that this component of PBL is worth 40% of the total marks, so she should not worry. She then motivated her to work hard on her reflective assignment.

## Chapter Six: Research Findings: PBL Facilitator (Ivy)

### Introduction

This chapter aims to identify ways in which Ivy facilitated PBL in the classroom and the challenges she faced using thematic analysis of the data. Themes and sub-themes are presented, together with extracts from the three data sets---PBL curriculum documents, observational data of classroom interactions between Ivy and the students, and interviews with Ivy. These sub-themes were developed from a matrix, reflecting the evidence reflected in the raw data. Collectively, the data provide a full picture of the lecturer's practice in facilitating PBL in the classroom.

### Findings

Table 6.1 provides an overview of the findings from this case, structured by three themes and six sub-themes.

**Table 6.1**

*Findings from Case C*

| Themes  | Sub-themes  |
|---|---|
| 1. Providing a conducive, non-threatening environment | 1.1 Building rapport and relationship with students<br>1.2 Setting guidelines   |
| 2. Managing group dynamics                            | 2.1 Sharing knowledge<br>2.2 Collaborating with students  |
| 3. Engaging in the PBL learning process               | 3.1 Communicating with students<br>3.2 Managing conflicts<br>3.3 Motivating students<br>3.4 Giving feedback<br>3.4 Assessing students |



**Theme 1: Maintaining Rapport and Relationship with the Students***Sub-theme 1.1: Building Rapport and Relationship with the Students.*

During Ivy's first PBL session, she came to the classroom about five minutes before the class started. When Ivy walked into the classroom, the students were busy talking regarding their clinical posting. When they saw Ivy her, one student commented that she looked smart in her jacket suit. She smiled at them. *Ivy brought in resources for the students such as whiteboards markers and flip chart sheets. She also ensured that the computer was in good working condition. Ivy gave the students problem-list sheets to scaffold their learning.*

*Before starting her lesson, Ivy asked the students whether the classroom temperature, which was at 26 degrees Celsius, was conducive for them. They said that the temperature was satisfactory and conducive for learning.* She also ensured that the classroom was well-lit.

Ivy welcomed the students to her class by greeting them, "Good morning." While recording the students' attendance, she noticed that Jean was absent. She asked the students if anybody knew why Jean was absent. One of the students mentioned that Jean had influenza. She thanked the student for this information.

Ivy was smiling and seemed to be looking forward to teaching the students when she introduced herself:

My name is Ivy. I am your facilitator for PBL this semester. I have been teaching in the School of Health Science for ten years. I teach diploma students in nursing and advanced diploma in Community Health. I deliver lectures on gastrointestinal and renal and teach laboratory skills. I have taught PBL since 2012. I have a few years' working experience in medical and surgical settings in the restructured hospitals and I'd be happy to help in gastrointestinal and renal modules. You need to work together in PBL, and please use your time effectively in the discussion. You are most welcome to ask questions if you do not understand the case study.

(PBL Group C, Session 1, 11:10)

The excerpt was recorded when the facilitator introduced herself to her PBL group. Ivy was one of the module tutors for this semester in Gastro-Intestinal and Renal module. By "I'd be happy to help," she meant that she could use her specialist knowledge to help the students during the Gastro-Intestinal and Renal module. This is not congruent with the curriculum, which states that the facilitator's role is to "allow students to be self-directed to generate their own learning issues" and guide them in developing life-long learning.

The facilitator's statement may make the students think whether her role is to share the knowledge she has acquired from her experience in the clinical settings. Moreover, during her introduction, she stated that she teaches diploma and advanced diploma in nursing, which are lecture-based programmes.

During the interview, Ivy mentioned that it is important to get to know the students and develop a rapport with them to assist them. She also highlighted that it is important to know the students' educational background and their clinical experiences, which may help them in their discussions.

During the first PBL facilitation session, Ivy introduced the case scenario on PBL, which is haemorrhoids, and stated the learning objectives. The students paid attention and listened attentively to her. She expected the students to learn independently and assist each other in the learning process of PBL.

Ivy told the students to arrange themselves into four groups of five students each. She gave the group leaders clear instructions that each group should consist of four female students and one male student. After forming the groups, she ensured that the students sat in a semi-circle.

Ivy told the students,

Go into your groups and discuss the case scenario on bleeding haemorrhoids. Please seek information and use resources such as e-books and journals. I expect all of you to discuss bleeding haemorrhoids. I will go around and see how you are getting

on with your discussion. Any issues that you do not understand, please discuss with your peers in your group. Different groups will come out with different solutions in solving the problems (Ivy).

After introducing the case scenario, Ivy told the students to discuss the terms in the case study that they did not understand or know. She also emphasised listing the patient's problems from the case scenario. Students discussed the case as Ivy walked around to ensure they actively participated.

Ivy involved the students in the learning process. She established a non-threatening learning environment by being approachable and helpful to them. For example, one student raised his hand to ask about the history of the patient's bleeding haemorrhoids. Ivy told him politely that the patient had been sick for about six months. She had good interpersonal skills, such as being friendly, and assisted the students whenever they needed help. She communicated clear expectations for the students, for example, encouraging them to ask questions and discuss the issues to ease their anxieties. She guided them in their learning process by asking questions:

**Ivy:** A 54-year-old taxi driver and is having irregular meals. What does this case scenario tell you?"

**Student C3:** Irregular meals can cause gastritis.

**Student C4:** Need to ask the patient whether he is having abdominal pain?

**Fac C Ivy:** How do you obtain the history of pain?

**Student C1:** Need to ask where the pain is and the severity of pain?

**Student C2:** When did the pain start and how long have you had it?

**Student C5:** Need to ask the patient whether he takes analgesic or anti-spasmodic medications to relieve his abdominal pain?

**Fac C Ivy:** After taking the history of the pain, what nursing actions do you need to take?

In this vignette, Ivy asks leading questions to stimulate the students' critical thinking skills. She initially asks the students open-ended questions on why the patient has gastritis. She also asked leading questions to explore further why the patient has abdominal pain and what type of analgesic will relieve his pain. Ivy believed that students would learn independently if the facilitators guide and support them in their learning process. Asking students questions during PBL stimulates their thinking skills and encourage deep learning.

Ivy mentioned that building rapport with the students was necessary to facilitate PBL smoothly. It was not easy to build rapport with students from China. They could not comprehend in English fluently. Moreover, they were taught Mandarin in school and taught to respect their teachers since they were young. "I really needed to give them time to speak up, and I believed that they could communicate clearly" (Ivy).

During the interview, Ivy mentioned that she enjoyed facilitating PBL, especially having students who are willing to participate and ask questions. This made her facilitation of PBL easy and effective. However, students who were unwilling to participate were a great challenge. Ivy called the names of the students who were not interested in participating and asked them their views, what their group had discussed and what they would like to tell her. Ivy suggested that facilitators should go around to every group and ensure that they participate in the group discussions, or else we "will lose them."

Ivy ensured that all the students are participating in the group discussions. "We will lose them" means that, if the facilitator does not go to every group to determine which students are not participating in the group discussions, they would not learn independently. Moreover, the facilitator might not find out if the students need guidance, and learning might not occur.

Ivy also interacted with the students after her work. The students were waiting for her to ask about the case study that was given to them. They did not understand on how to analyse the problems.

***Sub-theme 1.2: Setting guidelines***

Ivy briefed the students on the ground rules she expected them to follow. The rules included:

- i) Students must be punctual.
- ii) All students must participate actively in group discussions.
- iii) Students need to respect each other's ideas or suggestions.
- iv) Students are allowed to discuss and comment on each other's work.
- v) Each group should choose a leader and a scribe.
- vi) She orientated the students on the functions of a leader and a scribe before forming their groups. She instructed students to form four groups of five to six students.

After introducing herself, Ivy read the case scenario to the students. She instructed the students to discuss within their groups and identify problems with the given case scenario using e-books and journals. Ivy expected the students to discuss bleeding haemorrhoids. She walked around to see how they conducted the discussions and told them that they should discuss anything issues they did not understand with their group members.

During the interview with Ivy, she verbalised that the facilitator's role is to monitor the students' individual work. Guidelines ensure students work together and participate actively in group discussions. Although the groups nominated their leader and scribe, some groups did not comply with the PBL guidelines. They needed to be reminded of their roles.

**Theme 2: Managing Group Dynamics*****Sub-theme 2.1: Sharing of knowledge***

Sharing knowledge with the students is another role of the facilitator. Ivy shared her knowledge by asking the students the safety issues in obtaining consent.

**Ivy:** How do you ensure consent is taken from the patient accurately?

**Std C2:** Ensure that the doctor explains to the patient.

**Std C3:** Yes, must include the type of surgery and the risks.

**Std C5:** The staff nurse should witness the consent and ensure she signs the consent form.

**Fac C Ivy:** Yes, the consent form is a legal document, and it must be valid.

Ivy shared her experience with her students on one occasion when the consent form was not completed. This delayed the patient's surgery, and the patient had to last longer, resulting in hunger. Ivy mentioned that it also stressed the patient and increased the patient's anxiety.

According to Ivy, the facilitator's role is to share knowledge with the students. The lecturer must know the PBL process, set clear learning objectives, and guide the students. Ivy further mentioned that the knowledge shared with the student included professional knowledge and clinical experience. "I shared a lot of knowledge from my clinical experiences, which I am unable to get from books or journals." which I shared with the students on consent for surgery. Through her real-life experiences in managing patients with differential diagnosis, she was able to integrate her clinical experience with the case scenario.

Ivy also mentioned that it is important for lecturers to share professional nursing knowledge with the students. Legal aspects, such as written consent, are important for the patient before surgery. She stressed that the doctor should complete the consent form, and a staff nurse should witness it.

### ***Sub-theme 2.2: Collaborating with the students.***

In analysing the case scenario, students learnt from each other by contributing their ideas. They shared their ideas and gave constructive feedback on each other's ideas. Ivy

was sitting with the students supporting them to think and analyse the case scenario. The students interacted in their groups and engaged in investigating the case scenario. Ivy interacted with them, discussing the causes of bleeding. When one student tried his best to explain why the patient was bleeding from the rectum, Ivy acknowledged them with a smile and a nod smiling and in agreement.

Ivy mentioned that she needed to work together with the students during the interview. She commented that the students feel more motivated when the facilitator is there with them to support their learning and acknowledge their contributions. She further stressed that the lecturer must be tactful and respect the students' contributions or ideas, even if they are inaccurate. Dealing with students' emotions and being sensitive to their needs is another role of the lecturer.

I need to bring them on the right track during the discussions, and I have to be very careful not to hurt their self-esteem so that their learning experience will be positive. The way I tell them must not hurt their feelings (Ivy).

Ivy was supportive and worked collaboratively with the students. She appreciated the students' contributions and guided them constantly. Ivy was very careful "not [to] hurt their feelings" when they were wrong. She meant that, when students did not answer the questions accurately, she acknowledged them politely, guided them and sensitively handled them. For example, she highlighted her extensive clinical experience that helped facilitate PBL, using her expert knowledge, enhancing the students' learning process and applying clinical knowledge. She was also caring, supportive, and emphasised that if the students needed help, they were free to approach her at any time. She created a learning environment that encouraged students to be open to exchanging ideas, which helped them construct new knowledge.

### **Theme 3: Engaging in the PBL Learning Process**

#### ***Sub-theme 3.1: Communicating effectively with the students***

Ivy agreed that to provide quality teaching in PBL, the facilitators must ensure that their interactions with the students are appropriate. She explained that effective communication is important to enhance students' learning. This was observed when Ivy was facilitating PBL during group discussions. Ivy's voice was clear. She was able to gain the students' attention with good eye contact when she emphasised the importance of learning together and working as a team. She listened to the students' inquiries attentively and answered them patiently. She acknowledged the students' contributions by praising them, saying "excellent," "well done" and patting their shoulders.

Ivy emphasised the use of resources, especially nursing journals, which they could access from the institution's library databases. One student looked lost when Ivy asked her whether she knows how to access the databases. Ivy guided her. She stressed that the students needed to interact actively and engage in group discussions and not be shy. She encouraged the students to participate in group discussions and ask questions. She told the students that "It is all right to make mistakes, through which you learn" (Ivy).

Ivy used non-verbal cues by raising her hands to remind the students about PBL assessment. She mentioned that the facilitator's role is to keep the group focused on their tasks and guide them to achieve their learning process goals. She managed to gain the students' attention through eye contact when she emphasised the PBL guidelines.

During the interview, Ivy commented that the facilitator must have good communication skills to engage the students in learning. She stressed that facilitators must use leading questions to stimulate students' thinking. Furthermore, the facilitator must be sensitive to the students' feelings, especially when giving negative feedback.

The difficulty that she faced when communicating with the students was the language barrier, especially with the students from China. She verbalised that she needed to listen carefully and reminded them to speak slowly to enhance her understanding. She



mentioned that the facilitator should give them time to learn and encourage them to speak English.

### ***Sub-theme 3.2: Managing conflicts.***

Managing conflict is not an easy task for the facilitator. According to Ivy, one Group C student was always controlling the group despite not being the group leader. She wanted to lead the discussions but was not given the opportunity by her colleagues to participate in the discussions. Ivy intervened by telling her politely that it was good for her to participate actively in the group discussions, but she must allow other students to contribute their ideas for them to learn. Although the student positively received feedback, her facial expression showed that she was unhappy.

The facilitator should be careful about and sensitive to students' feeling. From the Asian cultural perspective, students "lost their face value" when the teacher commented about their behaviour in front of their groups. It would be good if Ivy spoke to the student individually, stating why it is important to allow other students to share their ideas. This would help the student to reflect on her actions.

During Group C discussion, Student C2 tried to share his ideas with group members but Student C4, who was the group leader, ignored him. Ivy intervened by telling the group leader to listen to Student C2's suggestions.

Ivy further added that she had to allow every student to participate in the group discussion, especially the quiet ones. She commented that the quiet students were usually shy, and when they saw her coming to their group, they looked away. She commented that Asian's students are timid and do not like to express how they feel. Ivy always gave such students some time to think before returning to them to ask questions.

***Sub-theme 3.3: Motivating students.***

One of the facilitator's roles is to motivate students to learn. During the first PBL session, Ivy told the students that they could learn from each other through discussion. She stated that she was proud that they participated actively in group discussions. Ivy motivated her students by probing to build the students' confidence and motivate them to think critically. She probed using cognitive questions to build the students' confidence during the PBL process. For example, she asked the students:

**Fac C Ivy:** Why is the patient pale?

**Std C2:** I think the patient is anaemic.

**Fac C Ivy:** What do you mean by anaemia?

**Std C3:** The patient's haemoglobin is low at only 9dm/litre.

**Std C4:** The patient is bleeding from the rectum, and is anaemic.

**Fac C Ivy:** Yes, you need to find out why the patient is bleeding from the rectum?

**Std C3:** It is due to bleeding piles.

**Fac C Ivy:** Good. You need to explore the causes of bleeding piles.

When probing, Ivy asked congruent cognitive questions to stimulate the students' thinking. She praised Student C3 for answering the question accurately. According to Ivy, asking students congruent cognitive questions motivates them to find out more about the causes of bleeding. It also encourages students to think critically, which leads to deep learning.

Ivy also mentioned during the interview that she motivated the students by listening to their opinions and acknowledging them. She praised them when they were able to answer her questions. At times, she also gave them a pat on the back when praising them.

***Sub-theme 3.4: Giving feedback.***

Ivy gave the students feedback immediately after the presentation. She highlighted their strengths and weaknesses for them to improve. Before giving feedback, she asked the students to reflect on their group presentation and the dynamics of working together. Group C students, who presented on bleeding haemorrhoids, stated that they could present the haemorrhoids patient's issues. However, they forgot to discuss the management of the patient post-operatively and on observation of bleeding. They were happy that they could work as a team and co-operate during group discussions. Two of the students felt that it was quite stressful, especially when the facilitator assessed them, considering they had other modules to concentrate on.

Ivy gave negative feedback to the students first, followed by positive feedback. She commented that the students did not discuss that the patient may have a potential bleeding problem, which is an essential aspect of care. Ivy further commented that they did not mention psychological support to alleviate the patient's anxiety.

Ivy was pleased with how the students analysed the problems and described the causes of haemorrhoids and patient education. The students also drafted a pamphlet for patient's education on haemorrhoids. However, the group should have described the causes of bleeding, its consequences and psychological support. Their presentation skills could be better if they involved other students by asking them to have active participation. The students were receptive of the feedback.

During the interview, Ivy seemed happy as she laughed when verbalising that she prefers to give negative feedback first to the students. She mentioned that she would explain to the students that the rationale for providing negative feedback first is to improve and be better each time in their presentation of the problems. "I will always tell the students that feedback helps them to improve, and we need to be open" (Ivy). Ivy believed that it is not difficult for her to give negative feedback, as she intended to help the students improve. She further added that, when giving feedback, the facilitator should communicate

effectively and clearly explain the students' strengths and weaknesses. Ivy stated that building rapport with students helps the facilitator interact with the students easily and be positive when receiving negative feedback.

### ***Sub-theme 3.5: Assessing PBL***

The PBL assessment was conducted during the eighth week of the first semester. The students arrived early, before the class started at 11.00 am to ensure that the computer system was working and that they had adequate time to check their PowerPoint slides. They were dressed in white shirts or blouses and black pants, and they appeared to be cheerful. Before the presentation started, one group member approached Ivy to inform her that they forgot to bring their marking criteria forms. Ivy went to her office to get it for them.

Five students stood in a row at the corner of the classroom, waiting to present, while one student stood in front of the class, ready to present. Ivy sat in the middle of the classroom to assess the students. Student C1, who was the group leader, introduced the group members and started the presentation by introducing the case scenario. After presenting the case scenario, he involved other groups by asking them to list Mr Gary's problems. It was an interactive discussion between student C1 and other groups. Group C also asked three open-ended questions on the complications of haemorrhoidectomy. Students who managed to answer the questions were rewarded with a bar of chocolate by group C. During his presentation, Student C3 seemed to be cheerful and to know his work. Ivy observed the students closely and, at times, she smiled and acknowledged them.

After the presentation, Ivy asked other groups whether they had any questions to ask Group C. All the students were quiet, so Ivy asked them some questions.

**Fac C Ivy:** What are the treatment options when the patient refuses surgery?

**Std C 2:** Anusol

**Fac C Ivy:** What is the effect of Anusol, and how do you administer Anusol?

**Std D2:** It reduces discomfort.

**Std D3:** It is administered via the rectum.

**Fac C Ivy:** Good effort!

Ivy asked leading questions on the treatment of haemorrhoids. She probed further by asking students about their knowledge of pharmacology. She was pleased with the student's presentation, and she mentioned that she enjoyed and learnt from the students' presentation. She told the group leader not to switch off the laptop as she needed to refer to the PowerPoint slides when giving feedback. She asked the students to provide feedback about their presentation individually.

Student C1 stated that she had a better understanding of managing patients with bleeding haemorrhoids. She commented that working in a group helped her understand her colleagues' views. She commented that she also learnt how to manage a patient with haemorrhoids. Student C2 mentioned that he was sceptical about the other risk factors of haemorrhoids, which were not stated in the case study. He added that his group managed to research the risk factors by referring to nursing journals and library books. He commented that learning in a group was fun and that they learnt from each other by sharing their ideas.

Student C3 stated that his group discussed the aspects of patient education. However, teaching the patient about the importance of having a well-balanced diet was not mentioned during their presentation. He commented that learning in a group was fun, and he learnt from the other group members by sharing their ideas.

Student C4 stated that he learnt about the types of haemorrhoids and the patient's management after surgery. He found that learning together as a team motivated him to work harder. He also mentioned that his past clinical experiences in nursing patients with haemorrhoids helped him in the discussion and presentations.

Student C5 shared that he learnt about the types of haemorrhoids and the management of patients after surgery. He found that learning together as a team motivates him to work harder. He also mentioned that there was not enough time for group discussion in the classroom.

Student C6 commented that he could reflect on his previous experience, working in the surgical unit, on the management of patients with haemorrhoids. He was able to construct knowledge from his previous clinical experience, which was helpful in his discussions.

Ivy sat as she gave the students feedback. She thanked Group C for their efforts and commented that their presentation was good. Ivy added that good communication skills are essential when giving feedback, and the facilitator should maintain eye contact when giving feedback.

Ivy asked other groups whether there are any differences in the management of a patient with haemorrhoids. One student in group A pointed out that there is a slight difference as his group brought up the issue of the patient having osteoarthritis.

Ivy stressed the importance of assessing the patient and checking their health history when they are admitted to the hospital. She further asked Group C whether there is any evidence that squatting in the toilet prevents haemorrhoids. Student C2 mentioned that a longitudinal study has shown that squatting on the toilet bowl helps people defecate and prevents haemorrhoids.

Ivy said that the group work presentation was excellent, with holistic nursing care given to the patient. She asked the students if they had any questions. nobody had. Ivy led some questioning:

**Fac C Ivy:** Very informative. Thank you. What aspects of patient management do you need to improve?

**Student B:** We did not include in detail the types of haemorrhoids, especially third-degree haemorrhoids. This is our dilemma.

**Students D:** We did not include the physical examination of the patient.

**Facilitator:** Yes, physical examination. Why do you need to do a physical examination?

**Student C 4:** To assess the patient's physical well-being.

Facilitator: Yes, it is important to do a physical examination.

Ivy probed the students and stimulated their thinking by asking them to reflect on the nursing care that they did not include in the care of the patient with haemorrhoids. She also emphasised the importance of assessing pain.

Ivy commented that the presentation was informative. Additional information given and the focus of the management of the patient with bleeding haemorrhoids was client-centred and individualised, according to Gary's symptoms. However, one of the learning objectives needed to be more specific. Ivy suggested that it is good to use a laser pointer when presenting a diagram. She further commented that the presentation was systematic; however, eye contact needed improvement. Ivy reflective report stated that reflection and the overall presentation were well done.

### ***Student's Reflective Report***

After the presentation, students had to write a reflective report of their own learning experience and provide their perspectives on the PBL process. The reflective report was an integral part of the learning process allowed the students to self-evaluate and to recognise the value of their contributions to the groups. Ivy reminded the students to submit their reflective report one week after their presentation.

In the assessment of the written reflective reports, Ivy mentioned that the students could reflect on the positive and the negative aspects of their learning process. They felt that they could apply their clinical experience in the construction of new knowledge. They could also learn independently and use their critical thinking skills to guide inexperienced nurses in PBL.

The other aspect of learning PBL is that students worked together as a team to achieve their learning outcomes. They assisted each other and respected their peers' ideas and suggestions.

One student commented that he appreciated teamwork as there was a strong bonding between their groups. Moreover, they could motivate each other to work with pride and discuss in an organised and systematic manner. He mentioned that he was nervous before the presentation started as his was the first group to present. They discussed most of the problems but due to limited time, they were unable to elaborate on the details of nursing management.

One student commented that the PBL session was meaningful and an enjoyable. He understood the treatment and management of haemorrhoids after the discussion. He further pointed out that PBL develops confidence in sharing ideas with the others. They answered all questions correctly. His group could not cover other aspects of management due to time constraints.

Student C2 pointed out that this was his first time attending a PBL class. He commented that he could work with his group members and clarify with them about his doubt to enhance his understanding. His group members were helpful, and they participated actively in group discussions.

Student C3 stated that he was nervous before the presentation, as they were the first group to present. The presentation was well done. However, he mentioned that PBL was still new to him, and it was difficult as he needed to analyse the case study accurately. He did not ask questions as he was fearful that they might be irrelevant. In reflecting on how he learnt, he stated that he always works hard and reads widely, especially nursing journals.

Student C4 mentioned that learning PBL was difficult, especially in finding out the literature on specific problems. "I spent the time to find the resources, and analysing them was not easy. During my year one, PBL was just 'touch and go'"



(Student C4). He stated that he had limited experience in PBL and was unsure about the PBL learning process. He added that his colleagues were kind and reassured him and involved him in the group discussions.

Student C5 commented that his group leader was helpful and delegated to them effectively. He mentioned that the facilitator was very knowledgeable and supportive of their learning. He suggested that the facilitator be sensitive when giving the students' feedback.

Ivy pointed out that the facilitator must have professional and pedagogical knowledge, especially in teaching nursing students. With professional knowledge, lecturers can lead the students in analysing the case study and on the issues that the students need to know. Lecturers who are expert in their speciality are able to share their knowledge and experience with the students, and this makes learning more meaningful.

Ivy commented that it was difficult to assess the students' reflective report, as a few students did not follow Gibbs' model of reflection. Even in doing reflective reports, students would ask lecturers for guidance. They needed a lot of guidance as they are new and have limited experience in managing complex situations. She stressed that a facilitator needs to be patient and scaffold student learning slowly until they can be independent learners.

## **Overview**

This chapter discussed Ivy's facilitation of PBL for second-year nursing students. She encouraged the students to be open and receptive when participating in their group work. Her facilitation style was more student-centred than teacher-centred. Ivy has three years' experience in PBL facilitation. She is motivated to learn about facilitating PBL. Initially, she was afraid and unsure about the technique of conducting PBL. She tried to attend a PBL workshop during the term break. She also consulted her expert colleagues in facilitating PBL. She mentioned that she sat in her colleague's class to observe how the

facilitator interacted with the students, during a PBL teaching session, to learn facilitation skills.

Ivy stated that the students' level of knowledge and motivation level would affect their learning styles in PBL. Every student is a unique individual, and facilitators need to assess their learning styles. The facilitator needs to consider these factors when planning PBL as they may affect their learning.

Ivy was friendly and had good interpersonal skills. She interacted with the students and maintained good rapport with them. She established a conducive learning environment whereby the students could clarify or ask questions to enhance their understanding. Ivy used social congruence to interact with the students during classroom discussion. She stressed that effective communication was paramount to students' learning. Although Ivy was friendly and had good interpersonal skills, she criticised the students in front of other students. Instead, she should have told the students about their mistakes individually.

Ivy stressed that professional role modelling of clinical and academic knowledge helped share knowledge with the students. It also helped the facilitator guide the students and use PBL knowledge to stimulate their thinking. As a facilitator, one needs to be aware of current research, nursing policy, and the facilitation process, which helped the facilitator guide the students.

Ivy was committed to her work, and she stated that she always tries her best to assist students learn. She noted that scaffolding supports learners to construct new knowledge and building on existing knowledge is one method of helping students learn. Ivy's also used questioning, feedback, and cognitive structuring to support students in their learning. She preferred to use cognitive congruence questions in stimulating the students' thinking.

Ivy always gave students' feedback after their presentation. The way Ivy gave feedback to the students was different from the other lecturers. She preferred to give

negative feedback first, followed by positive feedback. She believes that the students learn through their mistakes. However, most literature (Brookhart, 2008) (Dohrenwend, 2002) and Jug et al. (2019) suggests that facilitators should give positive feedback first to the students, followed by negative feedback.

Ivy was an effective facilitator committed to the pedagogic philosophy underpinning learning in PBL. Her behaviour, such as being punctual, kind, tolerant, and motivated, might impact the students' attitudes towards their colleagues and patients. The contextual factors, such as students' prior knowledge, problem design, group composition, and familiarity with the PBL process affected Ivy's facilitating performance. Ivy also distributed mature students with a previous nursing background were equally among the groups by to ensure that group members could share knowledge among themselves. Moreover, students with past clinical experience helped them to apply their prior knowledge to the case scenario, motivating the students to learn. Furthermore, the students could share their knowledge, which assisted Ivy in facilitating PBL. Ivy also attended a PBL workshop and observed experienced lecturers in conducting PBL, which helped her guide the students in PBL.

## **Chapter Seven: Research Findings: Junita**

### **Introduction**

This chapter describes the research findings on Junita, who facilitated PBL for third-year nursing students. This chapter aims to identify ways in which Junita stimulated PBL in the classroom and the challenges she faced using thematic analysis of the data. Themes and sub-themes are presented, together with extracts from the three data sets---PBL curriculum documents, observational data of classroom interactions between Junita and the students, and the interviews with Junita. These sub-themes were developed from a matrix, reflecting the evidence reflected in the raw data. There were three themes and ten sub-themes. Collectively, the data provide a full picture of the lecturer's practice in facilitating PBL in the classroom.

### **Findings**

Table 7.1 provides an overview of the findings from this case, structured into themes and sub-themes.

**Table 7.1***Overview of findings*

| <b>Themes</b>   | <b>Sub-themes</b>   |
|---|---|
| 1. Providing a conducive, non-threatening environment | 1.1 Building rapport and relationship with students<br>1.2 Setting guidelines<br>1.3 Providing an open climate  |
| 2. Managing group dynamics                            | 2.1 Leading the group<br>2.2 Managing conflicts<br>2.3 Collaborating with the students                          |
| 3. Engaging in the PBL learning process               | 3.1 Communicating with the students<br>3.2 Motivating students<br>3.3 Giving feedback<br>3.4 Assessing students |

**Theme 1: Providing a Conducive, Non-threatening Environment*****Sub-theme 1.1: Building rapport and relationships with the students.***

During Junita's first PBL session, she came to the classroom about 10 minutes before the class started. She ensured that the computer was working and that there were adequate flip charts and whiteboard markers for the students to use. She switched on the computer and ensured there is light background music. Junita welcomed the students by greeting them "Good morning." Before commencing her PBL class, she recorded the students' attendance. All the students were present. She then introduced herself to the students.

Junita asked the students whether the classroom temperature was conducive for learning. The students replied that the temperature, about 20 degrees Celsius, was acceptable. Junita also ensured that the classroom was bright and well ventilated.

Junita smiled and seemed happy when she introduced herself to the students:

I'm Facilitator D. I've been teaching PBL for the past two years. I teach diploma and advanced diploma in critical care nursing. I have some experience in teaching research. I have been teaching critical care students. I have done PBL for two semesters. I enjoy teaching PBL because I can engage and interact with students. I've been pleased when the students are able to analyse the problems and are motivated to learn (Junita).

(Facilitator D, PBL group D)

This excerpt was recorded when the facilitator was introducing herself to her students. She mentioned that she is involved in teaching research and nursing sciences. She seemed enthusiastic about her experience in facilitating PBL. She also highlighted her experiences in teaching students on critical care, which was an added advantage for teaching this module on cardiovascular and respiratory nursing.

The students were busy talking about their clinical posting. Junita told them to keep quiet for her to start the lesson soon. She introduced PBL to the students, telling them that PBL is self-directed learning, and they needed a lot of discipline to learn independently. Before she started PBL, she asked the students to introduce themselves to build a relationship and know each other. She told the students that PBL would take 15 weeks. There were four case studies for PBL

related to cardio and respiratory modules. She gave them instructions, including reading the workbook first before coming to their second PBL session.

Junita was smiling and seemed enthusiastic and happy to describe her experience in the clinical setting, which she would use to facilitate PBL. During the interview, Junita mentioned that it was good for the students to know each other before starting PBL. She believed that the facilitator needs to create a learning culture with active interactions between the lecturer and the students. She told the students, "I am always happy and looking forward to interacting with all of you" (Junita).

She then introduced the case study of Mr Lim, a 70-year-old, admitted two days prior. He had a history of diabetes mellitus for 20 years. He complained of tiredness and giddiness, and his blood sugar level was 12.5mg/dl.

She asked the students how many of them have nursed patients with diabetes, a common chronic disease. All the students raised their hands. She asked if any of the students would like to share their clinical experience in nursing the patients with diabetes. One student, Rizal, volunteered to share his clinical experience on how difficult it was to convince the patient to take his breakfast after an insulin injection. "He kept on telling me to wait and not to nag at him to take his breakfast. I was worried that his blood sugar is low" (Student D1).

Junita asked one student to share his clinical experience managing a patient with diabetes. The student found it challenging to convince the patient to comply with the treatment to avoid such complications as hypoglycaemia. He told them that he was worried that the patient's blood sugar was low, which could lead to hypoglycaemia.

Every student had to introduce themselves to the lecturer, stating their names and educational and working experience. This was to assist Junita to build

rapport with the students and to maintain a good relationship. According to Junita, maintaining a good relationship with the students is vital to relate well with them and ensure that they are not afraid to ask questions or clarify issues.

Junita briefed the students on the roles of a leader and a scribe before forming their groups. She instructed students to form four groups of 5-6 students in a group. Each group had to choose a leader and a scribe. They sat in a circle for discussion of the case scenario.

After introducing the case scenario, Junita told the students to discuss any terms in the case study they did not understand and determine the causes of these problems. Students discussed the case using the PBL format given by Junita. Junita walked around the classroom to ensure that students participated actively.

Junita used her clinical experience and specialist knowledge to guide the students during the discussion. With her previous experience working in the ICU, she could also apply her knowledge and skills to guide the students as this module focused on cardiovascular diseases.

Junita mentioned that she loves teaching PBL despite being new to the subject during the interview. She described PBL as student-centred learning that stimulates students' thinking through complex, realistic problems using clinical situations. It helps students develop critical thinking skills and make decisions in their patients' care. It also motivates students in deep learning approaches.

Junita felt that she had adequate knowledge of PBL. "I also need to be curious and give student cues to stimulate critical thinking" (Junita). For example, she used differential diagnosis to direct students to think the most probable diagnosis. There is no one causal factor, but many causal factors.

According to Junita that she has adequate knowledge and experience in nursing and facilitating knowledge and the topics related to the subject she taught.



"I am undergoing through the real thing, and you have seen that I'm convinced that I'm able to apply my clinical knowledge in the classroom during the discussion with the students" (Junita).

Regarding knowledge in PBL, Junita stated that she has limited knowledge in facilitating PBL, especially guiding students in the PBL process. However, after observing a few experienced lecturers facilitating PBL in the classrooms, Junita mentioned that she became more confident. "That's how I learnt to conduct PBL" (Junita).

She further mentioned that she would prefer other lecturers to observe her teaching, especially in scaffolding the students and give her feedback. This would assist in improving her facilitation skills. "It is not easy to scaffold students in PBL. Sometimes, I tend to give the student the answers instead of guiding them" (Junita).

Junita mentioned that the PBL process was not easy, especially since she was still new to it. She was still learning how to scaffold students. She also needed to attend PBL workshops to improve her facilitation skills, especially scaffolding the students.

Junita added that she believes that an individual lecturer's personality and behaviour play a part in students' learning. She stressed that the lecturers' behaviour might affect the students' learning. For example, strict and controlling lecturers deter students from participating in PBL sessions as they fear speaking up or asking questions. "I think the lecturers must have good interpersonal skills and respect them as every student is a unique individual" (Junita).

Junita always valued her students in the classroom. For example, she praised them for working hard on analysing the problems. She believes that PBL helps students learn from many angles, and there are many right answers and

possibilities of wrong answers. In Junita's perspective, in PBL, problem triggers should engage students to work together if they are motivated to learn. She further commented that individual students' learning capabilities are different and incomparable. Overall, she found the students interactive and motivated to learn. Junita interacted with the students by asking them leading questions.

**Fac D Junita:** In diabetes mellitus, why is the blood sugar high?

**Std D1:** It is due to the Islets of Langerhans of the pancreas not producing enough insulin.

**Std D2:** I think there is insulin production; however, the insulin is not effective.

**Fac D Junita:** Excellent! What is the action of insulin?

**Std D3:** Insulin is used to control blood sugar levels in people with type 1 diabetes.

**Std D5:** It also brings down the blood sugar.

**Fac D Junita:** How do you administer insulin?

**Std D1:** Insulin is administered subcutaneously.

During the interview, Junita mentioned that the facilitator should ask the students open-ended and leading questions to stimulate their thinking skills. She even prepared her questions before facilitating PBL. Junita further mentioned that open-ended questions result in deep learning.

Junita was committed to her work and aimed to inspire the students in PBL, stressing the importance of working together as a team and using critical thinking skills to solve problems. She also built relationships with the students through her introduction, and by highlighting her expertise in the subjects that she teaches and facilitates. She was also caring and supportive and emphasized that if the students needed help, they were free to approach her at any time.

The facilitator also provided a supportive learning environment. She appeared to be friendly and genuinely wanting to assist her students. She was caring in her approach and helped guide the students. Students preferred a supportive and caring facilitator to enable them to learn effectively. They felt that the facilitator could maintain a good relationship with them. The students' feedback suggests that Junita was patient, caring and supportive of students' learning. With her background as a professional nurse, her caring behaviour was evident to the students.

### ***Sub-theme 1.2: Setting guidelines.***

Setting guidelines is another role of the facilitator in PBL. Junita briefed the students on PBL guidelines, which were stated in the workbook. She expected them to listen attentively and comply with the instructions. She stressed the importance of attending the tutorials regularly and being punctual. Junita expected every student to participate in group discussions, emphasising the need to read a lot and find resources from the library. She further encouraged the students to review the literature on managing patients with diabetes mellitus after listing the problems. During PBL discussions, Junita observed that two of the students in the group did not follow her instructions. They were doing their assignment on their laptop instead of participating in the group discussions. Junita told them to switch off their laptops and participate in the group discussion.

In another situation, Junita had to intervene when the students did not focus on their discussions. This example shows how June intervened when the students disagreed with each other's views and suggestions:

**Std D1:** How do you manage hyperglycaemia?

**Std D2:** Need to give intravenous insulin.

**Std D1:** I think you need to check the blood sugar first.

**Std D2:** No, usually, the doctor will order intravenous insulin first to bring down the blood sugar level.

**Std D3:** How do you know how much insulin is required when the blood sugar is not measured?

**Std D1:** I think you need to check the blood sugar first.

**Std D3:** Blood sugar should be done first. I agreed with D1.

**Std D2:** Need to give intravenous insulin.

**Std D5:** I see what you mean, but I'm not entirely convinced. You need to check the blood sugar first.

**Fac D Junita:** Yes, it is great that all of you have contributed ideas together on how to resolve hyperglycaemia. You need to make decisions together as a team, respect each other's ideas, and search for more literature on hyperglycaemia management.

Junita resolved the conflicts by explaining to the students that they had to respect each other's ideas according to PBL guidelines. She advised them to share ideas and suggestions and make decisions. She reminded the students to follow the ground rules that she had set to avoid disagreement and conflict. The ground rules helped resolve conflicts and helped students be independent learners. During the interview, Junita mentioned that it is good to set ground rules for students to follow, especially when they argue or disagree with each other's views.

### ***Sub-theme 1.3: Providing an open climate.***

Junita believed that as a PBL facilitator, it is essential to engage the students by establishing an open climate. She told the students they were free to contribute

their ideas matter, whether right or wrong. They were encouraged to ask questions and clarify if the learning objectives. Junita mentioned that facilitators should provide a conducive environment where they interact with and students actively. The facilitator should not create fear in students as this would deter students from asking questions or clarify what they did not understand.

Junita preferred the students to be open and ask for help if they are unsure how to approach any issue. She also wanted them to inform her whenever they faced problems with their group members. Indeed, Junita spent time with her students to analyse the issues arising from the case scenario.

## **Theme 2: Managing Group Dynamics**

### ***Sub-theme 2.1: Leading the group***

Junita planned and managed the students' learning effectively. She gave the students responsibilities and set clear expectations of the learning outcome. She believes that the facilitator is like a leader giving the group leader the power and autonomy to lead group discussions. She instructed the students to work as a team and consult her if they faced difficulties. She further commented that the tutor role is to guide, question, and not teach. She argued that, as a facilitator, one needed to motivate and challenge the students to solve the problems.

Junita guided the group leaders on how to organise their teams and assigned the members appropriately. She instructed the leaders to organise the students into four groups and ensure that every group has one male student, as there were only four male students in the classroom. She also monitored that each group was focused on their group discussions and ensured they were on the right track.

Junita believed that the tutor's role is to lead the group and give them time to learn independently. She further mentioned that the facilitator needs to drive the group and motivate them to achieve their goals.

### ***Sub-theme 2.2: Managing conflicts.***

Managing conflict among the students is another role of the lecturer to ensure students get along well. Student D1 always wanted to answer the questions. Junita had to tell him that he was participative, but he had to allow other students to answer questions. Student D1 was receptive of Junita's comments and remained quiet subsequently.

Another problem was that student D2 was unhappy with Student D3. D2 mentioned that she tried her level best to find resources on the pathophysiology of hypoglycaemia, but Student D3 was unhappy with her contributions. Student D3 commented that the pathophysiology on hypoglycaemia was not adequate and told off Student, D2 "You have not done your work properly. You need to repeat it." This upset Student D2, who went to see Junita for advice. Junita reassured her, advised her to be patient, and showed her how to find resources from the library. She also encouraged her to use anatomy and physiology books for references. She arranged a discussion with Student D3 on the conflict and told him to respect every member's contributions and be sensitive to them. Student D3 was receptive to Junita's feedback.

Junita mentioned that it was challenging for her to resolve conflicts among the students. She commented that it was difficult for her to resolve disputes among them, especially when they were not happy working together. For example, some students did not get along with their group members and wanted to switch groups. "It was difficult for me to change their grouping as other groups' members

were not willing to accept them, especially those who were not contributing actively in the group discussion" (Junita). She spent time counselling them and even attended their group meeting to ensure that everyone contributed ideas in the group discussion. Junita mentioned that she had to be fair and listened to the students' issues before making decisions on how to handle the conflicts.

Junita remarked that she facilitates PBL and leads the groups to ensure that they work together as a team. She commented that the facilitator's role is to lead the team and empower them to learn independently to be self-directed learners and increase their learning satisfaction.

### ***Sub-theme 2.3: Collaborating with the students.***

Another role of the PBL facilitator is to collaborate with the students. Junita ensured that the students learned together as a team. She was sat with them and asked them leading questions during the discussions. The students were brainstorming their ideas on managing a patient with hypoglycaemia. Student D2 and D3 were adamant that they must prepare insulin intravenous for Mr Ray to prevent hyperglycaemia. However, after confirming the latest hyperglycaemia management literature, the group agreed to administer an insulin injection to prevent hyperglycaemia.

Junita also encouraged active engagement and interaction among the students to learn collaboratively. She encouraged students to activate their prior knowledge, such as using their clinical experience to construct new knowledge. She also motivated them by encouraging them to ask questions and seek clarifications among their peers what they did not understand. She fostered a mutual respect culture as the students shared their strengths and limitations and encouraged them to support each other in learning.

During the interview, Junita stated that every student had to participate, contribute their ideas and support their group members to achieve their learning objectives. She commented that students were very cooperative as most of them were mature. Most of them had working experience, and it was quite easy for her to facilitate learning. During self-directed learning, the students made appointments to discuss with Junita about managing a patient with diabetes. "They were hardworking, and they really needed guidance. I was pleased to support and give them encouragement to ensure they focused on the management of the patient's problems" (Junita).

Junita commented that the students were happy to work together with her, and they felt motivated when the facilitator is there to support them. She also acknowledged the students' contributions by praising them. She also stressed that the facilitator must respect the students' contributions even if they are inaccurate, as they have tried their level best to participate *in the discussions*.

### **Theme 3: Engaging in the PBL Learning Process**

#### ***Sub-theme 3.1: Communicating effectively with the students***

Junita stated that good communication skills are vital for the facilitator. She believed that the facilitator needs to be open and honest while communicating with the students. During the first session of PBL, Junita interacted with the students and answered a few questions regarding the case study. The students asked Junita for how long the patient would be prescribed insulin injection and their other histories other than hypertension. Junita answered the students promptly based on her clinical experience. Her voice projection was clear, and she was able to gain the students' attention during the introduction of PBL and case study. She stressed the importance of following guidelines by asking the students to refer to



the HS 2032 workbook.

She displayed good listening skills by paying attention to students' inquiries and answering them promptly. She also encouraged the students to communicate with their group members effectively. She maintained eye contact and listened attentively during students' presentation. According to her, she had to be fair to the students, use her observational skills and listen attentively to the students' presentations to grade them fairly.

During the interview, Junita stated that the facilitator should communicate to the students effectively to interact and engage them in learning. She mentioned that the facilitator needs to be sensitive to the students' feeling when giving feedback. When giving negative feedback, it is good to explain to the student their weaknesses in private and how to assist them in improving learning. Junita even mentioned that the tone of the lecturer's voice should be soft and use non-verbal cues when giving feedback.

### ***Sub-theme 3.2: Motivating students.***

The role of the facilitator is to motivate the students to learn. Junita mentioned that she motivated the students using various means. She paired the local students with foreign ones to enable them learn together. She also encouraged the students to do self-directed learning by guiding them to search the library databases and see her after lessons to clarify issues they could not understand.

Junita motivated and supported her students in PBL. For example, Junita encouraged the students in PBL:

**Fac D Junita:** Please try to think carefully. Ask yourself what information you need to find regarding hyperglycaemia

**Std D2:** Need to find out the clinical features of hyperglycaemia

**Std D3:** Need to recognise the signs and symptoms of hyperglycaemia which are giddiness, nausea and vomiting, abnormal thirst and passing a lot of urine.

**Fac D Junita:** Yes, good. Continue with the management of hyperglycaemia.

**Std D4:** Need to administer insulin intravenously.

**Fac D Junita:** Great, good clinical reasoning skills. (24 Nov 2016).

Junita was observed using this strategy during her PBL facilitation. She seldom judged her students' response or gave the student the answer. Instead, she would introduce a question to motivate them as she believed that they could answer the questions. She wanted the students to explore knowledge and find their mistakes by themselves. She also encouraged them to reason in-depth, develop their critical thinking abilities and derive satisfaction from solving problems.

During the interview, she believed that it was essential to provide a non-threatening environment for the students to learn. She further highlighted that "From my perspectives, my students were comfortable, guarded and not threatened by my questions. I always ask straightforward questions" Junita.

According to Junita, providing a non-threatening environment is also another role of the facilitator to motivate the students. She was adamant that her students were comfortable and not threatened by her questions. As a facilitator, she should ask closed-ended questions and open-ended questions that stimulate the students' thinking and improve their cognitive knowledge.

Junita mentioned that the other aspect of motivating students to learn is the lecturers' behaviour. During PBL sessions, Junita was cheerful and

approachable and helped the students learn. "Some lecturers are stern-looking and cranky and are not helpful, and these behaviours exhibited will deter the students' learning." According to Junita, a lecturer's negative behaviour affects students' learning. Some lecturers are not friendly and approachable, which prevents students from asking questions and demotivates them in learning.

Junita also motivated students by listening to their opinion and acknowledging them. She mentioned that adult learners wanted praises, and she would use words such as "well done" and "I am proud of you." She believed that using a sense of humour is vital to boost the students' morale and reduce their stress level.

### ***Sub-theme 3.3: Giving feedback.***

Junita gave the students constant feedback after the presentation. She believes that, when giving feedback, the facilitator should inform the students about their strengths and weaknesses to improve. Junita mentioned that one must use soft approach skills and be non-judgemental. She said that it is important to choose appropriate words, and the facilitator's tone of voice should be soft. Junita further stressed that the facilitator should empathise with the students and not hurt their feelings when giving negative feedback.

Before Junita gave feedback, she asked the students to reflect on their group dynamics. Group D students felt happy that they worked together as a team and everybody in the group contributed their ideas during the discussions. The group leader mentioned that he gave every member of the group an equal amount of work. He added that working cohesively as a team helped them finish their PBL on time and increased their satisfaction level. They felt that they did well on the management of a patient with hyperglycaemia.

Junita's feedback that the students discussed the problems well and hyperglycaemia management was comprehensive. However, the group should have focused on describing the investigations such as full blood count (FBC), urea electrolytes (U/E) and liver function test (LFT), which might affect the patient's condition. Junita further commented that relieving patients' anxiety is another aspect of nursing care that was omitted. They could enhance their presentation skills by preparing some questions for other groups.

She also gave feedback on the students' communication skills, stating that they tended to read their notes instead of presenting the patient's problems. She commented that the presentation would be more effective if the students used non-verbal cues such as eye contact and express their ideas clearly and confidently.

### ***Sub-theme 3.4: Assessing PBL***

During the third session of PBL, Group D arrived early at 3.40 pm before the class started at 4 pm as they were worried that the computer was malfunctioning. They discussed their roles in presenting the case study for assessment and agreed upon their roles.

Before the assessment, the group leader handed over the marking criteria to Junita. Junita sat at the back of the classroom and observed the students' presentation skills. The students were dressed in blue shirts or blouses and black pants and were well-groomed.

Before the presentation, four students stood at the corner of the screen; one student sat at the laptop, and the leader was standing in front of the class. The leader introduced the group members, and they started their presentation by showing the case study on the screen, which they created to enhance the students' understanding. During the presentation, one student from Group B asked about the

health education of the patient with diabetes. Group D1 student answered the question confidently. Student D4 was confident, and she seemed to be articulate and knew her work well. Junita observed the students, and at times, she acknowledged the students by smiling at them.

After the presentation, Junita stood in front of the class, asking the students whether they had questions for group D. One Group B student asked a question on the causes of low blood sugar. Student D1 answered that the patient had low blood sugar because they did not take their diet after the insulin injection. Junita was pleased with group D's presentation and mentioned that she learnt from them. She mentioned that the students listed the patients' problems accurately and hypothesised and used clinical reasoning skills to explain how the problems occurred. However, Group D did not explain the rationales of the investigations done. She suggested that the students use their clinical reasoning skills to explain the rationale of the investigations done to enhance their understanding of managing a patient with diabetes, leading to deep learning.

Junita met the students individually to give them feedback. She commented that Student D1 clearly explained the management of the patient with diabetes. However, observations of the patient needed to be explained clearly. The frequency of monitoring patient's blood sugar was not mentioned.

She was impressed with Student D2, who was the leader of Group D. She praised Student D2, who led his group effectively by assigning them roles fairly in their preparation of the presentation. His group members respected student D2 due to his commitment as a group leader. She motivated the student to study hard and try his level best to achieve a GPA score of 3.5.

Junita found that Student B3's explanation on the use of insulin in the treatment of diabetes was clear. However, she needed to improve her presentation

skills, especially on her eye contact. She was told not to read the scripts. She encouraged Student B3 to practice a few times before her presentation. Student B3 agreed on the feedback by nodding her head and thanking Junita.

Student D4 was slightly nervous during the presentation, although she managed to finish her presentation on time. Due to her nervousness, she forgot to discuss the patient's education on diabetes mellitus. Junita reassured her that she had tried her level best and her presentation skills, especially her eye contact, were good, and her voice projection was loud and clear.

Student D5 commented that he was able to reflect on his experience, working in the medical ward on the management of a patient with hyperglycaemia. He mentioned that he assisted the doctor in the administration of insulin. Student D5 was able to construct knowledge from his previous clinical experience, which was applicable and helpful in his discussions.

### **Students' Reflective Report.**

Reflection is an essential role of purposeful activity in PBL whereby the students analyse their experiences to learn. It also assists them in improving their learning. The students had to submit a reflective report on their presentation, as a summative assessment, one week after presenting the case scenario. Junita emphasised the guidelines for writing reflective reports using Gibbs' model of reflection.

In the assessment of the written PBL summary report, Junita commented that the students could reflect both on the positive and negative aspects of learning. Most of the students found learning PBL enjoyable and could apply the knowledge gained to clinical practice. They would also be able to learn independently and PBL motivated them to ask questions and to use critical thinking skills. Moreover, they

felt that they could apply the knowledge gained in the classroom to nursing the patients in the medical and gerontology setting.

The students were happy working in groups. They helped each other and respected each other's ideas. Moreover, group work assisted them in working co-operatively as a team. One of the students in group D commented,

The feedback given by the lecturer was helpful. My group needed to discuss the rationale of investigations for diabetes patients in detail. I was happy that most of the feedback was positive. Overall, I enjoyed PBL, and it stimulates me to use my critical thinking skills in solving the problems (Student D3).

Student D4 found PBL challenging and enjoyable, especially team learning. She commented that "I learnt through the group and we helped each other." She mentioned that there was no competition among their group's members. The facilitator was helpful and guided them throughout the learning process.

Student D5 commented that PBL involved a lot of work. "I really took my time to search for literature." She added that PBL helped her approach problem-solving by delegating tasks to her group members. She said that "I also felt stressed at times, but at the end of the day, I benefited from the knowledge gained."

Student D6 mentioned that the group leader was helpful and delegated roles fairly. Self-directed learning was initially difficult for her, but with perseverance, she overcame her fear. She felt happy, as she was able to find resources with the facilitator's guidance. The students enjoyed PBL, although there was a lot of homework. They also commented that the facilitator was helpful and guided them in the learning process.

Student B4 from China found PBL engaging and helped her improve her English. She also stated that her colleagues helped and motivated her to communicate in English. She added that PBL enhanced her knowledge of patients with diabetes. She also received feedback from her colleagues on how to improve her communications skills.

Junita stressed that one must have pedagogical knowledge and professional knowledge to guide students in PBL. With professional knowledge, the lecturers can guide and teach students to make decisions and accurate nursing diagnoses. Moreover, they need to have cognitive knowledge in bioscience for clinical reasoning of the patient's investigations.

Junita stated that a facilitator needs to be sensitive to students' feelings, especially when giving negative feedback. Using appropriate body language, such as a proper tone of voice, eye contact, and smiling when communicating with students, are important during feedback. Appreciating and commending the students' hard work, for example, by saying "excellent work," and "you have done well," increases the students' motivation. Junita was open when giving feedback. She highlighted positive feedback first and praised the students for presenting the problems and diabetes management. She gave negative feedback to help students improve their learning. The students were receptive of negative feedback. Then, she ended by giving positive feedback praising the students for the group's cohesiveness and working together as a team.

## **Overview**

This chapter discussed Junita's facilitation of PBL to second-year diploma in nursing students. Her typical facilitation style was more student-centred learning than teacher-centred learning. Her teaching strategies were mainly group



discussions. Junita commented that she has limited experience in guiding the students. Junita viewed PBL as an instructional strategy for lecturers to guide students. She stated that the students' level of knowledge, learning styles, and educational background are the factors that the lecturer should consider during planning, as they may affect their learning.

Junita built rapport and maintained a good relationship with the students. She built a good rapport with her students by communicating with them and sharing her clinical experiences in managing patients with hyperglycaemia. She cared about the students and supported them in their learning by helping them find resources from the library. She used her extensive clinical knowledge to engage the students in the PBL process actively. This was evident when Junita asked one student about the nurses' role in managing hyperglycaemia patients. The student could integrate her previous clinical experience to construct knowledge during PBL. Junita also tried to alleviate students' anxiety by introducing light music during learning. She believes that music slows the students' heart rate and is conducive to learning. She built up students' confidence in learning by praising them when they answered her questions.

Junita faced many challenges during the facilitation of PBL. She always needed to cope with the limited time given for PBL, and she felt that adequate time should be given for PBL. She suggested that at least two hours be given for the first PBL session to guide the students effectively. She mentioned that she always reflected on her facilitation skills, what she did well, and how to improve her facilitation skills. She found that every class that she facilitated PBL was different, and the mature students they were motivated to learn, and it was easy for her to facilitate PBL. It was a tremendous challenge for Junita to support and control the learning environment, especially when she was inexperienced in conducting PBL.

She commented that, although she had observed one lecturer conducting PBL, she still needed more time to learn the art of facilitating PBL. She had not attended any training in PBL since she joined the institution two years ago. However, with her nine years of clinical experience, she felt that she has some knowledge of the subject and can conduct PBL. She suggested that every lecturer should attend a PBL facilitation workshop before facilitating PBL.

Junita used questioning in PBL discussions. She asked direct, simple closed-ended questions more often compared to open-ended questions. According to Schmidt et al. (2011) open-ended questions that focus on eliciting and extending students' ideas lead to more productive discussion than closed-ended questions. Indeed, Junita should have asked open-ended questions to stimulate students' thinking.

Junita believes that the facilitator role in PBL is complex. A facilitator should be flexible, group-oriented and able to interact with the students effectively. She believed that good facilitation skills could be achieved through experience in teaching and the ability to scaffold student learning in PBL.

Junita was a novice lecturer with two years' teaching experience in PBL. Her behaviour such as being helpful, patient, and committed to her work impacted students' learning. She shared knowledge with the students and collaborated with them. Junita was socially congruent and interacted with the students in a relaxed and non-threatening environment. She was very generous in rewarding the students with a chocolate bar to appreciate their participation and motivate them to work hard.

She suggested that a guidebook on how to conduct PBL should be implemented to ensure there is consistency in the facilitation of PBL. She was aware of her lack of training on PBL and looked forward to attending a PBL course

to improve her facilitation. Although she had limited experience in facilitating PBL, she was enthusiastic and had a positive attitude that she can guide her students effectively.

## **Chapter Eight: Analysis and Discussion**

### **Introduction**

This chapter focuses on the analysis of the role of the lecturers in facilitating PBL. The cross-case analysis examines the similarities and differences between and among the four cases. The discussion also links the analysis to previous research to compare the research findings. Evidence from this (Schettino, 2016) study shows that the PBL facilitation process is complex and challenging for nursing lecturers to prepare students for clinical practice. A thematic analysis was adopted in this research to assist in analysing, organising and describing the findings. The following themes were identified:

- Providing a conducive, non-threatening environment
- Managing group dynamics
- Engaging in the PBL learning process

### **Providing a Conducive, Non-threatening Environment**

The role of the lecturer in PBL is to provide a conducive learning environment for the students. According to Schettino (2016), a good learning environment is vital to help students to learn. This is supported by Savin-Baden (2003) and Tharani et al. (2017), who argue that a conducive learning environment is necessary for students' learning in PBL and impacts their learning outcomes. In a study of students' perceptions about the PBL learning environment, Tharani et al. (2017) found that students preferred a safe and conducive learning environment. In this study, the facilitators ensured a conducive PBL learning environment through formal and informal processes. In the formal process, all the facilitators ensured that the physical learning environment was conducive through the classroom layout, use of audio-visual equipment and the accessibility of

resources. In an informal learning environment, the students consulted the lecturers by clarifying issues to enhance their understanding during their self-directed learning.

According to Marx et al. (1999), the classroom seating arrangement plays a part in students' learning environment. Aini (section 4.2), Ivy (section 6.1) and Junita (section 7-1) arranged the tables and chairs in a semi-circle for the group discussions. This seating arrangement allows students to see each other and encourages more interactions between the facilitator and the students (Atherton, 2005). This is supported by Marx et al. (1999), who stated that students seated in a semi-circle can easily establish face-to-face interactions. Moreover, students can ask more questions in a semi-circle seating arrangement compared to sitting in rows (Marx et al., 1999). However, Devi (see 5.1) preferred to arrange the chairs and tables in rows, as she wanted the students to role-play on the given case scenario. In Devi's classroom, the students in the back row were seen to be talking without listening to the discussion and other students' contributions. This may affect other students' concentration level of learning and may lead to poor learning outcomes.

As noted above, the layouts chosen by Aini, Ivy and Junita were different from Devi's. According to Atherton (2005), arranging chairs and tables in rows is a top-down approach and a teacher-centred approach to learning. Atherton (2005) added that active learners in the classrooms are better oriented through circle or cluster seating arrangements compared to row seating. However, Simon et al. (2015) argued that although seating in rows does not foster collaboration, it is a good seating arrangement for students' assessments and for them to work independently.

The classrooms in this context were not only used for PBL but also other

teaching activities. Whenever there is PBL, the lecturer and the students must rearrange the chairs, which is quite inconvenient. In other PBL settings, there are rooms designed especially for PBL and the chairs are arranged neatly in a semi-circle. It would be effective if some classrooms are designated for PBL, and students are able to use these rooms at any time for discussion (Eberlein et al., 2008). The other advantage of the designated classroom for PBL is that students can leave their notes on used whiteboards to refer to during discussions. However, Johnston (2009) argued that classrooms can be used for other purposes and should not necessarily be designed for only PBL, as this is more cost-effective. The facilitators also addressed other aspects of preparation to ensure a comfortable learning environment, including room temperature, lighting and windows.

In Aini's classroom, the temperature was initially set at 27 °C, and it was too hot. Aini was concerned about the students' learning environment and regulated the temperature to 25 °C to ensure that the learning environment was conducive.

In Devi's classroom, the temperature was set at 20 °C, and it was raining heavily. When one student complained that it was cold, Devi adjusted the air conditioner temperature to 25 °C. Ivy and Junita's classrooms temperature was set at 20 °C that the students felt comfortable with as it was warm outside the classroom, and the temperature was 34 °C. Song et al. (2012) studied air conditioner regulation and measured the students' temperature. They found that the ideal classroom temperature was between 23.7 °C and 27.3 °C. Song et al. (2012) pointed out that most conditioners' average temperature setting is approximately 20 °C.

According to Ahmad (2015), having adequate lighting helps students focus and engage in learning. Furthermore, the facilitators can control the brightness of

all the classrooms using a separate switch as required according to the learning activities. All the four classrooms had access to windows and natural light, which helped create a bright, conducive and cheerful environment.

Aini and Junita provided some resources for the students, including journal articles and books, to assist them with their research. In PBL, students are encouraged to find more resources and research on their own to find more in-depth information on the problems and diagnosis. This is congruent with PBL philosophical principles, where students need to be self-directed and empowered in their learning process (Savin-Baden, 2003).

Adequate resources are essential if PBL is to be successful (Salinitri & Wilhelm, 2015). Without adequate resources, students would not be able to relate the causal factors of the problems, especially in applying knowledge about bioscience, pharmacology, and social science. The students in this research were guided by all the lecturers on how to access electronic resources via the institution's library as they were novices.

Groups B and C found many resources from the library, but they experienced difficulty analysing them. Moreover, it took them time to select and evaluate the articles. This group needed to learn from other groups and share their ideas on evaluating the resources. They were too shy to ask the lecturer or their peers how to analyse the articles related to their case scenario. In self-directed learning, students must be responsible for their own learning and if they do not understand, they should ask the facilitator to guide them. Although students are empowered to learn on their own in self-directed learning, they can still consult the lecturer or tutors for guidance. In this respect, the facilitator should facilitate learning. Instead of being the "sage on the stage," they should move to the "side of the stage" to guide the students in the learning process (Mifflin, 2004).

Ivy did not provide adequate resources for the students as she only provided flip charts and markers but did not bring along books or journal articles. There were about 15 sheets of flip chart paper and ten marker pens—red, blue and black—neatly arranged on the table. The students were asked to use flip charts in Aini's, Ivy's and Junita's classrooms to write down their issues and ideas. However, in Devi's classroom, only a whiteboard and marker pens were used during student discussions. Using flip charts or whiteboards during their group discussion is appropriate in PBL as the students were able to refer to their discussions after the class, and any suggestions could be written down. According to Hmelo-Silver (2004), this serves as a focus for students in negotiating the problem. It also serves as a platform for students to co-construct their knowledge. Hmelo-Silver (2004) further purported that the use of whiteboards provides a way to approach problem-solving and helps students plan and monitor what needs to be recorded or removed from the whiteboards.

According to Uden and Page (2008), a classroom should be well organised and have the required resources readily available. However, Devi and Ivy did not bring the books for students. Instead, they instructed the students to search for articles online. There was only one computer in every classroom for the facilitators to access the Internet and facilitate the search for information during teaching sessions. Kehrwald et al. (2011) pointed out that the computer is a useful pedagogical tool that assists the teacher in the learning and teaching process.

Nine students brought their laptops to use for their literature search in Devi's classroom. Using computers to search for articles in PBL assists students in obtaining information easily. Besides information, guidelines and assessment criteria were posted through a course management system (Blackboard) for students' easy access. Moreover, the use of information technology in PBL can



increase access for students who can participate in learning at their own time and pace (Jin and Bridges, 2014). Jin and Bridges (2014) further pointed out that using technology in PBL helps the students in their presentation and assisting them in sharing knowledge. This is congruent with the findings of Park and Ertmer (2008) that the use of information technology in PBL increases students' engagement and motivation level. However, without guidance, the students may waste a lot of time finding resources that are not related to the PBL scenario's focus. The facilitator should guide the students in finding the resources and recommended books available in the library.

Another strategy used to enhance student learning was providing background music. Junita (facilitator D) was the only facilitator who provided soft background music during PBL to relax the students and relieve their stress. She believed that music assisted learning by relaxing the students. She even measured the students' pulse during PBL with soft Beethoven music and found that the students' pulse rates were within normal limits of 70 to 80 beats per minute. This connects to Yehuda's (2011) finding that positive hormones are released when background music is played in the classroom, lowering students' stress levels. The students were relaxed and enjoyed PBL with background music.

Aini, Devi and Ivy did not use background music while facilitating students' learning. However, the students were observed engaging actively in the discussions, but they seemed tense up and stressed from their facial expressions. Aini, Devi and Ivy were surprised that Junita used background music in her PBL sessions. Ivy and Aini pointed out that they did not believe in using music as it might interfere with students' learning.

***Building rapport and relationship with students***

Building a good rapport and relationships with the students is another role of the facilitator and was evident in the four classrooms. All the four facilitators' strategies included introducing themselves and outlining their background and clinical experience. They stated that developing a trusting relationship with the students was vital to gain their co-operation. This was to help the students know the facilitator and build a relationship so that students do not feel threatened when asked questions during PBL. In PBL, students learn by collaborating with the facilitator. Facilitators work together with the students and guide them to ensure that they are in the right track during discussions (Doherty et al., 2018).

The facilitators also outlined the expected learning outcomes. Robinson et al (2015) showed that the facilitator's relationships with the students have an impact on their learning outcomes. All the facilitators had good interpersonal skills and could relate effectively with the students. Similarly, the students in this study also introduced themselves to the facilitators. Kassab et al. (2006) state that students appreciate tutors who can maintain a good rapport with students, value and respect their opinions, and understand their feelings. All the lecturers in the present study maintained a good rapport by learning the students' names and asking them to introduce themselves and state their experience. Students' feedback showed that they appreciated the facilitators who valued and respected their contributions.

All the study facilitators were approachable, showed concern for the students, and were available whenever they needed assistance, such as clarifying the case scenario and asking questions. The facilitators also provided a supportive learning environment. They appeared to be friendly and wanting to assist their students. The students preferred a supportive and caring facilitator to help them

to learn effectively.

Aini and Junita instilled a sense of humour by joking with the students. The students laughed and enjoyed PBL. However, Devi and Ivy were very serious, and the class was quiet most of the time. According to Achike & Nain (2005) and Morrison (2012), humour facilitates students' learning, increases attention spans, reduces stress and builds student-tutor relationships.

Students' feedback suggested that Aini, Devi, Ivy, and Junita were patient, caring, and knowledgeable and guided them effectively during the PBL process. This is consistent with Goh's (2009) findings. Goh investigated polytechnic students in Singapore, perceptions of what constitutes a good PBL facilitator. Goh's (2005) findings showed that the students preferred facilitators who are approachable, patient, friendly, and have a sense of humour. They also appreciated facilitators who provided affirmation and encouragement during PBL. This is supported by Moore's (2009) findings that maintaining positive relationships between tutors and students assisted student learning. All the facilitators also praised students when they answered questions and for their involvement in group discussions. They also provided support by guiding them and by emphasising the need to learn independently rather than depending on the facilitator.

Aini was quite relaxed, with her hands at her sides as she walked around the classroom. There was a lot of laughter among the students. Aini was the only facilitator who used humour in PBL. One example was when students were told to assess each other's work. Group D students did not understand what Aini meant when she told them to walk across diagonally to assess group C's work. Instead, they walked straight to group A. Everyone broke into laughter, including Aini. Creating a learning environment through humour helps tutors focus on group processes and sharing ideas to educate students for professional practice and life-

long learning (Chauvet & Hofmeyer, 2007). Similarly, Skinner (2010) pointed out that through integrating humour in the classroom, students learn and retain more, and it is also effective in enhancing students' achievement.

Aini, Devi and Ivy were concerned about students who did not turn up for their classes. They asked the present students the reasons for their absence. They were worried about the students' absence and went the 'extra mile' by making phone calls to the students after the facilitation. However, all the students in Junita's class were present for all PBL lessons. If the students missed the PBL sessions and the discussion of the authentic case scenario, this might have an impact on their clinical reasoning skills when making decisions about the care of the patients during their clinical attachment. Indeed, this might impact making an accurate judgement on patient care, which may affect patients' safety.

Thabet et al. (2017) did a quantitative study on the effect of PBL on nursing students' decision-making skills. They found that the mean score of decision-making skills in the study group increased after PBL. Therefore, PBL plays a vital role in developing nursing students' decision-making skills. The other reason why students need to attend PBL sessions is that absenteeism may affect their learning outcome. The students needed to write a reflective assignment after PBL, and the facilitators were worried that they would not be able to reflect on their PBL discussions if they missed some sessions.

Aini, Devi, Ivy and Junita also welcomed any questions or doubts, and students could make an appointment with their lecturers after PBL sessions. They were concerned about the difficulties the students faced in learning. The facilitators' caring behaviour in this study may be related to their professional background and clinical experience.

Devi was anxious and always reminded herself to smile when orientating

the students to the PBL scenario. She was worried that the students would notice if she appeared stressed, especially as she was still new to facilitating PBL. Although she was anxious, she was gentle, soft-spoken and supportive of student learning. She willingly assisted the students whenever they did not understand the problems and clearly explained to them to enhance their understanding. This is congruent with Murad et al.'s (2010) research, which suggests that facilitators need to help students instead of letting them learn by trial and error. However, there is a debate among PBL researchers on whether to leave the students to learn on their own or overly guide them in their learning (Papinczak et al., 2009). This has major implications on the facilitation of PBL. Moreover, there is a lot of concern among researchers about whether the students can cover all areas required in self-directed or student-directed learning in PBL. Facilitators are encouraged to adopt and develop student-centred learning that relies on less direction from the teachers. However, we need more understanding of the facilitator role, especially as Kirschner et al. (2006) found that minimal teacher guidance models are not effective in helping students achieve outcomes in PBL.

Aini, Devi, Ivy and Junita were polite and greeted the students at the classroom door when they arrived for their PBL sessions. Aini, Devi and Ivy were concerned when the students were late in attending PBL sessions as they did not want them to miss the discussions. Aini asked them why they were late and ensured that they were not late for subsequent sessions. She also reminded the students that they must be punctual for PBL sessions. However, no student was late for Junita's class.

Junita stressed the importance of working together as a team and encouraged them to clarify when they could not understand the case scenario. She was very friendly and greeted the students, "Hi," when they entered the

classroom. She walked around the classroom to communicate with the students to get to know them. She also offered help and guidance and mentioned that if the students are too shy to clarify specific issues in the classroom, they could consult her after her tutorials.

During Junita's introduction to the students, she mentioned that she has clinical experience working in the ICU. With her previous clinical experience, she could also apply her knowledge in the management of patients. Junita believed that she has adequate knowledge, and the topic she was teaching was related to her past clinical experience. However, during the interview, she mentioned that she has limited knowledge of PBL, especially in guiding the students. She learned to conduct PBL by observing a few experienced lecturers teaching PBL in the classroom.

She also believed that the lecturers' personality and behaviour also play a part in students learning. For example, if the lecturers are strict and control the students' PBL learning process, this will deter them from participating in PBL discussion as the students are fearful of speaking or asking questions. She also commented that individual student's learning capabilities are different, and therefore, the lecturers should not compare them with other students.

In this study, all the facilitators were caring and ensured that the students were comfortable and safe. This is congruent with Rogers' (1969) facilitation theory of adult learning. Roger (1969) believed that facilitators caring about students assist them in learning and accepting new ideas. Other attributes identified by Rogers (1969), such as trust, respect and active listening, were shown by all the facilitators in this study. Similarly, Willkie (2004) stressed that the facilitator's caring and supportive behaviour is important for the nurturing socialiser, features that were observed in all the facilitators.

The present study shows that good interpersonal relationships between facilitator and students, such as good listening skills, acknowledging the students' contributions, valuing them through praise and addressing them by name, were strategies used to ensure students were learning effectively. According to Azer (2009), the facilitator's role is to ensure that students learn in a secure environment, whereby the facilitator establishes a trusting relationship with the students. A positive relationship between students and the facilitator encourages students to feel comfortable and to share their ideas in the learning process. Moreover, the students in Aini's, Ivy's and Junita's groups were not afraid to ask questions or make mistakes, as the facilitators supported the learning process. However, in Devi's classroom, three students were quiet, and only a few students asked questions, compared to Aini, Ivy and Junita's classrooms. A lot of noise and laughter were observed in Aini's, Ivy's and Junita's classrooms. Students being quiet does not necessarily mean that they do not understand the aspects of PBL but may be due to the cultural assumption that they should not query or question the teachers. This is supported by a study done by Remedios et al. (2008) in Australia, which showed that Asian students are generally quiet during PBL and that this may be due to their personality or cultural preferences.

The students interacted with their group members in all four groups. Students in Groups A, C & D interacted by talking and laughing. However, group B students seemed to be quiet despite actively participating in group discussions. They also engaged with their lecturers when the lecturers asked them open-ended questions. Most of the questions asked were leading questions. Junita mentioned that asking open-ended questions encourages students to think critically, and this results in deep learning.

The other way that the teacher can create positive relationships with the students is by providing a supportive learning environment whereby the students and the teacher respect one another and build warm relationships. These behaviours were exhibited by Aini, Ivy, Devi and Junita, who acknowledged the students' presence by addressing them by their names and welcoming them. Students feel motivated to learn, especially when they are skilful and confident, and they have control over their learning. Furthermore, they feel loved and respected by their teacher.

All the facilitators were nurturing and supportive. They offered their help if students needed them and listened to them. In adopting a caring attitude using the Nodding's' caring concept in education (1999), the facilitators listened to the students to gain their trust. In an on-going relationship of care and trust, students are more likely to accept what is taught. They will not see the facilitator's efforts as "interference" but, rather, as cooperative work proceeding from the relationship's integrity. Second, as the facilitators engage the students in dialogue, they learn about their needs, working habits, interests, and talents. This is important for the facilitators to plan their lessons according to the students' needs.

### ***Setting guidelines***

The four facilitators briefed all the groups about the PBL guidelines for PBL and their roles in group work. This ensured that the students had clear information about their roles and their responsibilities in PBL. According to Azer (2005), setting guidelines for students in PBL is vital for students to comply and mediate misunderstandings between students. It also assists them to be self-directed learners (Azer, 2005).



Students were also given an orientation on PBL and on how individual groups function by all the facilitators during the first PBL sessions. Ibrahim et. al (2018) stated that an orientation programme is an essential aspect of PBL, including the skills required for group learning. All facilitators stressed the importance of respecting each other's suggestions and contributions.

Aini mentioned that every individual is unique and that the students need to respect one another. Curseu and Pluut (2013) stated that diversity in a group could help solve problems creatively and increase quality of performance. The students learn collaboratively by working in groups and solving problems through a systematic process facilitated by the lecturers. Although the students were told to respect each other's views, ideas or suggestions, there were still conflicts among them.

The guidelines set by the facilitators about the roles of the group members were similar across the four cases. All the facilitators in the study briefed the guidelines on the students' roles and responsibilities in PBL. However, the process of choosing leaders and scribes was different among the facilitators. Devi and Junita instructed the students to choose their group leaders. However, Aini and Ivy preferred to select group leaders and scribes. A timekeeper was also nominated to ensure that the discussion finished on time. According to Tan (2003), the primary purpose of assigning roles is to ensure that group activities are productive. Tan (2003) further argued that group work might not be productive if team members do not proactively assume roles and take up their responsibilities.

Aini emphasised that the leader's role is to facilitate discussion and stay focused, while the scribe role is to record the main points discussed. She stressed that all these roles should be rotated in each PBL tutorial. The students were compliant with Aini's instructions. However, Devi, Ivy and Junita did not instruct their students to rotate their

roles. Rotating roles gives students the opportunity to take over the leadership role to understand the roles they can assume (Savin-Baden & Major, 2004). This should also help the students develop good leadership skills during PBL, which should assist them in their clinical practice, especially in planning and organising the patients' care.

Savin-Baden and Major (2004) pointed out that assigning roles can help the students develop leadership skills in a team situation and allow them to talk less so that other students can participate in the discussion. Developing students' leadership skills by all the facilitators in this study could also assist the students in preparing for clinical practice, especially when they are assigned to be in charge of patients.

During the discussion of the problems, the scribes recorded the discussions. However, other students were observed writing down some notes as they were fearful that they would not get the notes after the discussions had concluded. This was a common phenomenon in the researcher's classrooms during group discussions in PBL. Indeed, Junita reminded the students to spend their time more on discussion instead of taking down notes. Junita resolved the conflicts by explaining to the students that they should respect each other's ideas, as stated in PBL guidelines. She should have allowed the students to take notes on what they have discussed to enhance their understanding. She advised the students to share their ideas and suggestions and to make decisions. She also reminded them to follow the ground rules she had set to avoid disagreement and conflict. The ground rules are useful for preventing disputes and assisting the students to be independent learners.

Aini intervened and reminded her students of the rules that she had set, work together and respect each other's ideas. Students were also reminded that they should share information and make decisions together. Aini had to intervene, as the students did not follow the ground rules she had set earlier. Ground rules

are beneficial for mediating misunderstandings between students and assisting them in being self-directed learners (Azer, 2011). Students are expected to participate actively in PBL discussions so that they can learn from each other and the facilitator.

## **Managing Group Dynamics**

### ***Managing conflicts***

The issue of managing group dynamics is one that is widely researched in the area of PBL (Azer, 2011, Holen, 2000) and the lecturers report similar experiences to those previously described. The difficulty on when and how to intervene by the lecturers on group conflicts, as previously mentioned by Sproken-Smith and Harland (2009) and other researchers (Azer, 2011, Maudsley, 2002) were also raised in this study. All the groups were cooperative, but there were still some conflicts among the group members. Group A, B and C leaders were dominating and autocratic in handling their group members. Two members of Group A and B tried their best to contribute some ideas for the group discussions, but the group leaders ignored their suggestions. The leaders exerted their power on their group members, which is not congruent with the philosophy of PBL, where students learn together in a group and should be given autonomy over their learning (Azer, 2011). However, in group D, the conflict was between two students, relating to disagreement about the pathophysiology of hyperglycaemia. Junita handled the conflict confidently by reassuring the students and advising both of them to do further reading.

During Group A discussion, there was a conflict between the group and one student regarding the post-operative complications of cholecystectomy. The leader could not handle the situation, and Aini intervened by encouraging the students to discuss together and make a decision. Devi was able to deal with the conflicts

confidently by speaking to the leaders after PBL. However, although Ivy handled the Group C leader's conflict confidently, she did not do it in a sensitive manner as she did it in front of the group members. According to Azer (2011), facilitators should handle students' conflict sensitively and using their communication skills effectively. Ivy should have spoken to the leader in her room privately to avoid embarrassment for the student. Ivy reminded Group C to follow guidelines and encouraged them to take each other ideas positively.

Good and Lavigne (2017) pointed out that the students need to communicate effectively and willingly listen to each other's ideas by respecting one another and taking criticism positively to avoid conflicts. The group leader's role is to communicate the guidelines clearly to the group members and ensure that the group members contribute actively during learning. In PBL, effective communication is necessary to avoid misunderstanding and conflicts among group members (Azer, 2009).

Devi and Junita intervened when the students could not explain the cause of haemorrhoids by providing them with a clear explanation. This is consistent with Aarnio et al.'s (2014) finding on how tutors intervene during conflicts about the PBL learning process. The tutors should provide direct explanations instead of asking them to work collaboratively to elaborate on the issues and refrain from giving straightforward answers.

The facilitator's role in PBL is to guide the students but not to take over by giving direct explanations, which would prevent students from using their critical thinking skills and inhibit further discussion, thus compromising self-directed learning and the collaborative principles of PBL (Aarnio et al., 2014). In contrast, Aini and Ivy did not explain or give answers to the students. Instead, they asked probing questions to stimulate their thinking skills.

### ***Collaborating with the students***

Collaborating with the students in PBL is another role of the PBL facilitator (Doherty et al., 2018). In this study, all the students learnt by collaborating with their facilitators and guiding them to ensure that they were on the right track during discussions. This is in line with Doherty et al.'s (2018) study in which the lecturers were learning collaboratively with the students in the discussion of case scenarios.

Group A, B, C and D students approached the case scenario by analysing the problems by assuming their roles as assigned by their leaders. Research has shown that assigning group members positively affects group collaboration, group task performance, and students' achievements (Chiriac, 2008). The group members worked together by communicating effectively and solve the problems. Huber (2013) added that working together cooperatively as a team fosters leadership skills to help students solve problems.

All the lecturers also encouraged active engagement and interaction among the students to learn collaboratively. They worked together with the students in analysing the problems. They were very supportive and collaborated with the students in their learning process. According to DuFour et al. (2008), teachers can work collaboratively and cooperatively with the students to build their relationships.

In teamwork, all the groups shared their knowledge by contributing their ideas and working collaboratively during the discussion. This is supported by Schmidt, et al.(2000) view that the impact of working together results in higher knowledge gains compared to individual contributions. Moreover, working in groups enables students to organise their knowledge (Larue, 2008). This is supported by Savin-Baden (2003) that every student should take responsibility

for self-directed learning in PBL. With everyone contributing their ideas in PBL, students could understand the disease process and the management of the patient in more detail.

Groups A and D had a lot of fun and laughter during their group discussions. They interacted effectively, asked questions and clarified the causal factors of the problems during collaborative learning. Although Groups B and C were serious and, in their discussions, they also interacted with their group members actively.

There were interactions between group members and the facilitator in the collaborative learning environment. Groups A and C brought their surgical clinical experience and knowledge to the discussion. This was not possible for Group B members who did not have experience working in the surgical ward. Group D used their clinical medical experience to construct knowledge during their discussion. Groups A and C used their expertise and previous knowledge of each group member and assigned tasks accordingly to ensure that their group work was effective. The use of previous knowledge and experience helped Groups A and C to construct new knowledge. In this situation, students were using constructivist learning theory by constructing new knowledge from their previous knowledge and experiences (Gupta, 2017).

The lecturers motivated the students by encouraging them to ask questions and seek clarifications from their group members if they did not understand the issues of the problems faced by the patient. They also encouraged them to support each other in learning. According to Bate et al. (2014), in collaborative learning, facilitators need to motivate and encourage students to support each other in learning. However, one of the facilitators mentioned that the facilitator should be tactful and respect the students' contributions or ideas even they are inaccurate and be sensitive to students' needs. This is congruent with Kassab et al. (2006),

who found that students perceived good facilitators as those who respected their ideas, established good communication, understood their feelings, and worked together collaboratively. Devi and Junita asked open-ended questions and gave the students time to think and encouraged them to reflect during collaborative learning.

Ivy was supportive and worked collaboratively with the students. She appreciated the students' contributions and guided them constantly. She acknowledged them politely, guides them and handles them in a sensitive manner. For example, she highlighted that her extensive clinical experience helps her facilitate PBL, enhancing the students' learning process.

### ***Ownership of learning***

The lecturers stressed the importance of students taking ownership of their learning. The students have to take responsibility once they are given the problems to solve (English & Kitsantas, 2013).

During the observations, Aini allowed the students to independently discuss the problems with their group members and own their learning. She guided the students if they faced any difficulty in generating the causal factors of the problems. She provided minimal assistance to the students to solve the given problems from the case scenario.

The lecturers gave support and encouragement to the students, telling them that they could solve the problems and guiding them to find resources to solve the problems. They let the students learn independently in groups, but they could consult them any time they faced problems. They also guided and coached the students and allow them to own their learning.

## **Engaging in the PBL Learning Process**

### ***Motivating students***

In PBL, the lecturers guide the students and motivate them in their learning. All the lecturers asked the students questions in an unthreatening manner to build their confidence. Students were given time to think about answering the questions posed.

The facilitators were observed asking questions in a non-threatening manner. Before asking the students questions, the facilitator reassured the students that they must try to ask questions and communicate effectively. Aini helped the students to think by probing to build up the students' confidence. However, Ivy used cognitive questions to stimulate students' thinking.

Students were praised when they attempted to answer questions. The lecturers respected the students' opinions and probed them with further questioning to build their confidence.

Another method to motivate students to learn is to respect their opinions. During observation of Aini's classroom, one of the students suggested that obesity is one of Mr Gary's problems. Everyone in the classroom laughed as they thought the answer was inappropriate. Aini did not laugh at the student. Instead, she pointed out that every student's contribution was important, which means Aini respected the students' opinion.

Junita motivated students by pairing Singaporean students with foreign students to learn together. According to Junita, it is important to provide a non-threatening environment to motivate the students to learn. Tharani et. al (2017) stressed that nurse educators should provide a conducive and non-threatening learning environment for students to learn.

According to Junita, another way of motivating students is to learn the



lecturer's behaviour as few lecturers are stern-looking and cranky, and when this behaviour is exhibited, it will deter the students learning. It was also pointed that the students would be fearful of the lecturers' behaviour, affecting the students' learning.

### ***Sharing of knowledge***

It is the facilitator's role to share knowledge with the students (Salinitri et al., 2015). Ivy and Aini mentioned that the lecturers must have knowledge of the PBL process, professional knowledge, and clinical experience to share their knowledge with the students. Al-Sheik et al. (2017) stated that facilitators should have knowledge on the subject and content they are teaching, pedagogical knowledge and clinical knowledge when facilitating PBL. Alsheik et al (2017) emphasised that pedagogical expertise can also assist the lecturers in developing curriculum and assessment.

Ivy is the only facilitator who used professional knowledge and clinical experience to share her knowledge with the students. She was able to apply her professional knowledge when discussing with the students to apply legal issues on written consent. All the facilitators were sharing their clinical knowledge and experiences with the students. By sharing knowledge with the students, the lecturers are also working collaboratively with the students.

According to Aini, Ivy and Devi, PBL facilitators should have content knowledge and clinical experience to share their knowledge and assist the students in the construction of knowledge. Aini, Devi and Ivy were content expert facilitators and guided the students and shared knowledge with them. However, Ivy also used professional expertise and shared her past experiences with the students when discussing written consent before the patient is taken for surgery.

Aini assisted the students in answering the questions asked when the students were quiet. However, this contradicted the aim of PBL, where the students should learn independently, and the facilitator should be guiding the students (Barrows, 2000).

Devi, Aini and Ivy have attended PBL workshops that assisted them in sharing knowledge with the students. Devi and Ivy found the workshop engaging as they learned some PBL facilitating skills. They stated that the knowledge and skills they had gained from the workshop would make the facilitation of PBL less stressful for them and suggested that every lecturer conducting PBL should go for PBL facilitation training. This is congruent with the findings of Chan's (2016) qualitative study, who found that lack of training and support from colleagues was a major impediment to the success of PBL. Chan (2016) stated that facilitators need to attend training before conducting PBL. Without knowledge and experience in PBL, the facilitators cannot facilitate effectively, thus affecting students' learning outcomes.

Junita was unable to attend the workshop due to teaching commitments. She could not facilitate PBL as confidently because she had not attended any form of PBL training or workshops. Moreover, she was not skilful in the PBL process as she was unable to scaffold student learning, which may affect their learning outcomes. According to Azer (2011), attending PBL workshops is crucial for facilitators because it is an important component for successful facilitation, which experienced PBL facilitators should deliver. Lim and Choy (2014) investigated the effects of a structured staff programme on new lecturers in their role in PBL. The results revealed that the programme has helped them acquire more knowledge relevant to self-directed learning and use their learning experience to share knowledge for promoting collaborative learning (Lim & Choy, 2014).

### ***Communicating effectively with the students***

All the lecturers communicated with the students effectively. They were motivated and asked questions in the classrooms. There was also evidence of good communication and mutual respect among the students as they listened attentively to each other. The students were very cooperative and motivated, assisted each other, and worked cohesively as a team.

The lecturers interacted with the students effectively, which is another role of PBL facilitators (Azer, 2009). All the facilitators were polite and patient. They interacted with the students effectively by asking them open-ended questions. Most students asked clarifying questions, and only a few of them asked elaborative and critical questions. This is congruent with Yew and Schmidt (2007) Singapore study that reported a lack of critical questioning by students and the resolution of conflicting ideas by discussion and elaboration.

The facilitators encouraged the students to participate actively and share their ideas equally in the group discussion. Although the students participated effectively, a few were talked among themselves without participating in the group discussion, which Devi did not notice. This is not in line with PBL, where facilitators are expected to encourage all the students to participate in group discussions. According to El Naggar et al. (2014), facilitators need to monitor students' learning and ensure that the groups are working effectively during PBL.

Aini, Devi and Junita were very gentle, soft-spoken and modelled positivity in how they communicated with the students. This is in line with Weber's (2004)'s advice that using positive words and respectful communication leads to healthy classroom culture. Weber (2004) further pointed out that using positive words motivates the students and brings a closer relationship between the teacher and the students. However, Ivy's voice was loud, especially when she emphasised the

importance of group work and encouraged the students to participate in group discussions.

In Devi's class, most of the students were quiet and listened to the teacher attentively. Three students were asked questions, but the other three students were very quiet. The three quiet students in Devi's group were from China. They were fearful that if they could not answer the questions, they would "lose face." The facilitator's role is to communicate and guide the students to ensure that every student participates in group discussions (Hmelo-Silver, 2004; Rakhudu et al., 2017; Savin-Baden, 2003). Jin (2012) and Remedios et al. (2008) showed that silence can be a learning space and stressed the importance of valuing silence. They added that students might be quiet but still be learning from one another and analysing other group members' contributions compared to what they have understood.

Social congruence is a vital attribute for facilitators in PBL (Yew & Yong, 2014). Social congruence is defined as inter-personal skills such as communicating effectively, showing empathy and creating a learning environment whereby students can discuss openly. This was shown by all the facilitators in this study through affective behaviours, for example sharing emotions by smiling, acknowledging the students by a greeting, using the students' names, and acknowledging the students' contributions.

Furthermore, all the lecturers maintained a good rapport with the students by communicating with them and being friendly and helpful. This is in line with Kassab et al.'s (2006) findings that medical students valued facilitators who maintained a good rapport with them. Aini, Devi, Ivy and Junita interacted actively with the students by involving them in the discussion and asking open-ended questions. This is in line with Bassey et al.'s (2008) advice that a conducive learning

environment can positively influence students' attitudes and motivation to learn. Furthermore, two-way communication between the facilitators and the students is essential for them to have good learning outcomes. They engaged the students by drawing their attention to the important aspects of the issues, especially in analyzing the problems' causal factors, which were rather complex.

However, in engaging the students, Devi and Junita intervened when the students discussed and could not explain the cause of haemorrhoids by providing them with a clear explanation. This is consistent with Aarnio et al. (2014) findings of how tutors intervene during conflicts about the PBL learning process. The results showed that the tutors provide direct explanations instead of asking the students to work collaboratively to elaborate on the issues and refrain from giving straightforward answers.

In PBL, the role of the facilitator is to guide the students but not to take over by giving direct explanations, which would prevent students from using their critical thinking skills and inhibit further discussion, thus compromising self-directed learning and the collaborative principles of PBL (Aarnio et al., 2014). In contrast, Aini and Ivy did not explain or give the students answers instead, they asked probing questions to stimulate their thinking skills. For effective implementation of PBL, facilitators are encouraged to ask probing questions that will assist students to identify relevant issues and finding solutions to the given problems (Leary et al., 2013).

### ***Giving feedback***

Giving feedback is another vital role of the facilitator in PBL (Mubuke et al., 2016). All the facilitators gave the students feedback in a timely and constructive way to help the groups improve their presentation on the problems.

Mubuuke et al. (2016) stated that feedback should be given time and constructively. Aini, Devi and Junita gave positive feedback to the students after the presentation, followed by negative feedback. However, Ivy started with negative feedback, followed by positive feedback. Although Ivy was able to maintain good rapport and relationships with Group C students, she was insensitive in managing a student who always controlled the group. She told her to give other students opportunities in front of all the students, which upset the student. When giving negative feedback, facilitators need to be sensitive to students' feelings and do so privately (Azer, 2009).

The facilitator should respect and give feedback to the student privately to avoid affecting the student's self-esteem. According to Mubuuke et al. (2016), teachers should be sensitive to students' feelings and respect their views when giving negative feedback. Ivy believed that highlighting the students' weaknesses would assist them to improve their learning. Ivy's students were receptive to the negative feedback. However, most literature suggests that facilitators should give positive feedback first to the students, followed by negative feedback to motivate the students to improve their learning (Brookhart, 2017; Mubuuke et., al 2016).

However, three students from Group B commented that they were lost and were unable to focus on PBL as Devi did not give them adequate information. They preferred close guidance and coaching by Devi and more examples of how to approach PBL. The students were also responsible for their learning process by setting goals, reflecting and sustaining their motivation to be successful (English & Kitsantas, 2013).

Aini, Devi and Junita were uncomfortable about giving negative feedback. They mentioned during the interview that they were concerned that they might hurt the students' feelings when giving negative feedback. However, Aini was

fearful that the students might label her as “condemning” the students when giving negative feedback. In giving negative feedback, facilitators should use appropriate language and non-verbal cues

## **Overview**

This chapter provides a cross-case analysis of the data linked to previous research and literature. The roles of the nursing lecturers in PBL are complex, and it requires time for them to modify their approach from teacher-centred to student-centred learning. The nursing lecturers in this study sought to provide a conducive learning environment for the students by establishing a good rapport and maintaining a good relationship, interacting with the students effectively and using subject or content expertise and social congruence to facilitate PBL.

Providing a conducive learning environment for the students is important to foster active learning (Schettino, 2016). This study's findings indicate that the nursing lecturers established a good rapport and maintained good relationships with the students. This was observed during the first session of PBL when they introduced themselves and highlighted their educational background and professional nursing experiences. They also respected the students by learning their names, listening to the students attentively, and not interrupting them. These findings are consistent with Moore's (2009) findings that the facilitators respected the students and maintained a good rapport with them. Similarly, Schmidt & Moust (1995) also noted that students preferred tutors who have positive attitudes and care towards them. The facilitators were attentive to the students' needs and supportive of students' efforts. A study by Wood and Tanner (2012) also showed that the tutors were supportive of the students and encouraged them in their learning process.

The relationships between the students and the four lecturers in this study were good, and they were able to work together collaboratively. They respected each other's ideas, and the lecturers were able to gain the students' co-operation in learning. The lecturers were polite and patient and guided the students in the learning process, which motivated them to learn. However, a few students from China were quiet due to shyness and the language barrier, but they were cooperative when working in their groups. According to Beser et al. (2004), facilitators should establish a good rapport with the students, increase interactions with them and promote individual responsibility. McLean (2003) also found that students wanted facilitators to be friendly and supportive. Moreover, Bowman and Hughes (2005) stated that facilitators and students should communicate with each other to cause less anxiety to the students and assist them in learning.

Collaborative and cooperative learning were used among students and between teachers and students in the classroom interactions during PBL. All the students performed their assigned roles and worked together with their peers during group discussions. The lecturers and the students collaborated in the debate on the case scenarios' problems, and interactions were varied. The facilitators walked around the classrooms and ensured that they guided the students to learn to foster good group dynamics. Moust (2010) stated that the tutor roles were to guide the students in the content and learning process and maintain the cohesiveness of the group dynamics. In this study, the facilitators helped the group members function effectively, foster collaborative learning, and demonstrate good leadership skills. However, although there were good group dynamics, there were also conflicts among the students. The lecturers were able to resolve the disputes between the students effectively.



The other way of interacting with the students by the facilitators is to give the students constructive feedback by highlighting their strengths and weaknesses to improve their learning. Interactions between students and students, and students and facilitators, are vital to ensure deep learning and successful learning outcomes (Azer, 2009). Azer (2009) also points out that facilitators need to listen attentively to students' discussion by questioning and debating an issue to infer what type of thinking has taken place and identify their learning needs to evaluate their critical thinking skills.

Facilitators with different backgrounds and content expertise also affect students learning in PBL. All the facilitators who were subject or content experts were able to conduct PBL effectively in this study. Without having content knowledge, the facilitators would not be able to guide the students in PBL. According to Couto et al. (2015), content expert facilitators were able to conduct PBL effectively. Ates and Eryilmaz's (2010) case study also found that students preferred content expert tutors who have expert knowledge and experience and can guide them in PBL effectively.

Furthermore, the tutors gave the students feedback regarding their learning, which helped them increase their self-confidence and passion for learning PBL (Ates & Eryilmaz, 2010). However, expertise in the process of PBL is also vital in guiding the students in PBL. Indeed, two of the facilitators in this study were inexperienced in facilitating PBL, and they needed training to shift their teaching and learning skills to become synchronised with the PBL philosophy. Walker et al. (2015) argue that facilitators need tutor guides to assist them in facilitating PBL.

The role of nursing lecturers in facilitating PBL is important to ensure that students are learning effectively. Providing an environment that is supportive and conducive for learning enhances students' learning. The facilitator role is to

interact with the students by working collaboratively with them, asking questions to stimulate their critical thinking skills (Valtanen, 2014) and giving feedback. Interacting with students is another role of the lecturers in PBL to ensure successful learning outcomes (Azer, 2009; McCabe & O'Connor, 2015). This fosters deep learning and ensures that students are actively involved in group discussions and developing a passion for learning. As a result, students and facilitators may engage in learning activities actively to ensure that PBL is an effective form of education ontologically and practically.

## **Chapter Nine: Conclusion**

### **Introduction**

The purpose of this chapter is to show how the four research questions have been answered. It also discusses the research implications, notably in the Singapore context, and for policy, practice and further research on problem-based learning in nursing education.

### **Overview of Main Findings**

The roles of the nursing lecturers in PBL are complex, and it requires time for them to modify their approach from teacher-centred to student-centred learning. The nursing lecturers in this study sought to provide a conducive learning environment for the students by establishing a good rapport and maintaining good relationships, interacting with the students effectively and using subject or content expertise and social congruence in facilitating PBL.

The lecturers were able to manage the groups effectively in PBL. They were also able to manage conflict among the groups by ensuring that students' issues were resolved amicably. Student issues, such as the leader of one group being unhappy with a group member's contributions, were addressed sensitively by the lecturer. All four lecturers maintained good relationships and worked collaboratively with the students.

Engaging the students in the PBL learning process is another important role for the lecturers. The lecturers asked open-ended questions to stimulate their critical thinking in problem-solving. They used their clinical experience in sharing knowledge with the students. Moreover, the facilitators were able to scaffold and engage students by asking them probing questions.

Good communication skills, such as eye contact and other non-verbal

approaches, were used to guide the students. Three lecturers gave positive feedback to the students first, followed by more critical feedback designed to improve student learning. However, one the lecturers preferred to give negative feedback first as she believed that it will motivate the students to learn from their mistakes.

One of the main principles of PBL is that the students are guided to be self-directed learners (Hmelo-Silver, 2004; Savin-Baden, 2003; Mann, 2011; Yew and Schmidt, 2012). The students were guided in self-directed learning, initially by the lecturers, and empowered to take responsibility for their own learning when they began to learn independently. Loyen et al.'s (2008) qualitative study on facilitators' roles reported similar findings that the facilitators assisted and guided the students in PBL by providing resources and giving them autonomy in group discussions in self-directed learning. Adult learners are motivated, autonomous and self-directed in their learning (Taylor and Hamdy, 2013).

There are some issues faced by the nursing lecturers in facilitating PBL. One of the lecturers noticed that one student was not paying attention when the group was having a discussion. Instead of the lecturer encouraging the student to participate actively in the group discussion, they just ignored the student. In this study, the lecturers found difficulties giving negative feedback as they were afraid that it might affect the students' self-esteem. For example, in this study, when a lecturer gave negative feedback to one of the students in front of their colleagues, the student's facial expression showed that she was unhappy. It was also observed that there was silence in class when one of the lecturers questioned the students. Instead of probing and giving the students some time to think, the lecturer gave the students the answer. In PBL, lecturers should not give answers to their students.

## **Answering the Research Questions**

This section shows how the study has addressed the research questions. It draws on the findings from document analysis, classroom observations, the student questionnaire, and the interviews with the four nursing lecturers.

### ***Research Question 1: What do facilitators understand by PBL in Singapore?***

The four nursing lecturers said that the facilitators should have content or subject knowledge of their teaching topics. For example, in this PBL curriculum example, the topics were cholelithiasis, haemorrhoids and diabetes mellitus. The lecturers had adequate knowledge about the topic they were teaching. They were able to guide the students effectively in identifying problems and the causal factors as they had adequate knowledge about anatomy and physiology to apply to the disease process.

Furthermore, their knowledge of pathophysiology helped them guide the students to rationalise what happens when the body structure is dysfunctional and the clinical features presented by the patient. They also asked students questions about the lectures to assess if they could apply their knowledge. The facilitators were observed to have good knowledge of the relevant curriculum and were adequately prepared for PBL facilitation. It is critical that the PBL tutor has good knowledge of the overall curriculum, specifically PBL cases, and how they fit within educational methodologies, including formative assessment and evaluation (Beachey, 2007). The facilitators were informed about the students' educational background and clinical experience to plan their teaching according to the students' educational level.

The other aspects of knowledge used by the facilitators in this study were

learning theories, such as adult learning (Kolb, 1987), leading to questioning aspects of management of the patients after cholecystectomy. Moreover, the facilitators also used constructivist and experiential learning theories. They were observed to apply experiential learning theory while also drawing on their clinical experience. The lecturers' prior experience was useful in guiding the students in PBL, for example, in the management of post-operative cholecystectomy. Without prior experience in the subject, the facilitator could not conduct PBL effectively. The lecturers' subject expertise and clinical experience helped the students apply their knowledge to address the problems identified in PBL. The facilitators for example, Aini showed that learners are autonomous, and they learn independently by self-directed learning. In applying adult learning theory in PBL, the lecturers ensured that the students were ready to learn. The students learnt by being open to experience, and the lecturers motivated them to learn by giving them support and constructive feedback.

The facilitators also applied pedagogical knowledge, including experiential learning based on Kolb's theory of experiential learning. The lecturers used different types of experiential learning, including concrete experience, observation, reflection and abstract conceptualisation. In experiential learning, the facilitator guides the students, who are responsible for their own learning, by asking them to apply what they have learnt during their clinical attachment, such as sharing their experience of nursing patients with haemorrhoidectomy and cholecystectomy. In experiential learning, from the perspectives of social theory, it was observed that the students interacted and engaged actively with their peers and facilitators in the learning process. The facilitators engaged them in their learning process.

The other learning theory the lecturers used is constructivism. In constructivism, knowledge is constructed based on prior knowledge and experience. In this study, the students learnt from the knowledge gained through their clinical experience by constructing new knowledge. Moreover, they learnt from group discussions by interacting with one another in a supportive environment and respecting each other's individual views. According to Savin-Baden (2003), in social constructivism, the learner constructs knowledge through discourse with the group members and the facilitator. Students worked cooperatively in groups to discuss the problems, and knowledge was produced collectively by the team members.

Finally, clinical experience and professional knowledge assisted the lecturers in facilitating PBL. Lecturers with more significant clinical experience were more confident in guiding the students, especially Aini and Ivy. Their clinical experience and professional knowledge assisted them to guide the students. The lecturers pointed out that without clinical experience, it would have been challenging to guide the students in PBL as they needed to apply the clinical knowledge to the case scenario.

***Research Question 2: How do the nursing lecturers facilitate PBL in the classroom?***

The nursing lecturers were well prepared before conducting PBL. They prepared their lesson plans and learning objectives to guide the students effectively. The briefing about PBL, PBL processes, the students' role, and the case scenario were essential roles of the nursing lecturers in facilitating PBL. In the briefing, the facilitator gave the students adequate information on their roles in PBL to ensure that they work collaboratively with one another.

Three specific aspects of facilitation were evident in this research:

- Student support
- Learner engagement
- Self-directed learning

### ***Student Support***

In student support, the lecturer helps the students learn PBL (Kassab et al., 2006). In this study, the lecturers fostered high-level questioning to involve students in group discussions.

All the facilitators showed support when they guided the students by ensuring that they were on the right track in analysing the problems. They also provided support by planning the lesson and PBL resources effectively, organising the students in different groups and delegating the leaders of different groups to lead the discussion. They were polite and communicated clearly to the students on the expectations and their roles in PBL. Without effective communication, the facilitators would have been unable to give the students adequate information about PBL, which might have affected their learning outcomes.

Student motivation was another aspect that the lecturers focused on. They asked the students open-ended questions to stimulate their thinking. They encouraged the students to answer the questions and praised them when they answered the questions accurately.

Building good relationships between the facilitator and the students is important in order to develop a trusting relationship. Good relationships between the facilitators and the students were observed as most of the students came forward to ask questions, and there was no power distance between the students and the facilitators. The students and the lecturers worked together collaboratively



in analysing the case scenarios. The students were motivated to learn as the learning environment created by the lecturers was seen to be helpful and supportive, and lecturers helped individually or in groups. The lecturers' caring behaviour, such as listening to the students attentively, assisting them by providing resources, and encouraging dialogue during their self-directed learning, helped them learn PBL.

The lecturers also motivated the students in problem-solving by engaging them by asking them leading questions. For example, Aini asked the students why a cholecystitis patient felt pain and the nursing actions to relieve the patient's pain.

In supporting the students, the lecturers showed good leadership skills. They organised and planned their PBL effectively by dividing the students into groups, ensuring that they worked together as a team and guiding them effectively. They also communicated to the students clearly on their role in PBL using their verbal and non-verbal cues. Conflicts among students were handled effectively and resolved. Furthermore, they collaborated and negotiated ideas during group discussions.

### ***Learner Engagement***

Learner engagement is vital in facilitating PBL. The facilitators engaged the students actively in PBL, ensuring that they were taking ownership of their learning. For example, they ensured that the students worked together as a team to discuss the problems identified from the given case scenario. They also interacted and guided the students in PBL and led them to learn effectively and achieve their learning outcomes. Questioning is another technique the facilitators used to engage the students and stimulate their critical thinking skills. The lecturers used non-directive open-ended questions to stimulate the students' clinical reasoning

skills, leading to deep learning. When asking questions, Ivy, Junita and Devi gave the students some time to think before directing the questions to another student. An opportunity was given to every student to answer the questions. If the same student answered the question, Ivy redirected the question to another student. She also asked the students to expand their answers by asking what actions they would take if the patient was bleeding, for example. However, Aini left a quiet student without involving him in the discussion. Aini mentioned that she noticed Ali was not asking questions as he was shy, but she did not act on this by directing questions to him. In PBL, every student should be involved in group discussion, and it is the lecturer's role to encourage students to be involved in group discussion and stimulate their critical thinking skills.

### ***Self-directed Learning***

Self-directed learning is one of the main principles of PBL. The facilitators supported the students in self-directed learning in many ways, including providing them with learning facilities and resources. For example, they showed students how to search the library for e-resources such as nursing journals and e-books. Aini and Junita encouraged the students to make appointments with them if they faced issues related to PBL. Aini and Ivy were very helpful to the students and motivated them to learn from their peers and helped them book the tutorial rooms for self-directed learning.

The facilitators gave the students autonomy to learn independently and were also available to see the students whenever they needed guidance. On the other hand, the students took responsibility for their own learning. They were self-directed learners and discussed the problems together in a group.

### ***Scaffolding***

Scaffolding is another method the lecturers used to engage the students in PBL. They scaffolded learning by encouraging students to make connections between prior knowledge and new knowledge to help them enhance their understanding. For example, Ivy asked the students questions related to the anatomy of the gall bladder, which the students learnt about in year one, and they were able to relate this to their new knowledge about cholelithiasis. This was also observed in Aini, who asked the students regarding the management of patients with haemorrhoidectomy, which they could relate to their previous clinical experiences. However, Devi was unable to relate the students' clinical experience with the management of the patient with haemorrhoidectomy. Junita was also unable to relate the student's clinical experience to diabetes mellitus. Both Junita and Devi were inexperienced in facilitating PBL and needed support and guidance from the experienced lecturers.

Scaffolding learning in PBL was not an easy task for the lecturers, especially since the students were newly exposed to this approach. The students were initially guided closely. The lecturers scaffolded learning by giving students a format stating the problems identified, their causes, and their learning objectives. The lecturers, especially Aini, Ivy and Junita, were very patient and willing to go the 'extra mile' to guide the students. They also gave the students guidance on analysing the problems, setting their learning objectives, and stating their findings.

### ***Research Question 3: What challenges and problems do the nursing lecturers face in facilitating PBL?***

The nursing lecturers in PBL faced many challenges. One of the challenges

was the inadequate time given by the lecturers to the students during group discussions in the classroom. As observed, all the groups needed to rush the group discussions as one hour was too short. However, students had additional time to participate in their own self-directed learning after the first session of PBL. The lecturers suggested that more time be given for group discussions. They also discussed with academic managers about increasing time for this purpose.

A significant challenge was the facilitators' need to relinquish their role as teachers to facilitate PBL. The nursing lecturers stated that it was difficult for them to facilitate PBL as they were used to delivering lectures and tutorials and lacked experience in delivering PBL. At times, they tended to give the students the answers, which contradicts the philosophy of PBL in which students should be self-directed learners (Savin-Baden, 2003). They should be guiding the students in learning, not giving them answers. They felt that, as the students were in the second year, and this was their first experience of PBL, they needed close guidance. Moreover, they felt that it was difficult for the students to answer the questions and gave them answers. This is not congruent with the principles of PBL as the students should learn independently.

The facilitators also found it challenging to give negative feedback without affecting the students' self-esteem. All the facilitators mentioned that it was important to explain to the students that feedback would improve their learning. They mentioned that they needed to think about using appropriate words, facial expressions, and tone of voice before giving feedback as these could affect the students' feelings. The lecturers acknowledged the students' contributions and praised them when they did well in their presentations. For example, Ivy mentioned that the aspect of patient care after cholecystectomy was well discussed, but the aspect of psychological care was not highlighted. Ivy mentioned

that the students should reassure the patient by explaining that post-operative analgesic for pain would be given promptly. The facilitators exhibited clear communication when explaining to the students how to improve their learning during negative feedback to avoid being sensitive or damaging their self-esteem. Communication is one of the lecturer's roles in facilitating PBL. The lecturers observed were able to communicate effectively by using good eye contact and non-verbal cues.

The diversity of the nursing students, including those from China, Myanmar, Vietnam and Malaysia, with different educational backgrounds, cultures and languages also created challenges for the lecturers. According to the lecturers, some students were passive, quiet and too shy to ask questions in the classroom. They attributed this to their Asian culture, which discourages argument or asking questions. If they argued or disagreed with the teacher's explanation, they perceived themselves as rude. Engaging passive students and encouraging them to interact with the facilitators was a significant challenge for the nursing lecturers in facilitating PBL. When engaging them in questioning, Ivy preferred to ask them simple questions to encourage them to participate in the group discussions. However, Aini and Junita encouraged the students to actively ask questions and reassured them that mistakes are also allowed as they are inexperienced in PBL. According to Devi, she spent time with the students from China, guiding them after PBL and asked them questions as they were afraid to make mistakes in front of their colleagues to "save face."

In this study, all the facilitators guided the students to solve problems, motivated them to work together in a team and encouraged them to learn independently. Working in groups gave the students opportunities to play different roles such as leader, scribe and timekeeper, taught them clinical reasoning skills,

and consequently allowed them to gain experience in different roles. The students worked cooperatively and generated new ideas and advanced their knowledge. For example, they respected each other's contributions or ideas to hypothesise the problems. The lecturers encouraged the students to share their opinions with the group members and use critical thinking skills. This helped them make decisions regarding the problems given in the case scenario. This, in turn, developed their self-confidence and ability to make decisions when handling complex problems. Furthermore, the complex, real-life case scenarios gave the students autonomy and power to discuss the problems with group members. They were able to engage actively with their group members and the facilitators.

The students worked effectively as a team by analysing the case scenario and using their clinical reasoning to engage with other students. They were seen to ask each other questions and stimulate each other's thinking processes. They were engaged in group discussions and effectively used their resources to solve the problems identified in the case scenario. The authentic case scenarios presented encouraged them to apply their knowledge and go beyond what they need to know. Aini, Ivy and Junita encouraged the students to identify the knowledge gaps during their group discussions and list the information needed to solve the problems identified in the case scenario. However, Devi engaged the students in role-play to identify the problems.

***Research Question 4: What strategies are used to facilitate PBL effectively?***

The facilitators in this study created a supportive learning environment and provided a positive learning culture as strategies to help the students learn PBL. The facilitators helped whenever the students needed clarification on the given

case scenarios. They also briefed the students on the process of learning PBL. The lecturers gave adequate information on PBL and the students' roles.

Another strategy involved asking questions to stimulate the students thinking. One of the lecturers, Junita, asked students for explanations by asking open-ended questions such as "What do you mean by hypoglycaemia?" The lecturer also probed further, "If patient blood sugar is low, what signs and symptoms do they experience?"

Aini and Ivy involved the less vocal students to ensure that all the students participate actively in group discussions. They gave them time to answer questions and advised them to answer the questions even when they felt unsure. Moreover, the facilitators motivated the students by praising them when they answered the questions correctly.

Junita used music to reduce stress among the students during PBL. Students remained focused when analysing the problems even with the background music. The students enjoyed PBL and preferred background music during their discussions. The study's findings show that background music is a strategy that can be used to enhance students' PBL.

### **Implications of the Study**

This study has highlighted the roles of the lecturers in facilitating PBL. This study's implications include the contextual significance and implications for policy, practice, and research.

### ***Contextual Significance***

This study focuses on four nursing lecturers' roles in facilitating PBL for second-year nursing students in Singapore. Previous studies on this topic in

Singapore were on approaches to problem-based learning (Kwan, 2008; Yew & Goh, 2016) and the nature of PBL interactions (Yew & Schmidt, 2007).

However, there is no previous study on the role of nursing lecturers in facilitating problem-based learning in Singapore. Therefore, this study is significant as the first to focus on nursing lecturers' role in facilitating PBL in the classroom in Singapore.

This study has demonstrated that nursing lecturers play multiple roles in facilitating PBL. The findings indicate how PBL in Singapore could be improved. The recommendations relate to policy, practice and research.

### ***Policy Implications***

The institution should draw a clear policy on PBL. A policy on teaching and learning for hospital staff in Singapore should incorporate problem-based learning, which will help the nursing students be independent learners and make accurate clinical decisions using critical thinking skills.

All the facilitators in PBL should attend courses or workshops on PBL before they start facilitating PBL. This is to equip them with knowledge about facilitating PBL to ensure that they are confident and knowledgeable in PBL. They should attend conferences on PBL locally and internationally to update their knowledge in PBL and share with their colleagues.

### ***Implications for Practice***

Experienced lecturers, appointed and well supported by the management team, should develop a guidebook for PBL facilitation. This would ensure consistency and maintain PBL facilitation standards among the nursing lecturers. The lecturers should refer to the guidelines whenever they are unsure of how to



conduct PBL. Moreover, the book would act as a guide for new lecturers conducting PBL. Kolmo et al (2006) states that having a guideline or a book for PBL facilitation is effective as it acts as a guide for the lecturers to facilitate PBL.

It is crucial for experienced facilitators in PBL to mentor new facilitators to guide students in achieving good learning outcomes. Guidance and support to the new facilitators would increase their confidence in facilitating PBL. Moreover, if they are unsure about the PBL facilitating process, they would be able to consult their mentors for guidance.

Sharing experience in facilitating PBL with other lecturers is another good practice that the lecturers can implement to improve their facilitation skills. The nursing lecturers should share their experiences in the facilitation of PBL with their peers during journal club meetings. This is a platform to share their knowledge and receive feedback from colleagues to implement changes and improve their facilitation skills. This would assist in improving students' learning outcome.

An experienced PBL lecturer should assess individual lecturers facilitating PBL in the classroom to monitor PBL facilitation consistency. The feedback given to the lecturers after classroom assessment should be constructive to help them improve their facilitation skills.

Background music is also another way to improve lecturers' practice in facilitating PBL. Music can be used during students' discussions to avoid stress for the students and enhance learning.

### ***Suggested Further Research***

The nursing lecturers' case study in facilitating PBL has generated several recommendations for PBL in nursing in Singapore. Research on PBL in nursing education mostly focused on student learning. However, there is a

need for further research on nurse lecturers' role in facilitating PBL in Singapore. For example, a survey of PBL facilitators across Singapore is recommended to provide generalisable data. Besides, qualitative research on facilitators' role in PBL using case studies should be conducted in different hospitals in Singapore to provide comparative data about PBL in nurse education.

## **Overview**

The lecturers faced many challenges in facilitating PBL. In this study, the lecturers played multiple roles, including planning the learning environment and resources, interacting with the students through questioning, and guiding them effectively to ensure that their learning outcomes are achieved.

Nursing lecturers have a role in supporting their students to facilitate PBL. In this study, the lecturers showed good leadership by planning and organising the learning environment and resources effectively. They organised their students into groups and assigned them roles in the groups. They also guided the students and ensured that they developed PBL skills. The lecturers briefed students on self-directed learning by motivating them to learn independently and showing them how to find resources in the library and on websites.

Another role of the facilitators is to engage students in PBL. They interacted and communicated with the students in group discussions by sharing ideas and working together. Self-directed learning is one of the principles of PBL. the nursing lecturers in the study motivated the students to learn independently by giving them support and providing a conducive learning environment.

This research is significant because it is the first study to explore nursing lecturers' role in facilitating PBL in Singapore. Methodologically, it is also significant

as it uses a multiple case-study approach, qualitative methods, documentary analysis, observation and interviews to enhance in-depth understanding of nursing lecturers' role in facilitating PBL. A key recommendation is that all lecturers should be required to attend PBL workshops to update their knowledge and skills in facilitation before they are assigned to teach PBL.

## REFERENCES

- Aarnio, M., Lindblom-Ylänne, S., Nieminen, J., & Pyörälä, E. (2014). How do tutors intervene when conflicts on knowledge arise in tutorial groups? *Advances in Health Sciences Education: Theory and Practice*, 19(3), 329-345.
- Abraham, R. R & Komattil, R. (2017). Heutagogic approach to developing capable learners. *Medical Teacher*, 39, 295-299.
- Achike, F. I., & Nain, N. (2005). Promoting problem-based learning (PBL) in nursing education: A Malaysian experience. *Nurse Education in Practice*, 5 (5), 302–311.
- Ahmad, C, C., N., Yahya, A., Abdullah, M. F. N., Mohd Nor, N., & Adnan, N. (2015). An instrument to assess physical aspect of classroom environment in Malaysia. *International Journal of Arts and Science*, 8 (2), 1-12.
- Ahmed, I. A. M., Elseed, M. A. M., & El-Sheikh, M. A. (2015). Expert and non-expert tutors: Roles in problem-based learning. *International Association of Medical Science Educators - IAMSE*, 17 (1), 13-19.
- Ali, S. S. (2019). Problem-based Learning: A student-centered approach. *English Language Teaching*, 12(5), 73–78.

- Aliakbari, F., Parvin, N., Heidari, M., & Haghani, F. (2015). Learning theories application in nursing education. *Journal of Education and Health Promotion, 4* (2), 1-8.
- Al-Sheik, M. A. H., Elbashir, A.M., Abdelrahman, A. M., & Alsarei, S., A. (2017). Tutors' role and responsibilities in (PBL): Pros and cons of subject expert and tutorial process expert literature overview. *International Education and Research Journal, 3* (4), 42-44.
- Alqurashi, M. (2018). An exploratory study to identify teaching styles in Saudi Arabia based on three learning theories. *International Journal of Social Sciences, 3*, 1442-1454.
- Applin, H., William, B., Day, R., & Buro, K. (2011). A comparison of competencies between problem-based learning and non- problem-based learning graduate nurses. *Nursing Education Today, 31* (2), 129-134.
- Arghode, V., Brieger, E. W., & McLean, G. N. (2017). Adult learning theories: Implications for online instruction. *European Journal of Training and Development, 41*(7), 593-609.
- Ates, O., Eryilmaz, A. (2000). Factors affecting performance of tutors during problem-based learning. *Procedia Social and Behavioural Sciences, 2*, 2325-2329.

- Atherton, J. S. (2005). Teaching in learning: Physical layout. Retrieved December 20, 2007, from <http://www.learningandteaching.info/teaching/layout.htm>
- Azer, S. A. (2005). Challenges facing PBL tutors: 12 tips for successful group facilitation. *Medical Teacher*, 27, 676-681.
- Azer, S. A. (2009). Interactions between students and tutor in problem-based learning. The significance of deep learning. *The Kaohsiung Journal of Medical Sciences*, 25, 240-249.
- Azer, S. A. (2011). Introducing a problem-based learning program: 12 tips for success. *Medical Teacher*, 33 (10), 808-813.
- Azer, S. A., Patterson, R., Guerrero, A. P. S., Edgren, G. (2012). Twelve tips for constructing PBL cases. *Medical Teacher*, 34, 361-367.
- Bada, S. O. (2015). Constructivism learning theory: A paradigm for teaching and learning. *Journal of Research & Method in Education*, 5(6), 66-70.
- Bahri, A. & Corebima, A. D (2019). Improving PBL in empowering metacognitive skills for students. *Indian Journal of Science and Technology*, 12, 1-9.
- Bandura, A. (1977). *Self-efficacy: The exercise of control*. New York: W. H. Freeman.

- Bandura, A. (2011). A social cognitive perspective on positive psychology. *International Journal of Social Psychology*, 26 (1), 7-20.
- Barbour, R. (2014). *Introducing Qualitative Research: A Student's Guide* (2nd ed.). SAGE Publications, Inc. <https://doi.org/10.4135/9781526485045>
- Barret, T., Moore, S. (2011). *New approaches to problem-based Learning: Revitalising your practice in higher education in practice*. New York: Routledge.
- Barrows, H. S. (1986). A taxonomy of problem-based learning methods. *Medical Education*, 20(6), 481-486.
- Barrows, H. S. (1988). *The tutorial process*. Springfield: Southern Illinois University School of Medicine.
- Barrows, H. S. (1994). *Problem-based learning: Problem-based learning applied to medical education*. Springfield, IL: Southern Illinois University School of Medicine.
- Barrows, H. S. (2000). *Problem-based learning applied to medical education*. Springfield, IL: Southern Illinois University School of Medicine.
- Barrows, H. S., & Tamblyn, R. M. (1980). *Problem-based learning: An approach to medical education*. Springfield, IL: Springer.

Bastable, S. B., Sopczyk, D., Gramet, P., & Jacobs, K. (2019). *Health professional as educator: Principles of teaching and learning* (2nd ed.). United States of America: Jones & Bartlett Learning.

Bate, E., Hommes, J., Duvivier, R. & Taylor, D. C. M. (2014). Problem-based learning (PBL): Getting most out of your students. Their roles and responsibilities: AMEE Guide No 84. *Medical Teacher*, 36 (1) 1-12.

Bate, E. & Taylor, D. C. M. (2013). Twelve tips how to survive PBL as a medical student. *Medical Teacher*, 35, 95-100.

Beachey, W. D. (2007). A comparison of problem-based learning and traditional curricula in baccalaureate respiratory therapy education. *Respiratory Care*, 52(11), 1497-1506.

Benner, P. (1984). *From novice to expert, excellence and power in clinical nursing practice*. Menlon Park: CA: Addison-Wesley Publishing.

Benner P (2012). Educating nursing: A call for radical transformation—how far we come? *Journal of Nursing Education*, 51, 83–84.

Benner, P., Hughes, R. G., & Sutphen, M. (2008). Clinical reasoning, decision making, and action: Thinking critically and clinically. In: R. G., Hughes, (Ed), *Patient safety and quality: An evidence-based handbook for nurses* (pp, 1-28). Rockville, MD: Agency for Healthcare Research and Quality.



Bentham, S. (2002). *Psychology and education*. London: Routledge.

Beser, A. Mete, S., Yilriyet drim, H. S. (2004). How should be a tutor in problem-based learning? *Journal of Cumhuriyet University School of Nursing*, 8, 32-38.

Bevis, O., & Watson, J. (2000). *Towards a caring curriculum: A new pedagogy for nursing*. Sudbury, MA: Jones & Bartlett.

Bhoyrub, J, Hurley, J., Neilson, G., R., Ramsay, M., & Smith, M (2010). Heutagogy: An alternative practice-based learning approach. *Nurse Education in Practice*, 10, 322-326.

Biggs, J. (1999). What the student does: Teaching for enhanced learning. *Higher Education Research & Development*, 18 (1), 57-75.

Blaschke, L. M. (2012). Heutagogy and lifelong learning: A review of heutagogical practice and self-determined learning. *The International Review of Research in Open and Distributed Learning*, 13 (1), 56-71.

Blaschke, L., & Hase, S. (2019). Heutagogy and digital media network: Setting students to the path of lifelong learning. *Pacific Journal of Technology*, 1(1), 1-14.

Boud, D., & Feletti, G. (2013). *The challenge of problem-based learning*. London: Routledge.

- Bowman, D., & Hughes, P. (2005). Emotional responses of tutors and students in problem-based learning: Lessons for staff development. *Medical Education*, 39 (2), 145-153.
- Bradshaw, M. J., Hultquist, B. L., & Hagler, D. (2017). *Innovative teaching strategies in nursing and related health professions* (8th ed.). United State of America: Jones & Bartlett Learning.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3 (2), 77-101.
- Bright, L. K., & Mahdi, G. S. (2010). Out of crisis: Reflection of an Iraqi and an American on advocacy for andragogy. *Adult Learning*, 21(12), 37-40.
- Brookhart, S. M. (2017). *How to give effective feedback to your students*. United State of America: ASCD.
- Brunner, J. S., (1961). The Act of Discovery. *Harvard Educational Review*, 31(1), 21-32.
- Bryman, A. (2004). *Social Research Methods* (2nd ed.). United States of America: Oxford University Press.

- Caesar, M. I. M., Jawawi, R., Matzin, R., Shahrill, M., Jaidin, J. H., & Mundia, L. (2016). The benefits of adopting a problem-based learning approach on students' learning developments in secondary geography lessons. *International Education Studies*, 9(2), 51-65.
- Candy, P. C. (1991). *Self-directed lifelong learning: A comprehensive guide to theory and practice*. New Jersey: Jossey Bass.
- Carriger, M. S. (2015). Problem-based learning and management development—empirical and theoretical considerations. *The International Journal of Management Education*, 13(3), 249-259.
- Carvalho, D. P. S. R. P., Azevedo, I. C., Cruz, G. K. P., Mafra, G. A. C., Rego, A.L. C., Vitor, A. F., Santos, V. E. P., Cogo, A. L. P., & Ferreira Júnior, M. A. (2017). Strategies used for the promotion of critical thinking in nursing undergraduate education: A systematic review. *Nurse Education Today*, 57, 103-107.
- Casey, D. (2007). Using action research to change health-promoting practice. *Nursing & Health Sciences*, 9(1), 5-13.
- Casey, D., & Murphy, K. (2009). Issues in using methodological triangulation in research. *Nurse Researcher*, 16(4), 40-55.

- Chan, C. K. Y. (2016). Facilitators perspectives of the factors that affect the effectiveness of problem-based learning process. *Innovations in Education and Teaching International*, 53(1), 25-34.
- Chan, E. Y., & Morrison, P. (2000). Factors influencing the retention and turnover intentions of registered nurses in a Singapore hospital. *Nursing and Health Sciences*, 2(2), 113-121.
- Chan, Z. C. Y. (2012). Role-playing in the problem-based learning class. *Nurse Education in Practice*, 12(1), 21-27.
- Chan Z.C.Y. 2014. Students' and experts' perspectives on three learning and teaching activities. *Nurse Education in Practice*, 14(5), 449-454.
- Chauvet, S., & Hofmeyer, A. (2007). Humor as a facilitative style in problem-based learning environments for nursing students. *Nurse Education Today*, 27(4), 286-292.
- Che Ahmad, C.N, Osman, K & Halim, L. (2013). Physical and psychosocial aspects of the learning environment in the science laboratory and their relationship to teacher satisfaction. *Learning Environment Research*, 16, 367-385.
- Cheng, X. (2000). Asian students' reticence revisited. *System*, 28, 435-446.

- Chiriac, E. H. (2008). A scheme for understanding group processes in problem-based learning. *Higher Education*, 55(5), 505-518.
- Chng, E., Yew, E. H. J., & Schmidt, H. G. (2011). Effects of tutor-related behaviours on the process of problem-based learning. *Advances in Health Sciences Education*, 16(4), 491-503.
- Choi, E., Lindquist, R., & Song, Y. (2014). Effects of problem-based learning vs. traditional lecture on Korean nursing students' critical thinking, problem-solving, and self-directed learning. *Nurse Education Today*, 34(1), 52-56.
- Choo, S. S. Y., Rotgans, J. I., Yew, E. H. J., & Schmidt, H. G. (2011). Effect of worksheet scaffolds on student learning in problem-based learning. *Advances in Health Sciences Education: Theory and Practice*, 16(4), 517-528.
- Chow, Y. L. (2006). Survey for third-year nursing students. Singapore: NYP.
- Clark, K. R. (2018). Learning theories: Behaviorism. *Radiologic Technology*, 90(2), 172-175.
- Cober, R. Tan, E., Slotta, J., So, H. J., & Konings, K. D. (2015). Teachers as participatory designers: Two case studies with technology enhanced learning environments. *Instructional Science*, 43, 203-228.

- Cohen, L., Manion, L., & Morrison, K. (2011). *Research methods in education* (7th ed.). United Kingdom: Routledge.
- Colliver, J. A. (2000) Effectiveness of problem-based learning curricula: Research and theory. *Academic Medicine*, 75 (3), 259-266.
- Conroy, T. (2017). A beginner's guide to ethnographic observation in nursing research. *Nurse Researcher*, 24(4), 10-14.
- Consul-Giribet, M. & Medina-Moya, J. L (2014). Strengths and weaknesses of PBL from the professional perspective of registered nurses. *Revista Latino Americana de Enfermagem*, 22, 724-730.
- Couto, L, B, Bestetti, R. B., Restini, C. B. A., Faria-Jt, M. F, Roma, G. S. (2015). Brazilian medical students' perceptions of expert versus non-expert facilitators in a (non) problem-based learning environment. *Medical Education*, 20, 1-5.
- Creedy, D., Horsfall, J., & Hand, B. (1992). Problem-based learning in nurse education: An Australian view. *Journal of Advanced Nursing*, 17(6), 727-733.
- Creswell, J. W. (2003). *Research design: Qualitative and quantitative approaches* Thousand Oaks, CA: Sage Publications.

- Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five approaches* (2nd ed.). United States of America: Sage Publications.
- Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed.). Thousand Oaks, CA: Sage Publications.
- Crowe, S., Cresswell, K., Robertson, A., Huby, G., Avery, A., & Sheikh, A. (2011). The case study approach. *BMC Medical Research Methodology*, 11(1), 1-9.
- Curseu, P. L & Pluut, H. (2013). Student group as learning entities: The effect of group diversity and teamwork quality on groups' cognitive complexity. *Studies in Higher Education*, 38(1), 87-103.
- Dahlgren, M. A., Castensson, R., & Dahlgren, L. O. (1998). PBL from the teachers' perspective. *Higher Education*, 36(4), 437-447.
- Darling-Harmond, L. (2012). Teacher education around the world: What can we learn from international practice. *European Journal of Teacher Education*, 40(3), 291-309.
- Das Carlo, M., Swadi, H., & Mpofu, D. (2003). Medical student perceptions of factors affecting productivity of problem-based learning tutorial groups: Does culture influence the outcome? *Teaching and Learning in Medicine*, 15(1), 59-64.

- Davenport, J., & Davenport, J. A. (1985). A chronology and analysis of the andragogy debate. *Adult Education Quarterly*, 35(3), 152-159.
- Deci, E. L., Koestner, R., & Ryan, R. M. (2001). Extrinsic rewards and intrinsic motivations in education: Reconsidered once again. *Review of Educational Research*, 71(1), 1-27.
- De Grave, W.S., De Volder, M.S., Gijssels, W.H. & Damoiseaux, V. (1990). Peer teaching and problem-based learning: tutor characteristics, tutor functioning, group functioning, and student-achievement. In, Z.M. Nooman & H.G. Schmidt, (eds), *Innovation in medical education: An evaluation of its present status* (pp. 123-135). New York: Springer.
- Dehkordi, A. H., & Heydarnejad, M. S. (2008). The impact of problem-based learning and lecturing on the behavior and attitudes of Iranian nursing students. A randomised controlled trial. *Danish Medical Bulletin*, 55(4), 224-226.
- Deng, Z., & Gopinathan, S. (2016). PISA and high-performing education systems: Explaining Singapore's education success. *Comparative Education*, 52(4), 449-472.
- Denzin, N. K. (1989). *The research act: A theoretical introduction to sociological methods*. New York: McGraw Hill.



Denzin, N. K., & Lincoln, Y. S. (2008). *Handbook of qualitative research*. New York: Sage.

Dewey, J. (1990). *The school and society and the child and the curriculum*. Chicago: University of Chicago Press.

Doherty, D., Mc Keague, H., Harney, S., Browne, G., & McGrath, D. (2018). What can we learn from problem-based learning tutors at a graduate entry medical school? A mixed method approach. *BMC Medical Education*, 18(96), 1-12.

Dohrenwend, A. (2002). Serving up the feedback sandwich. *Family Practice Management*, 9(10), 43-46.

Dole, S., Bloom, L., & Kowalske, K. (2016). Transforming pedagogy: Changing perspectives from teacher-centred to learner-centred. *Interdisciplinary Journal of Problem-Based Learning*, 10(1), 1-15.

Dolmans, D. H. J. M., Loyens, S., M., M., Marcq, H., & Gijbels, D. (2016). Deep and surface learning in problem-based learning: A review of literature. *Advances in Health Science Education*, 21, 1087-1112.

Donnelly, R (2013). The role of the PBL tutor within blended academic development: *Innovations in Education and Teaching International*, 50(2), 133-143.

Downing, K. (2010). Problem-based learning and metacognition. *Asian Journal of Education and Learning*, 1(2), 75-96.

DuFour, R., DuFour, E., & Eaker, R. (2008). *Revisiting professional learning communities at work: New insights for improving schools*. Bloomington, IN: Solution Tree Press.

Dzerviniks, J., & Poplavskis, J. (2012). Acquisition of physics in comprehensive school: Accents of constructivism approach. *Problems of Education in the 21<sup>st</sup> Century*, 41, 10-17.

Eberlein, T., Kampmeier, J., Minderhout, V., Moog, R. S., Platt, T., Varma-Nelson, P., & White, H. B. (2008). Pedagogies of engagement in science: A comparison of PBL, POGIL, and PLTL. *Biochemistry and Molecular Biology Education*, 36(4), 262-273.

Eisenhardt, K. M. (1989). Building Theories from case study research. *The Academy of Management Review*, 14(4), 532-550.

El Naggar, M. A. A. E.-A., Maklady, F. A. H., Hamam, A. M., & Omar, A. S. (2014). Designing, implementing, and evaluating a tutor guide for problem-based learning Phase II Class tutors at the faculty of medicine, Suez Canal University. *Interdisciplinary Journal of Problem-Based Learning*, 1, 1-15.

- Etikan, I., Musa, S. A., Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, 5(1), 1-4.
- Evenson, D., H. & Hmelo-Silver, C., E. (2000). *Problem-based Learning: A research perspectives on learning interactions*. London: Routledge.
- Fang, Y. (2001). Turnover propensity and its causes among Singapore nurses: An empirical study. *The International Journal of Human Resource Management*, 12(5), 859-871.
- Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. *American Psychologist*, 34(10), 906-911.
- Fosnot, C. T. (1996). *Constructivism. Theory, perspectives, and practice*. New York: Teachers College Press.
- Freeman, S., Eddy, S. L., McDonough, M., Smith, M. K., Okoroafor, N., Jordt, H., & Wenderoth, M. P. (2014). Active learning increases student performance in science, engineering, and mathematics. *Proceedings of the National Academy of Sciences of the United States of America*, 111(23), 8410-8415.
- Freire, P., & Macedo, D. (2000). *Pedagogy of the oppressed*. New York: Continuum.

- Friedman, M. (1999). *Reconsidering logical postivism*. Cambridge: Cambridge University Press.
- Gewurtz, R. E., Coman, L., & Dhillon, S. (2016). Problem-based learning and theories of teaching and learning in health professional education. *Journal of Perspectives in Applied Academic Practice*, 4, 59-70.
- Gibbs, G. (1988). *Learning by doing: A guide to teaching and learning methods*. Great Britain: Further Education Unit.
- Gibril, A. (2018). Observational research in social sciences: A neglected qualitative research technique. *Sokoto Journal of Social Science*, 8, 231-240.
- Gilkison, A. (2003). Techniques used by "expert" and "non-expert" tutors to facilitate problem-based learning tutorials in an undergraduate medical curriculum. *Medical Education*, 37(1), 6-14.
- Goh, P. L. K. (2009). Factors influencing facilitators' successful adaptation to a problem-based learning environment. 'What are we learning about learning? Paper presented at the 2nd International PBL Symposium, Singapore.
- Goh, K. (2014). What good teachers do to promote effective student learning in problem-based learning environment. *Australian Journal of Educational &*

- Good, T. C., & Lavigne, A. L. (2017). Looking in the classroom. New York: Routledge.
- Greenhalgh, T., & Peacock, R. (2005). Effectiveness and efficiency of search methods in systematic reviews of complex evidence: audit of primary sources. *British Medical Journal*, 331, 1064-1065.
- Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp.105-117). London: Sage Publications, Inc.
- Gubrium, J. F., & Holstein, J. A. (2001). From the individual interview to the interview society. In Gubrium, J. F., & Holstein, J. A. (Eds.), *Handbook of interview research* (pp. 2-32). United States of America: Sage Publications, Inc.
- Guerriero, S. (2017). Teachers' pedagogical knowledge: What it is and how it functions. In Guerriero, (ed), *Pedagogical knowledge and the changing nature of teaching profession*. Paris: OECD Publishing.
- Gupta, P. (2017). Constructivism: A new paradigm in teaching and learning. *International Journal of Academic Research and Development*, 2(4), 183-183.
- Gwee, M. C. (2008). Globalisation of problem-based learning (PBL): Cross culture implications. *Kaohsiung Journal of Medical Science*, 24 (93), 14-22.

- Haghighi, M. M., & Mohd Jusan, M. (2012). Exploring students' behaviour on seating arrangements in learning environment: A review. *Procedia-Social and Behavioral Sciences*, 36, 287-294.
- Hak, T., & Maguire, P. (2000). Group process: The black box of studies on problem-based learning. *Academic Medicine: Journal of the Association of American Medical Colleges*, 75(7), 769-77.
- Haith-Cooper, M. (2000). Problem-based learning within health professional education. What is the role of the lecturer? A review of the literature. *Nurse Education Today*, 20(4), 267-272.
- Harun, N. F., Yusof, K. M., & Jamaluddin, M. Z. (2012). Motivation in problem-based learning implementation. *Social and Behavioural Sciences*, 56, 2332-2342.
- Hase, S., & Kenyon, C. (2000). From andragogy to heutagogy. *Ultibase Articles*, 5(3), 1-10.
- Hase, S., & Kenyon, C. (2007). Heutagogy: A child of complexity theory. *Journal of Complexity and Education*, 4, 11-18.
- Hase, S., & Kenyon, C. (2013). *Self-determined learning. Heutagogy in actions*. London: Bloomsbury.

Hase, S., & Kenyon, C. (2019). *Self-directed Learning: Heutagogy in actions*. London: Bloom Sherry Publication.

Hmelo, C.E., & Lin, X. (2000). Becoming self-directed learners: Strategy development in problem-based learning. In D. Evensen & C. E. Hmelo (Eds.), *Problem-based learning: A research perspective on learning interactions* (pp. 227–250). Mahwah, NJ: Lawrence Elbaum Associates.

Hmelo-Silver, C. E. (2004). Problem-based learning: What and how do students learn? *Educational Psychology Review*, 16(3), 235-266.

Hmelo-Silver, C. E., & Barrows, H. (2006). Goals and strategies of problem-based learning facilitator. *Interdisciplinary Journal of Problem-Based Learning*, 1, 21-29.

Hmelo-Silver, C. E., Bridges, S. M., & McKeown, J. M. (2019). Facilitating problem-based learning. In M. Moallem, W. Hung, & N. Dabbagh (Eds.), *The Wiley handbook of problem-based learning* (pp. 297–319). New York: Wiley.

Hmelo-Silver, C. E., & Lin, X. (2000). Becoming self-directed learners: Strategy development in problem-based learning. In D. Evensen & C. E. Hmelo (Eds.), *Problem-based learning: A research perspective on learning interactions* (pp. 227–250). Mahwah, NJ: Erlbaum.

Huber, D. L. (2013). *Leadership & nursing care management 5<sup>th</sup> (ed.)* China: Elsevier Saunders.

- Hughes, G. (2011). Towards a personal best: A case for introducing ipsative assessment in higher education. *Studies in Higher Education*, 36(3), 353-367.
- Hung, W. (2011). Theory to reality; a few issues in implementing problem-based learning. *Education Technology and Research Development*, 59, 529-552.
- Huower, J. E., Barnes-Holmes., D., & Moors, A. (2013). What is learning? On the nature and merits of a functional definition of learning. *Psychonomic Bulletin & Review*, 20, 631-642.
- Hussain, R. M., Mamat, W., Salleh, N., Mohd Saat, R., & Harland, T. (2007). Problem-based learning in Asian universities. *Studies in Higher Education*, 32(6), 761-772.
- Hussain, I. A. (2013). A study of learners' reflection on andragogical skills of distance education tutors. *International Journal of Instruction*, 6(1), 123-138.
- Hwang, S. Y., & Kim, M. J. (2006). A comparison of problem-based learning and lecture-based learning in an adult health nursing course. *Nurse Education Today*, 26(4), 315-321.



Ibrahim, M. E., Al-Shahrani, A. M., Abdalla, M. E., Abubaker, I. M., & Mohamed, M. E. (2018). The effectiveness of problem-based learning, acquisition of knowledge, soft skills during preclinical sciences: Medical students' points of view. *Journal of the Society for Medical Informatics of Bosnia & Herzegovina*, 26(2), 119-124.

Jacques, D. (2000). *Learning in groups: A handbook for improving group work*. London: Kogan.

Jin, J. (2012). Sounds of silence: Examining silence in problem-based learning (PBL) in Asia. In S. Bridges, C. McGrath, & T. L. Whitehill (Eds.), *Problem-based learning in clinical education: The next generation* (pp. 171-188). Netherlands: Springer.

Jin, J. (2017). Introduction of a pilot study. *Korean Journal of Anesthesiology*, 70(6), 601-605.

Jin, J. & Bridges, S. M. (2014). Educational technologies in problem-based learning in health sciences education: A systematic review. *Journal of Medical Interest Research*, 16 (12), 1-14.

Joint Polytechnic Recruitment (2013). *Polytechnic Admission Guidelines*. Ministry of Education: Singapore.

- Jones, R., W. (2006). Problem-based learning: description, advantages, disadvantages, scenarios and facilitation. *Anaesthesia Intensive Care*, 34(4), 485-488.
- Jug, R., M., B., Bao, B.C.H., Jiang, X., S., & Bean, S., M. (2019). Giving and receiving feedback. *Archive of Pathology and Laboratory Medicine*, 143, 244-250.
- Kaddoura, M. A. (2011). Critical thinking skills of nursing in lecture-based teaching and case-based learning. *International Journal for the Scholarship of Teaching and Learning*, 5(2), 1-18.
- Kang, M. H., Kang, J. H., Choi, H. S., & Um, S. Y. (2008). The effects of learners' perceived role of a tutor on interaction and learning outcomes of problem-based learning in medical education. *Research of Education Science*, 39, 198-204.
- Kannusamy, P. (2005). Nursing education: Shaping the future through the richness of the past. *Singapore Medical Journal*, 46(11), 594-595.
- Kantar, L. (2014). Incorporation of constructivist assumptions into problem-based instruction: A literature review. *Nurse Education in Practice*, 14(3), 233-241.

- Kassab, S., Al-Shboul, Q., Abu-Hijleh, M., & Hamdy, H. (2006). Teaching styles of tutors in a problem-based curriculum: Students' and tutors' perception. *Medical Teacher*, 28(5), 460-464.
- Kehrwald, B., Rawlins, P. & Simpson, M. (2011). Learner experiences of online learning in a blended learning situation: Different cohorts, different needs. In G. Williams, P. Statham, N. Brown, B. Cleland (Eds.), *Changing demands, changing directions* (pp.671-676). Hobart: Proceedings Ascilite.
- Kenyon, C., & Hase, S. (2010). *Andragogy and heutagogy in postgraduate work*. In Kerry (Ed), *Meeting the challenges of change in postgraduate education* (pp.165-178). United Kingdom: Continuum Press.
- Khalil, M. K., & Elkhider, I. A. (2016). Applying learning theories and instructional design models for effective instruction. *Advances in Physiology Education*, 40(2), 147-156.
- Kharade, K., & Peese, H. (2014). Problem-based learning: a promising pathway for empowering pre-service teachers for ICT-mediated language teaching. *Policy Future in Education*, 12 (2), 262-272.
- Khoo, H. E. (2003). Implementation of problem-based learning in Asian medical schools and students' perceptions of their experience. *Medical Education*, 37(5), 401-409.

- Kim, M. S. (2014). Doing social and aesthetic connections research means making empathetic and aesthetic connections with participants. *European Childhood Education Research Journal*, 22, 538-553.
- Kirschner, P. A., Sweller, J., & Clark, R. E. (2006). Why minimal guidance during instruction does not work: An analysis of the failure of constructivist discovery, problem-based, experiential and inquiry-based teaching. *Educational Psychologist*, 41(2), 75-86.
- Knight, S. J. G. (2016). *Developing learning analytics for epistemic commitments in a collaborative information seeking environment*. PhD thesis The Open University.
- Knowles, M. S. (1975). *Self-directed learning: A guide for learners and teachers*. United States of America: Cambridge Adult Education.
- Knowles, M. S. (1984). *The adult learner: A neglected species* (3rd ed.). Houston: Gulf Publishing.
- Knowles, M. S. (1995). *Designs for adult learning*. Alexandria, VA: American Society for Training and Development.
- Knowles, M.S., Holton, E.F., & Swanson, R.A. (1998). *The adult learner: The classic in adult education and human resource development*. Houston: Gulf Publishing Company.

- Kocaman G, Dicle A, Ugur A. (2009). A longitudinal analysis of the self-directed learning readiness level of nursing students enrolled in a problem-based curriculum. *Journal of Nursing Education*. 48(5), 286-90.
- Kolb, D. (1984). *Experiential learning. Experience as the source of learning and development*. Englewood Cliff: Prentice Hall.
- Kolmos, A., Du, X., Holgaard, J. E., & Jensen, L. P. (2008). Facilitation in a PBL environment. Aalborg: Aalborg University Press.
- Kwan, T. Y. L. (2008). Student-teachers' evaluation on the use of different modes of problem-based learning in teacher education. *Asia-Pacific Journal of Teacher Education*, 36(4), 323-343.
- Laforce, M., Noble, E., Balckstem, C. (2017). Problem-based learning and student interest in stem careers: The role of motivation and ability beliefs. *Education Sciences*, 7, 1-
- Larue, C. (2008). Group learning strategies for nursing students: Reflections on the tutors' role. *International Journal of Nursing Education Scholarship*, 51, 1-17.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. New York: Cambridge University Press.

- Leary, H., Walker, A., Shelton, B. E., Fitt, M., H. (2013). Exploring the relationships between tutor background, tutor training and student learning: A problem-based learning meta-analysis. *Interdisciplinary Journal of Problem-Based Learning*, 7 (1), 40-66.
- Lee, H. L. (2004). *Our Future of Opportunity and Promise*. Singapore: National University of Singapore.
- Lekalakala-Mokgele, E. (2006). Facilitation as a teaching strategy: Experiences of facilitators. *Curationis*, 29(3), 61-69.
- Lekalakala-Mokgele, E. (2010). Facilitation in problem-based learning: Experiencing the locus of control. *Nursing Education Today*, 30, 638-642.
- Leonard, S. H., & Lang, F. (2010). Leadership development via action learning. *Advances in Developing Human Resources*, 12(2), 225-240.
- Leung, L. (2015). Validity, reliability, and generalizability in qualitative research. *Journal of Family Medicine and Primary Care*, 4(3), 324-327.
- Li, H. (2013). *Educational changes toward problem-based learning: An organisational perspectives*. Denmark: River Publishers.
- Li, H., & Du, X. (2015). Teachers' Perspective of their role and student autonomy in the PBL context in China. *International Journal of Learning, Teaching and Educational Research*, 10(2), 18-31.

- Li, H., & Du, X. (2018). Educational Design for Future: Case study of the curriculum model and education idea of problem-based learning at Aalborg University in Denmark. *Chongqing Higher Education Research*, 3, 117-127.
- Lim, L., & Choy, J. (2014). Preparing staff for problem-based learning: Outcomes of a comprehensive faculty development program. *International Journal of Research Studies in Education*, 3(4), 53-68.
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Beverly Hills, CA: Sage.
- Loke, J., C. E., Lee, K., W., Lee B. K., Mohd, Noor., A. (2014). C: Effects of pre-registration nursing education. *Nurse Education in Practice*, 15, 421-429.
- Loyens, S. M. M., Rikers, R. M. J. P., & Schmidt, H. G. (2007). Students' conceptions of distinct constructivist assumptions. *European Journal of Psychology of Education*, 22(2), 179-199.
- Lyberg-Åhlander, V., Lundskog, M., & Hansson, K. (2014). Experiencing the role of PBL tutor. *Clinical Linguistics & Phonetics*, 28(2), 36-46.
- Macnee, C., L., & McCabe, S (2008). *Understanding nursing research: Using research evidence-based practice* (2<sup>nd</sup> edition). United States of America: Lippincott Williams & Wilkins.

- Major, C. H., & Palmer, B. (2006). Reshaping teaching and learning: The transformation of faculty pedagogical content knowledge. *Higher Education*, 51(4), 619-647.
- Mansor, A. N, Abdullah, N. O., Wahab, A., J., Mohd Nor, M. S., Mohd Nor, N. (2015). Managing problem-based learning: Challenges and solutions for education practice. *Asian Social Sciences*, 11(4), 259-268.
- Marx, A., Fuhrer, U., & Hartig, T. (1999). Effects of classroom seating arrangements on children's question-asking. *Learning Environments Research*, 2(3), 249-263.
- Mascolo, M. F. (2009). Beyond student-centred and teacher-centred pedagogy: Teaching and learning on guided participation. *Pedagogy and the Human Sciences*, 1(1), 3-27.
- Masek, A., Yamin.S (2011). The effect of problem-based learning on critical thinking ability: A theoretical and empirical review. *International Research of Social Science and Humanities*, 2, 215-221.
- Matheson, A., Fuhrer, U., & Hartig, T. (1999). Effects of classroom seating arrangements on children's question-asking. *Learning Environments Research*, 2(3), 249-263.



- Matheson, R., Hase, B. (2010). Exploring the foundations for problem-based learning. In T. J. Clouston, L. Westcott, S. W. Whitcombe, J Riley & R. Matheson (Eds.), *Problem-based learning in health and social care* (pp 9-24). United Kingdom: Blackwell.
- Maudsley, G. (1999). Roles and responsibilities of the problem-based learning tutor in the undergraduate medical curriculum. *British Medical Journal*, 318, 657-661.
- Maudsley, Gillian. (2002). Making sense of trying not to teach: An interview study of tutors' ideas of problem-based learning. *Academic Medicine: Journal of the Association of American Medical Colleges*, 77(2), 162-172.
- McAuliffe, M., Hargreaves,D., Abbe., W., Gary, C. (2008). Does pedagogy still rule? proceedings of the 19<sup>th</sup> Annual Conference for the Australasian Association for Engineering Education: To Industry and Beyond. Faculty of Sciences, Engineering and Health, CQUniversity, Australia, pp1-6.
- McCabe, A. & O'Connor, U. (2014). Student-centred learning: the role and responsibility of the lecturer. *Teaching in Higher Education*, 19(4), 350-359, DOI: 10.1080/13562517.2013.860111.
- McCombs, B. L. (2001). What do we know about learners and learning? The learner-centred framework: Bringing the educational system into balance. *Educational Horizons*, 79(4), 182-193.

- McGloins (2008). The trustworthiness of case study methodology. *Nurse Research*, 16, 45-54.
- McKenney, S., Kali, Y., Markauskaite, L., & Voogt, J. (2015). Teacher design knowledge for technology enhanced learning: An ecological framework for investigating assets and needs." *Instructional Science*, 43 (2), 181-202.
- McLean, M. (2003). What can we learn from facilitators' and students' perceptions of facilitation skills and roles in the first year of a problem-based learning curriculum? *BMC Medical Education*, 3 (9), 1-10.
- Merriam, S. B. & Caffarella, R. S. (1999). *Learning in adulthood: A comprehensive guide*. (2nd edition). San Francisco: Jossey-Bass.
- Merriam, S. B. (1988). *Case study research in education: A qualitative approach*. San Francisco, CA: Jossey-Bass.
- Merriam, S. B. (1998). *Qualitative research and case study applications in education*. Revised and expanded from case study research in education. Francisco, CA: Jossey-Bass.
- Mete, S., & Yildirim S, H. (2008). Nursing students' expectations from tutors in PBL and effects of tutors' behaviour on nursing students. *Nurse Education Today*, 28(4), 434-442.

Miflin, B. (2004a). Small groups and problem-based learning: Are we singing from the same hymn sheet? *Medical Teacher*, 26(5), 444-450.

Miflin, B. M. (2004b). Adult learning, self-directed learning and problem-based learning: Deconstructing the connections. *Teaching in Higher Education*, 9, 43-53.

Miflin, B. M., Campbell, C. B., & Price, D. A. (2000). A conceptual framework to guide the development of self-directed lifelong learning in problem-based medical curricula. *Medical Education*, 34(4), 299-306.

Miles, M., B., & Huberman, M. A. (1994). *Qualitative data analysis: An expanded sourcebook*. London: Sage.

Miner-Romanoff K., Rae A., Zakrzewski C.E. (2019). A holistic and multifaceted model for ill-structured experiential problem-based learning: Enhancing student critical thinking and communication skills. *Journal of Problem Based Learning in HigherEducation*. 7, 70-96.

Ministry of Education (1988). *Learning to think, thinking to learn: Towards thinking school, learning nation*. Singapore: Ministry of Education.

Ministry of Education (2005a). Knowledge and inquiry. Singapore: Ministry of Education.

Ministry of Education (2005b). Transforming: Teach less, learn more. *The Teacher's Digest*, 2, 4-16.

Ministry of Education (2012). Engaging our learners. teach less, learn more. Retrieved January 12, 2017 from <http://eresources.nlb.gov.sg/printheritage/detail/dbe9f1f3-efcb-4bce-917b1040e95ea179.aspx>.

Ministry of Health (1997). *More than a ceiling: Nursing in Singapore since 1885*. Ministry of Health: Singapore.

Moore, J. (2009). An exploration of lecturer as facilitator within the context of problem-based learning. *Nurse Education Today*, 29(2), 150-156.

Morales-Mann, E. T., & Kaitell, C. A. (2001). Problem-based learning in a new Canadian curriculum. *Journal of Advanced Nursing*, 33(1), 13-19.

Morrison, M. K. (2012). *Using humour to maximize living: Connecting with humour*. United States of America: Rowman & Littlefield Education.

Motley, C. L., & Dolansky, M., A. (2015). Five steps of giving feedback in the clinical setting: A new approach to promote teamwork and collaboration. *Journal of Nursing Education*, 54(7), 399-403.

- Moust, J. (2010). The role of the tutor. In H. van Berkel, A. Scherpbier, H. Hillen, & C. van der Vleuten (Eds.), *Lessons from problem-based learning* (pp. 47-56). Oxford: Oxford University Press.
- Mubuuke, A. G., Louw, A. J. N., & Van Schalkwyk, S. (2016). Utilizing students' experiences and opinions of feedback during problem-based learning tutorials to develop a facilitator feedback guide: An exploratory qualitative study. *BMC Medical Education*, 16(6), 1-17.
- Munhall, P. L. (2007). *Nursing research: A qualitative perspective* (4th ed.). United States of America: Jones & Bartlett Learning.
- Munsinski, B. (2007). The educator as a facilitator: A new kind of leadership. *Nursing Forum*, 34, 23-29.
- Murad, M. H., Coto-Yglesias, F., Varkey, P., Prokop, L. J., & Murad, A. L. (2010). The effectiveness of self-directed learning in health professions education: A systematic review. *Medical Education*, 44(11), 1057-1068.
- Murray-Harvey, R., Pourshafie, T., & Reyes, W. S. (2013). What teacher education students learn about collaboration from problem-based learning? *Journal of Problem Based Learning in Higher Education*, 1(1), 114-134.
- Neville, A. J. (2009). Problem-based learning and medical education forty years on a review of its effect on knowledge and clinical performance. *Medical Principle and Practice*, 18, 1-9.

- Ng, P. T. (2004). Students' perception of change in the Singapore education system. *Educational Research for Policy and Practice*, 3(1), 77-92.
- Noddings, N. (1999). Caring and competence. In G. Griffen (Ed.), *The education of teachers* (pp. 205-220). Chicago: National Society for the Study of Education.
- Norman, G. R., & Schmidt, H. G. (1992). The psychological basis of problem-based learning: A review of the evidence. *Academic Medicine: Journal of the Association of American Medical Colleges*, 67(9), 557-565.
- Oermann, Truesdell, S., Ziolkowski, L (2000). Strategy to assess, develop, evaluate critical thinking. *The Journal of Continuing Education in Nursing*, 31, 155-160.
- O'Shea, E. (2003). Self-directed learning in nurse education: A review of the literature. *Journal of Advanced Nursing*, 43, 62-70.
- Papinczak, T., Tunny, T., & Young, L. (2009). Conducting the symphony: A qualitative study of facilitation in problem-based learning tutorials. *Medical Education*, 43(4), 377-383.
- Park, S. H., & Ertmer, P. A. (2008). Examining barriers in technology-enhanced problem-based learning: Using a performance support systems approach. *British Journal of Educational Technology*, 39(4), 631-643.

Patton, M. Q. (2002). *Qualitative research and evaluation Methods* (3rd ed.). Thousand Oaks, CA: Sage.

Pavlov, I. P. (1927). *Conditioned reflex: An investigation of the physiological activity of the cerebral cortex*. London: Oxford University Press.

Pelech, J., & Pieper, G. (2010). *The comprehensive handbook of constructivist teaching: From theory to practice*. Charlotte, NC: Information Age Publishing.

Piaget, J. (1962a). *Play, dreams and imitation in childhood*. New York: W.W. Norton & Company.

Piaget, J. (1962b). The relation of affectivity to intelligence in the mental development of the child. *Bulletin of the Menninger Clinic*, 26, 129-137.

Piaget, J (1978). *Behaviour and evolution*. New York: Pantheon Books.

Polit, D. F., & Beck, C. T. (2003). *Nursing research: Principles and methods*. Philadelphia: Lippincott Williams and Wilkins.

Polit, D. F., & Beck, C. T. (2008). *Nursing Research: Generating and Assessing evidence for nursing practice*. Philadelphia: Lippincott Williams and Wilkins.

Polit, D. F., & Hungler, B. (1999). *Nursing research: Principles and methods* (6th ed.). Philadelphia: Lippincott Williams & Wilkins

Potgieter, E. (2012). Clinical teaching: Developing critical thinking in student nurses. *Professional Nursing Today*, 16(2), 4-8.

Pourshafie, T., & Murray-Harvey, R. (2013). Facilitating problem-based learning in teacher education: Getting the challenge right. *Journal of Education for Teaching*, 39(2), 169-180.

Preethi, B., Ashish, A, & Shriram, G. (2013). PBL: An effective approach to improve learning outcomes in medical teaching. *Journal of Clinical Diagnostic Research*, 7, 2896-2897.

Pritchard, A. (2014). *Ways of learning*. London: Routledge.

Punch, K. F., & Oancea, A. (2009). *Introduction to research methods in education*. United Kingdom: Sage.

Pyles, C., Hung, W (2019). The role of subject presence type on students' motivation in a problem-based learning environment. *Advance in Health Sciences Education*, 24(4), 643-663.

Rakhudu, M. A., Davhana-Maselesele, M., & Useh, U. (2017). A model of collaboration for the implementation of problem-based learning in nursing education in South Africa. *Curationis*, 40(1), 1-10.



- Remedios, L., Clarke, D., & Hawthorne, L. (2008). The silent participant in small group collaborative learning contexts. *Active Learning in Higher Education*, 9(3), 201-216.
- Richards, C. (2004). From old to new learning: Global imperatives, exemplary Asian dilemmas and ICT as a key to cultural change in education. *Globalisation, Societies and Education*, 2(3), 337-353.
- Rideout, E., England-Oxford, V., Brown, B., Fottergill-Bourbonnais, Ingram C., Benso, G., Ross, M. V., & Coates, A (2002). A comparison of problem-based and conventional curricula in nursing education. *Advances in Health Sciences Education*, 7, 3-17.
- Robinson, L., Harris, A., & Burton, R. (2015). Saving face: Managing rapport in a PBL group. *Active Learning in Higher Education*, 16(1), 11-24.
- Robson, C. (2011). *Real world research: A research for users of social research method in applied setting* (3rd ed.). United Kingdom: John Wiley & Sons.
- Rogers, C. R. (1969). *Freedom to learn*. Columbus, OH: Charles E. Merrill.
- Rogers, C., R., & Freiberg, H., J. (1994). *Freedom to learn*. New York: Macmillan.
- Ronis, D., L. (2008). *Problem-based Learning for Maths & Science: Integrating Inquiry and the Internet*. California: Corwin Press.

- Rowan, C. J., McCourt, C., & Beake, S. (2008). Problem based learning in midwifery: The students' perspective. *Nurse Education Today*, 28(1), 93-99.
- Russel, A. T., Comello, R. J., & Wright, D. N. (2007). Teaching strategies promoting active learning in healthcare education. *Journal of Education and Human Development*, 1, 1-6.
- Salinitri, F. D., Wilhelm, S. M., & Crabtree, B. L. (2015). Facilitating facilitators: Enhancing PBL through a structured facilitator development program. *Interdisciplinary Journal of Problem-Based Learning*, 9(1), 73-82.
- Sandra, R. & Goncalves, F. (2014). Preparing graduates for professional practice: Findings from case study of problem-based learning (PBL). *Procedia-Social and Behavioural Sciences*, 139, 219-226.
- Sangestani, G., & Khatiban, M. (2013). Comparison of problem-based learning and lecture-based learning in midwifery. *Nurse Education Today*, 33(8), 791-795.
- Saran, A., K. (2005). *Environmental psychology*. India: Anmol Publications.
- Savin-Baden, M. (2003). *Facilitating problem-based learning*. Great Britain: Open University Press.

- Savin-Baden, M. (2016). The impact of transdisciplinary threshold concepts on student engagement in problem-based learning: A conceptual synthesis. *Interdisciplinary Journal of Problem-Based Learning*, 10(2), 1-21.
- Savin-Baden, M., & Major, C. H. (2004). *Foundations of problem-based learning*. Great Britain: Open University Press.
- Savin-Baden, M., & Wilkie, K. (2004). *Challenging research in problem-based learning*. Great Britain: Open University Press.
- Schettino, C. (2016). A framework for problem-based learning: Teaching mathematics with a relational problem-based pedagogy. *Interdisciplinary Journal of Problem-Based Learning*, 10(2), 1-27.
- Schilling, J. (2006). On the pragmatic of qualitative assessment: Designing the process of control analysis. *European Journal of Psychological Assessment*, 22(1), 28-37.
- Schmidt, B., & Stewart, S. (2009). Implementing the virtual reality learning environment: Second life. *Nurse Educator*, 34(4), 152-155.
- Schmidt, D. A., Baran, E., Thompson, A. D., Mishra, P., Koehler, M. J., & Shin, T. S. (2009). Technological pedagogical content knowledge (TPACK): The development and validation of an assessment instrument for preservice teachers. *Journal of Research on Technology in Education*, 42(2), 123-149.

Schmidt, H. G. (1983). Problem-based learning: Rationale and description. *Medical Education*, 17(1), 11-16.

Schmidt, H. G., & Moust, J. H. C. (1995). What makes a tutor effective? A structural equations modelling approach to learning in problem-based curricula. *Academic Medicine*, 70, 708-714.

Schmidt, H. G., & Moust, J. H. C. (2000). Factors affecting small-group tutorial learning: A review of research. In D. H. Evensen & C. E. Hmelo (Eds.), *Problem-based learning: A research perspective on learning interactions* (pp. 19-51). Mahwah, NJ: Erlbaum.

Schmidt, H. G., Rotgans, J. I., & Yew, E. H. J. (2011). The process of problem-based learning: What works and why. *Medical Education*, 45(8), 792-806.

Schmidt, H. G., Vanderarend, A., Moust, J. H. C., Kokx, I., & Boon, L. (1993). Influence of tutors' subject-matter expertise on student effort and achievement in problem-based learning. *Academic Medicine*, 68, 784-791.

Schunk, D. H. (2008). Metacognition, self-regulation, and self-regulated learning: Research recommendation. *Educational Psychology Review*, 20 (4), 463-467.

Schunk, D. H. (2012). *Learning theories: An educational perspective* (6th ed.). United States of America: Pearson.

- Schwandt, T. A. (1994). Constructivist, interpretivist approaches to human inquiry. In N. K. Denzin & Y. S. Lincoln (Eds.), *The landscape of qualitative research: Themes and issues* (pp.221-259). Thousand Oaks: Sage Publications.
- Scott, K., S. (2017). An integrative framework for problem-based learning and action learning: Promoting evidence-design and evaluation in leadership development. *Human Resource Development Review*, 16(1), 3-34.
- Seibert S., A. (2020). Learning delegation through role-play: A problem-based learning activity for nursing students. *Nursing Education Perspectives*. <https://doi: 10.1097/01.NEP.0000000000000678>
- Shahin, E. S., & Tork, H. M. (2013). Critical thinking and self-directed learning as an outcome of problem-based learning among nursing students in Egypt and Kingdom of Saudi Arabia. *Journal of Nursing Education and Practice*, 3(12), 103-110.
- Shamugamratnam, T. (2005). *Junior college and upper secondary schools*. Singapore: Ministry of Education.
- Shin, H., Ma, H, Park., J., Ji, E. S., & Kim, D. H. (2015). The effect of simulation courseware on critical thinking in undergraduate nursing students: Multi-site pre-post study. *Nurse Education Today*, 35(4), 537-542.

Shulman, L. S. (1988). *Knowledge growth in teaching: A final report to the Spencer education*. Stanford, CA: California University.

Silverman, D. (2000). *Doing a qualitative research: A practical handbook*. London: Sage Publications.

Simons, K. D., & Klein, J. D. (2007). Impact of scaffolding and student achievement levels in a problem-based learning environment. *Instructional Sciences*, 35, 41-72.

Simone, D., C (2009). PBL and prospective teachers: Implications for problem solving and practice. *Journal of Excellence in College Teaching*, 20, 143-159.

Simmons, K., Carpenter, L., Crenshaw, S., & Hinton, V. M. (2015). Exploration of classroom seating arrangement and student behaviour in a second-grade classroom. *Georgia Educational Researcher*, 12 (1), 51-68.

Skinner, B. F. (1938). *The behaviour of organisms: Experimental analysis*. New York: Appleton-Century-Crofts.

Skinner, M. E. (2010). All joking aside: Five reasons to use humour in the classroom. *Education Digest: Essential Readings Condensed for Quick Review*, 76 (2), 19-21.

- Smith, M., & Cook, K. (2012). Attendance and achievement in problem-based learning: The value of scaffolding. *Interdisciplinary Journal of Problem-Based Learning*, 6(1), 129-152.
- SNB (2009). *Singapore Nursing Board annual report 2009*. Singapore: Singapore Nursing Board.
- Soliman, M., & Al-Shaikh, G. (2015). Readiness for self-directed learning among first year Saudi medical students: A descriptive study. *Pakistan Journal of Medical Sciences*, 31(4), 799-802.
- Solomon, P. (2005). Problem-based learning: A review of current issues relevant to physiotherapy education. *Physiotherapy Theory and Practice*, 2, 37-49.
- Song, G.-S., Lim, J. H., & Ahn, T., K. (2012). Air conditioner operation behaviour based on students' skin temperature in a classroom. *Applied Ergonomics*, 43(1), 211-216.
- Spradley, J. P. (1980). *Participant Observation*. New York: Holt, Rinehart and Winston.
- Spronken-Smith, R. (2012). Experiencing the process of knowledge creation: The nature and use of inquiry-based learning in higher education. *The Journal of Geography in Higher Education*, 2, 183-201.

- Spronken-Smith, R., & Harland, T. (2009). *Learning to teach with problem-based learning. Active Learning in Higher Education, 10 (2), 138-153.*
- Stake, R. E. (1995). *The art of case study research*. London: Sage.
- Stake, R. E. (2000). Qualitative case studies. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Sage handbook of qualitative research* (pp. 443-446). Thousand Oaks, CA: Sage.
- Stewart, M. (2012). Understanding learning: Theories and critique. In L. Hunt & D. Chalmers (Eds.), *University teaching in focus: A learning-centred approach* (pp. 1-22). London: Routledge.
- Stoddard, H., A., & Borges, N., J. (2015). A typology of teaching roles and relationships for medical education. *Medical Teacher, 38*, 1-6.
- Strauss, A., & Corbin, J. M. (2003). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (3rd ed.). Los Angeles, CA: Sage Publications.
- Tan, C. (2006). Creating thinking schools through 'Knowledge and Inquiry': The curriculum challenges for Singapore. *The Curriculum Journal, 17(1)*, 89-105.
- Tan, J., & Gopinathan, S. (2008). Education reform in Singapore toward greater creativity. *National Institute for Research Advancement, 7(3)*, 5-10.



Tan, O. S. (2003). *Problem-based learning innovation: Using problems to power learning in the 21st century*. Singapore: Cengage Learning.

Tawfik, A. A. , & Kolodner, J. L. (2016). Systematizing scaffolding for problem-based learning: A view from case-based reasoning. *Interdisciplinary Journal of Problem-Based Learning*, 10(1), 1-14.

Taylor, D., C. M., & Hamdy, H. (2013). Adult learning theories: Implications for learning and teaching in medical education: AMEE Guide No. 83. *Medical Teacher*, 35 (11), e1561-e1572.

Thabet, M., Taha, E. E., S., Abood, S. A., & Morsy, S. R. (2017). The effect of learning on nursing students' decision-making skills learning and styles. *Journal of Nursing Education and practice*, 7(6), 108-116.

Tharani, A., Husain, Y., & Warwick, I. (2017). Learning environment and emotional well-being: A qualitative study of undergraduate nursing students. *Nurse Education Today*, 59, 82-89.

Thimbleby, H. (2017). Trust me, I'm a computer? *Future Healthcare Journal*, 4(2), 105-108.

Thorndike, E. L., & Elliot, R. M. (1931). *Human learning*. New York: The Century Company.

- Tobin, G. A., & Begley, C. M. (2004). Methodological rigour within a qualitative framework. *Journal of Advanced Nursing*, 48(4), 388-396.
- Tuckman, B. W. (1965). Developmental sequence in small groups. *Psychological Bulletin*, 63(6), 384-399.
- Turan, S., Elcin, M., Odabası, O., Ward, K., & Sayek, I. (2009). Evaluating the role of tutors in problem-based learning sessions. *Procedia-Social and Behavioral Sciences*, 1(1), 5-8.
- Uden, L & Page, T. (2008). Development of learning resources to promote knowledge sharing in PBL. *Educational Technologies*, 5 (1), 15-22.
- Valtanen, J. (2014). Questions-asking patterns during problem-based learning tutorials: Formal functional roles. *Journal of Problem Based Learning in Higher Education*, 2(1), 29-44.
- Van de Ridder, J. M. M., Stokking, K. M., McGaghie, W. C., & Cate, O. T. J. (2008). What is feedback in clinical education? *Medical Education*, 42(2), 189-197.
- Vardi, I & Ciccarelli, M. (2008). Overcoming problems in problem-based learning: A trial of strategies in an undergraduate unit. *Innovations in Education and Teaching International*, 45 (4), 345-354.

- Verstegen, D. M. L., Jong, N. D., Berlo, J. V., Camp, A., Konings, K. D., van Merrieboer, J. V., & Donkers, J. (2016). How e-learning can support PBL groups: A literature review. In S. Bridges, L. K. Chan, C.E. Hmelo Silver (Eds), *Educational technologies in Medical and Sciences education*, (pp 9-33). London: Springer.
- Visschers-Pleijers, A. J. S. F., Dolmans, D. H. J. M., Wolfhagen, I. H. A. P., & Van Der Vleuten, C. P. M. (2004). Exploration of a method to analyze group interactions in problem-based learning. *Medical Teacher*, 26(5), 471-478.
- Vithayaporn, S., Katekaew, R., Vorapanya, C (2019). Changing role of lecturer to improve the students' learning outcomes. *PSAKU International Journal of Interdisciplinary Research*, 8, 218-226.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
- Walker, A., Leary, H., Hmelo-Silver, C., & Ertmer, P. A. (2015). *Essential readings in problem-based learning: Exploring and extending the legacy of Howard S. Barrows*. West Lafayette, IN: Purdue University Press.
- Wang, Q., Li, H., Pang, W., Liang, S. (2019). Developing an integrated framework of problem-based learning and coaching psychology for medical education: A participatory research. *BMC Medical Education*, 16(2), 1-4.

- Watkins, D. (2000). Learning and teaching: A cross -cultural perspectives. *School Leadership and Management*, 20(2), 162-173.
- Watkins, D. A. & Biggs, J. B. (2001) *Teaching the Chinese learner: Psychological and pedagogical perspectives*. Hong Kong: University of Hong Kong.
- Watson, G. & Glaser, E (1980). *Watson-Glaser critical thinking appraisal*. San Antonio: Psychological Corporation.
- Weber, R. (2004). The rhetoric of positivism versus interpretivism: A personal view. *MIS Quarterly*, 28(1), 3-7.
- Weitzel, K. W., Walters, E. A., & Taylor, J. (2012). Teaching clinical problem solving: Preceptor's guide. *American Journal of Health Systems Pharmacy*, 69, 1588-1599.
- Wells, S. H., Warelow, P. J., & Jackson, K. L. (2009). Problem Based Learning (PBL): A conundrum. *Contemporary Nurse*, 33(2), 191-201
- Wilkie, K. (2004). Becoming facilitator: Shift in lecturer approaches to facilitating problem-based learning. In M, Savin-Baden & K, Wilkie. (Eds.), *Challenging research in problem-based learning* (pp81-92). United Kingdom: Open University Press.

Wiznia, D., Korom, R., Marzuk, P., Safdieh, J., & Grafstein, B. (2012). PBL 2.0: Enhancing problem-based learning through increased student participation. *Medical Education Online*, 17 (1), 1-6.

Wolf, J. M., Bokhorst-Heng, W. (2008). Policies of promise and practices limit: Singapore's literacy education policy landscape and its impact on one school programme. *Educational Research for Policy and Practice*, 3 (7), 151-164.

Woltering, V., Herrler, A., Spitzer, K., & Spreckelsen, C. (2009). Blended learning positively affects students' satisfaction and the role of the tutor in the problem-based learning process: Results of a mixed-method evaluation. *Advances in Health Sciences Education: Theory and Practice*, 14(5), 725-738.

Wood, W., & Tanner, K. (2012). The role of the lecturer as tutor: Doing what effective tutors do in a large lecture class. *CBE Life Sciences Education*, 11(1), 3-9.

Yang, J. H., Yang, B. (2013). Nursing students experiences with facilitator in problem-based learning class. *Asian Nursing Research*, 7(4), 198-204.

Yardimci, F., Bektas, M., Muslu, G. K., Gerceker, G., O., & Basbakkal, Z. (2017).

A study of the relationship between the study process, motivation resources, and motivation problems of nursing students in different educational systems. *Nurse Education Today*, 48, 13-18.

Yee, H. L. A., Radhakrishnan, A., Ponnudurai, G (2006). Improving problem-based learning in the International Medical University: Defining the good facilitator and teacher. *Medical Teacher*, 28(6), 558-560.

Yehuda, N. (2011). Music and stress. *Journal of Adult Development*, 18(2), 85-94.

Yeo, R., K. (2008). How do learning (not)take place in problem-based learning activities in work place contexts? *Human Resource Development International*, 11(3), 317-330.

Yew, E. H. J., & Goh, K. (2016). Problem-based learning: An overview of its process and impact on learning. *Health Professional Education*, 2(2), 7579.

Yew, E. H. J., & Schmidt, H. G. (2007). Process study of verbal interactions in problem based learning. *Proceedings ASCILITE Singapore 2007: Concise Paper*.

Yew, E. H. J., & Schmidt, H. G. (2012). What students learn in problem-based learning: A process analysis. *Instructional Science*, 40(2), 371-395.

- Yew, E. H. J., & Yong, J. J. Y. (2014). Student perceptions of facilitators' social congruence, use of expertise and cognitive congruence in problem-based learning. *Instructional Science*, 42(5), 795-815.
- Yin, R. K. (2003). *Case Study Research: Design and Methods* (3rd ed.). Thousand Oaks, CA: Sage Publications.
- Young, L., & Papinczak, T. (2013). Strategies for sustaining quality in PBL facilitation for large student cohorts. *Advances in Health Sciences Education: Theory and Practice*, 18(4), 825-833.
- Yuan, H. B., Williams, B. A., Yin, L., & Fang, J. B. (2011). Nursing students' view on the effectiveness of problem-based learning. *Nurse Education Today*, 31(6), 557-581.
- Zhou, Z. (2018). An empirical study on the influence of PBL teaching model on college students' critical thinking ability. *English Language Teaching*, 11(4), 15-20.

## **Appendix 3.1**

### **Lecturer Information**

I would like to seek your permission whether you are willing to be a participant in this study. The purpose of this letter is to give you information to assist you to decide whether you would like to take part in this study. Please take your time to read the information carefully. If you have any question about the purpose of the research, what are the steps that you would have to participate, the possible benefits and risks and any questions related to the research, please ask me. When all the questions have been answered, you may decide whether you wish to participate in the study or not.

This is a student research study which will be conducted under the supervision of Professor Tony Bush and Dr Derek Chambers from the University of Nottingham, United Kingdom. This study will be reviewed by the Faculty of Education Ethics Committee of University of Nottingham.

#### **What is the purpose of the study?**

The study aims to explore how the lecturers' role and practice in facilitating PBL to the second-year nursing students in order to assist the lecturers to facilitate PBL effectively and improves students learning process. Perspectives of lecturers will be explored.

You are invited to take part in the study because you have experience in teaching the nursing students in problem-based learning.

#### **Do I have to take part?**

Taking part in this research is voluntary. You need to read carefully and understand why the research is being done and how you will be involved before you decide to participate in this study. If you will like to participate in this study, you will be required to sign a consent form. During the participation in this study, you can withdraw at any time, without giving a reason. If you do not wish to participate in this research, you will not be identified.

#### **What will happen if I take part in this study?**

You will be observed during facilitating PBL to the students and how do you engaged students in their learning process and learning in groups. You will be also asked to be engaged in an interview. The interview will be conducted in a private room and the conversation will be taped recorded. The duration of the interview will be about 45 to 60 minutes.



Your personal information will be examined by the researcher through document review.

**What are the risks of taking part in the research?**

It is less likely you will be upset by the interviews. If you feel unhappy, anxious or stressed by the interview, you may consult the counsellor or a doctor near Nanyang Polytechnic or the hospital which is near your home.

**What are the benefits of taking part in the study?**

I am unable to promise any benefits to you when you undertake to participate in this study. However, you may benefit in having opportunity to think of your work related to facilitating problem-based learning and how you are able to handle different groups' dynamics in PBL. The information which I will get from you will provide research findings which can help other facilitators in planning and facilitation of PBL effectively and also will help in improving students' learning. The information obtained will be presented in the conferences, journals and published in the university thesis.

**Will my participation in this study be kept confidential?**

All information which will be collected from you will be kept in confidence. The interviews will be recorded as audio files, and it will be assigned with a code number. Your name will not be identified and will not appear anywhere. After the interviews, the audio files will be transcribed, and the transcript will be analysed. During data analysis, all documents will be kept in the computer files. I will use the password in order that I will be able to access all the files. After the analysis, the report of this study will be presented. If it is necessary to quote your words, I will ensure that you will not be identified. All records will be destroyed on the completion of the study after 3 years.

**Contact details**

Miss Asmah Noor  
(Researcher)

Mobile No: 96202814  
E-mail: [Asmah\\_MOHD\\_NOOR@nyp.edu.sg](mailto:Asmah_MOHD_NOOR@nyp.edu.sg)

If you have any questions about any aspect of this study, please ask me to answer your questions.

**Appendix 3.2****Consent form****Please initial box**

1. I would have an opportunity to consider the information, ask questions and answered the questions satisfactorily.

☐

2. I would like to participate as a volunteer in this study.

☐

3. I am free to withdraw my consent and terminate my participation at any time

☐

4. I understand that my identity, place of work and location will be kept confidential and that all information related to me will be erased after 3 years.

☐

5. I understand that the information will be published but my name will not be associated with the research.

☐

6. I agree to take part in this study:

☐

To give permission to examine my personal information

To be observed

☐

To be tape recorded

☐

Name of participant \_\_\_\_\_ Signature \_\_\_\_\_

Date \_\_\_\_\_

Name of witness \_\_\_\_\_ Signature \_\_\_\_\_

Date\_\_\_\_\_

Name of researcher\_\_\_\_\_ Signature\_\_\_\_\_

Date\_\_\_\_\_

### **Appendix 3.3**

#### **Research Ethic Committee Approval**

**The University of  
Nottingham**

Ms Asmah Mohd Noor  
School of Education  
Faculty of Arts and Social Sciences

5 February 2016

Dear Ms Asmah,

#### **FASS Research Ethics Committee Review**

Thank you for submitting your proposal on “PHD thesis on the role and practice on nursing lecturers in problem-based learning: Singapore context”. The proposal has now been reviewed by that it is described in your submission.

I am happy to tell you that the Committee has found no problems with your proposal and able to give approval.

If there are any significant changes or developments in the methods, treatment of data or debriefing of participants, then you are obliged to seek further ethical approval of these changes.

We would remind all researchers of their ethical responsibilities to research participants. If you have any concern whatsoever during the conduct of your research then you should consult those Codes of Practice relevant to your discipline and contact the FASS Research Ethics Committee.

Independently of the Committee procedures, there also responsibilities of staff and student safety during projects. Some information can be found in the Safety Office pages of the University web site. Particularly relevant may be: Section 6 of Safety Handbook which deal with working away from the

University, <http://www.nottingham.ac.uk/safety/handbook/general-precations.aspx>

Specific safety guidance on:

Fieldwork <http://www.nottingham.ac.uk/safety/documents/fieldwork-policy.pdf>

Lone working [http://www.nottingham.ac.uk/safety/documents/lone\\_working.pdf](http://www.nottingham.ac.uk/safety/documents/lone_working.pdf)

Oversea travel/work <http://www.nottingham.ac.uk/safety/documents/oversea-travel.pdf>

Risk management [http://www.nottingham.ac.uk/safety/policies-and-guidance/guides\\_and\\_support.aspx](http://www.nottingham.ac.uk/safety/policies-and-guidance/guides_and_support.aspx). Responsibility for compliance with the University /National Data Protection Policy and Guidance also lies with principal investigator or project supervisor.

The FASS Research Ethics Committee. approval does not alter and replace or remove those responsibilities, nor does it certify that they have been met.

Sincerely

*Khong Kok Wei*

Professor Khong Kok Wei

On behalf of the FASS Research Ethics Committee.

### Appendix 3.4

#### Observation on lecturers

Lecturer:

Class:

Lesson:

Date:

Time:

#### Lecturer's performance observation:

| Lecturer's role  | Evidence |
|--|----------|
| 1. Create a conducive learning environment – introduction and expectation of students' involvement in PBL    |          |
| 2. Moving among groups -ensure students are working together as a team                                       |          |
| 3. Encouraging students to contribute their ideas and accept each other opinion                              |          |
| 4. Letting students have enough time to process information  |          |
| 5. Observing the students are working in their groups and make sure that they were following the PBL process |          |
| 6. Ensure that all students are involve in their own group work  |          |
| 7. Guiding the students and attends to students' questions   |          |
| 8. Encourage student to analyse and explain the problems that they identified. Asking the students Questions |          |
| 9. Creating an atmosphere of confidence among students   |          |
| 10. Comments:  |          |

### Appendix 3.5: Semi-structured Interview

| Research Questions   | Interview Questions   |
|--|---|
| 1. <i>What do facilitators understand by PBL?</i>                              | <p>1.1 What do you understand by PBL?</p> <p>1.2 Do you think you have adequate knowledge of PBL?</p> <p>1.3 Do you think it is important to have an adequate knowledge in PBL? (If yes, why?)</p> <p>1.4 Describe what you know about PBL? What do you think are your knowledge gaps on PBL?</p> |
| 2. <i>How do the nursing lecturers facilitate PBL in the classroom?</i>        | <p>2.1 Please tell me how you facilitate PBL?</p> <p>2.2 What were your feelings in facilitating PBL?</p>   |
| 3. What challenges and problems do nursing lecturers face in facilitating PBL? | <p>3.1 Do you find the facilitation is challenging?</p> <p>3.2 Please tell me the challenges that you have experienced in facilitating PBL?</p> <p>3.3 What are the problems that you faced when facilitating PBL?</p>  |
| 4. What strategies are used to facilitate PBL effectively?                     | <p>4.1 What are the strategies that you used to facilitate PBL? (Please elaborate)</p>  |

## Appendix 4.1

### Instruction for Presentation

#### School of Health Sciences (N)

#### HS 2230 – Adult Nursing 2 ICA 1 - Presentation

#### **Instructions for ICA group presentation**

- Each tutorial group will sub-divide into 4 subgroups.
- Each subgroup will attempt **ONE** of the given 4 case scenarios.
- Each subgroup will present their work during tutorial in week 7 or 8.
- The duration of each presentation is 30 minutes.
- The total score of each presentation is **50** marks with a weightage of **40%**.
- Refer to the **MARKING CRITERIA** closely when preparing for your presentation.
- Subgroup leaders are to keep a log of all discussions in the log sheet provided.
- Tasks assigned to team members must be evenly distributed. Marks will be awarded according to individual effort and understanding of the concepts.
- Every member of the group is **expected** to present. Students will be awarded a **zero** mark to the ICA if there is evidence of non-participation or absent without valid reason on the day of presentation.
- Please follow the following framework
  - Identify and discuss about issues and concerns from the scenarios.
  - Set appropriate and relevant goals of care

Develop management plan with rationales according to the case scenarios.

#### **Late or absence for presentation**

- Presentation is to be conducted during an assigned tutorial session.
- If you are late without valid reason for the assigned tutorial session, you are considered late for ICA assessment.
- You will be awarded '**zero**' for your presentation component.
- If any student has taken sick leave or absent from presentation due to unforeseen circumstance, such as death of a family member, should inform lecturer as soon as possible via a telephone call or SMS your lecturer if she is not reachable.
- Produce the statement of your absence or approved document to your lecturer for arrangement of an alternative assessment



Documentary evidence must be submitted within the next 2 working days following the day of absence.

## Appendix 4.2

### Instruction for written assignment

#### HS 2230 – Adult Nursing 2

#### ICA 2 Written Assignment: Reflection on Problem-based learning

=====

#### **Submit an individual written assignment**

**This reflective report is graded. Weightage 20%.**

1. The **800-word limit** (+/-10%) reflection report must include the following:
  - Your thoughts and opinions of problem-based learning related to your discussions working with your groups
  - How well were your group discussions, the strengths and weaknesses
  - Knowledge gained in problem-based learning
  - Any improvements that can help to enhance problem-based learning
  - Overall learning experiences on PBL

Written assignments must be presented in accordance with **SHSS Guide to Presentation of Assignment** which is available in Blackboard.

**Due date for submission of assignment is Week 9, Monday, 12/12/2016 by 1700hr.**

### **Instruction:**

#### Declaration Form

- Complete all the fields in the declaration form
- Acknowledge and sign on a physical copy
- Take a picture of the declaration
- Label file as HS2230\_Declaration\_NameAsInRegistry\_AdminNumber
- Submit as Softcopy via Turnitin under HS2230 in Blackboard.

#### Main Assignment

- Save file in MS Word together with end references list
- Keep direct quotations to a minimum. As a guide not > 5% of your entire assignment
- Keep similarity index to < 20%; [Note: Any student caught plagiarising the work of other student(s) or who deliberately use another author's ideas or words without acknowledgement of the source will be reported and investigated and may be subjected to disciplinary action]
- Label file as HS3203\_MainAssignment\_NameAsInRegistry\_AdminNumber
- Submit as Part 2 Softcopy via Turnitin under HS2230- in Blackboard;

- Repeat submission is permitted. The latest will override the previous submission;
- Repeat submission via Turnitin may take >24hrs. In view of this, students are advised to submit via Turnitin at least 3 days prior to the due date for submission;
- No hardcopy version will be accepted;
- Must keep a copy of the written work submitted to cover the possibility of loss of the original assignment; and
- Must keep a copy of the acknowledgement of submission of assignment via TURNITIN.

### **Late Submission**

- Exceed stipulated submission time or part thereof of 24 hours is considered 1 calendar day late
- Penalty is to deduct 5% from total possible mark
- The deduction is up to a maximum of 5 calendar days or 25% deduction
- After 5 calendar days, assignment will be evaluated but no marks will be awarded.

### Appendix 4.3: Rubrics for Presentation

|                   |                    |
|-------------------|--------------------|
| Assessment rubric | Group presentation |
| Assignment types  | PBL                |

| Criteria  | A (>=80%)<br>Very Good  | B (70 to <80%)<br>Good  | C (60 to <70%)<br>Satisfactory  | D (50 to <60%)<br>Marginally meet expectations  | F (0 to <50%)<br>Did not meet expectations   |
|---|---|---|---|---|--|
| <b><u>Content</u></b><br>Main purpose of Presentation | Demonstrates strong content knowledge to fully meet the purpose of the presentation.                    | Demonstrates good content knowledge to adequately meet the purpose of the presentation.             | Demonstrates adequate content knowledge to partially meet the purpose of the presentation.          | Demonstrates minimal content knowledge; barely meets purpose of the presentation.               | Demonstrates little/no content knowledge; does not meet the purpose of the presentation.   |
| Clarity of ideas and development of Arguments         | Ideas are relevant, clearly presented, well and Systematically developed with adequate scope and depth. | Most ideas are relevant, clearly presented and well-developed with adequate scope and depth.        | Some Ideas are relevant, and Adequately developed but have a narrow scope and little depth.         | A few ideas are relevant, and Adequately developed. Ideas have a narrow scope and little depth. | Ideas are often not relevant, vague and underdeveloped, showing a lack of scope and depth. |
| Examples / Evidences                                  | Supports ideas/ arguments with relevant and well referenced examples or evidences extensively.          | Supports ideas/ arguments with relevant and well Referenced examples or evidences most of the time. | Supports ideas/ arguments with relevant and well referenced examples or evidences some of the time. | Supports ideas/ arguments with relevant and well Referenced examples and Evidences marginally.  | Fails to support ideas/ arguments with examples and referenced evidences.                  |

| Criteria   | A (>=80%)<br>Very Good  | B<br>(70 to <80%)<br>Good   | C<br>(60 to <70%)<br>Satisfactory  | D<br>(50 to <60%)<br>Marginally meet expectations  | F<br>(0 to <50%)<br>Did not meet expectations  |
|--|---|---|--|--|--|
| Limitations and impacts                                      | Identifies limitations and impacts accurately and comprehensively.  | Identifies limitations and impacts accurately and adequately.   | Identifies some limitations and impacts accurately and adequately.   | Identifies few limitations and impacts accurately and adequately.  | Fails to identify limitations and impacts accurately and adequately.   |
| Referencing  | text and end- references are cited according to SHS Guide to Assignment (2011) or APA referencing format fully.                               | In-text and end- references are cited according to SHS Guide to Assignment (2011) or APA referencing format mostly. Minor referencing errors. | text and end- references are cited according to SHS Guide to Assignment (2011) or APA referencing format partially. Some referencing errors. | text and end- references are cited according to SHS Guide to Assignment (2011) or APA referencing format partially. Many referencing errors.               | Fails to adhere to SHS Guide to Assignment (2011) or APA referencing format. Extensive errors.               |
| <b>30 marks</b>  | <b>24-30 marks</b>  | <b>21-23.5 marks</b>  | <b>18-20.5 marks</b>   | <b>15-17.5 marks</b>   | <b>0-14.5 marks</b>  |
| <u>Planning &amp; organisation</u><br>Format of presentation | Adheres to format and structure for presentation as outlined/instructed fully.  | Adheres to format and structure for presentation as outlined/instructed mostly.   | Adheres to format and structure for presentation as outlined/instructed generally.   | Adheres to format and structure for presentation as outlined/instructed partially.   | Fails to follow format and structure for presentation as outlined/instructed.                                |
| Engagement with audience                                     | Audience is highly engaged and attentive throughout; Audio-visual aids (incl ppt) are well prepared, creative effective, and not distracting. | Audience is engaged and attentive; Audio-visual aids (incl ppt) are well prepared, effective and not distracting.                             | Audience is engaged and attentive most of the time; Audio- visual aids (incl ppt) are fairly effective and not distracting.                  | Audience is engaged and attentive some of the time; Audio- visual aids (incl ppt) are fairly effective but not well-prepared and are distracting at times. | Audience is not engaged; audio- visual aids (incl ppt) are not well-prepared, effective and are distracting. |
| Time frame   | Presentation is within the assigned time limit.   | Presentation exceeds the assigned time limit slightly (<2mins over).  | Presentation exceeds the assigned time limit slightly (2-4mins over).  | Presentation exceeds the assigned time limit slightly (5mins over).  | Presentation grossly assigned time limit slightly (>5mins over).   |
| <b>4-5 marks</b>   | <b>5 marks</b>  | <b>3.5 marks</b>  | <b>3 marks</b>   | <b>2.5 marks</b>   | <b>0-2 marks</b>   |

| A ( $\geq 80\%$ )<br>Very Good  | Criteria   | B<br>(70 to $<80\%$ )<br>Good   | C<br>(60 to $<70\%$ )<br>Satisfactory  | D<br>(50 to $<60\%$ )<br>Marginally meet expectations  | F<br>(0 to $<50\%$ )<br>Did not meet expectations  |
|---|--|---|--|--|--|
| Delivery is poised, controlled and smooth, and information was clear and well communicated; Very familiar with content when presenting and responding to questions. | <u>Individual Presentation</u><br>Overall Delivery | Delivery is controlled, and smooth, and information was well communicated; Familiar with content when presenting and responding to questions. | Delivery is smooth and information was fairly well communicated; Fairly familiar with content when presenting and responding to questions. | Delivery is fairly smooth; information was not communicated; Somewhat familiar with content when presenting and responding to questions. | Delivery is not smooth, and information was not well communicated; Lacks familiarity with content when presenting and responding to questions. |
| Maintains good eye contact with audience and is Appropriately animated (e.g., gestures, moving around, etc.) all the time.  | Eye contact and body language                      | Maintains good eye contact with audience and is Appropriately animated most of the time.  | Maintains eye contact with audience and is Appropriately animated some of the time.  | Maintains minimal eye contact with audience and is not Appropriately animated at times.  | Lacks eye contact and awareness of appropriate non-verbal cues.  |
| Uses a clear, audible, engaging voice and appropriate tone all the time.  | Voice quality and Tone                             | Uses a clear, audible voice and appropriate tone most of the time.  | Uses a clear, audible voice and appropriate tone some of the time.   | Uses a clear, audible voice and appropriate tone minimally.  | Voice is inaudible, unengaging and tone is inappropriate.  |
| 4-5 marks   | 5 marks  | 3.5 marks   | 3 marks  | 2.5 marks  | 0-2 marks  |

| Criteria  | A (>=80%)<br>Very Good  | B<br>(70 to <80%)<br>Good  | C<br>(60 to <70%)<br>Satisfactory  | D<br>(50 to <60%)<br>Marginally meet expectations  | F<br>(0 to <50%)<br>Did not meet expectations  |
|---|---|--|--|--|--|
| <u>Individual</u><br><u>Collaborative work</u><br>Proactiveness and self-directedness | Very proactive and self-directed in sourcing relevant information.      | Proactive and self-directed in sourcing relevant information most of the time. | Needs occasional reminders to be proactive and self-directed in sourcing relevant information. | Needs frequent reminders to be proactive and self-directed in sourcing relevant information. | Lacks proactiveness and self-directedness in sourcing information despite reminders. |
| Teamwork and contribution to group work   | timely supports, encourages team members and contributes to group work. | Supports, encourages team members and contributes to group work most the time. | Supports, encourages team members and contributes to group work some the time.                 | Supports, encourages team members and contributes to group work minimally.                   | Rarely / Does not support, encourage team members or contribute to group work.       |
| 10 marks  | 8-10 marks  | 7-7.5 marks  | 6-6.5 marks  | 5-5.5 marks  | 0-4.5 marks  |

## Appendix 4.4

### Rubrics for reflective report

School of Health and Social Sciences  
Diploma in Nursing  
HS2230

|                   |                    |
|-------------------|--------------------|
| Assessment rubric | Written assignment |
| Assignment types  | Reflection         |

| Criteria                                      | A (>=80%)<br>Very Good  | B<br>(70 to <80%)<br>Good  | C<br>(60 to <70%)<br>Satisfactory   | D<br>(50 to <60%)<br>Marginally meet expectations  | F<br>(0 to <50%)<br>Did not meet expectations  |
|---|---|--|---|--|--|
| <b>Content</b><br>Main purpose of Assignment  | Demonstrates strong content knowledge (incl the use of appropriate model or framework) to fully meet the purpose of the assignment.   | Demonstrates good content knowledge (incl the use of appropriate model or framework) to adequately meet the purpose of the assignment. | Demonstrates adequate content knowledge (incl the use of appropriate model or framework) to partially meet the purpose of the assignment. | Demonstrates minimal content knowledge (incl the use of appropriate model or framework); barely meets purpose of the presentation.   | Demonstrates little/no content knowledge (incl the use of appropriate model or framework); does not meet the purpose of the presentation.    |
| Clarity of ideas and Development of Arguments | Ideas are relevant, clearly presented, well and systematically developed with adequate scope and depth. Critical thinking is evident. | Most ideas are relevant, clearly presented and well-developed with adequate scope and depth. Some critical thinking is evident.        | Some Ideas are relevant, and adequately developed but have a narrow scope and little depth. Critical thinking is subtly present.          | A few ideas are relevant, and adequately developed. Ideas have a narrow scope and little depth. Critical thinking is subtly present. | Ideas are often not relevant, vague and underdeveloped, showing a lack of scope and depth. There is no/little evidence of critical thinking. |
| Examples / Evidences                          | Supports ideas/ arguments with relevant and well referenced examples or evidences extensively.  | Supports ideas/ arguments with relevant and well referenced examples or evidences most of the time.                                    | Supports ideas/ arguments with relevant and well referenced examples or Evidences some of the time.                                       | Supports ideas/ arguments with relevant and well referenced examples and evidences marginally.                                       | Fails to support ideas/ arguments with examples and referenced evidences.  |



| Criteria  | A (>=80%)<br>Very Good   | B<br>(70 to <80%)<br>Good  | C<br>(60 to <70%)<br>Satisfactory   | D<br>(50 to <60%)<br>Marginally meet expectations   | F<br>(0 to <50%)<br>Did not meet expectations  |
|---|--|--|---|---|--|
| Limitations and impacts   | Identifies limitations and impacts accurately and comprehensively.   | Identifies limitations and impacts accurately and adequately.  | Identifies some limitations and impacts accurately and adequately.  | Identifies few limitations and impacts accurately and adequately.   | Fails to identify limitations and impacts accurately and adequately.   |
| Referencing   | text and end-references are cited according to SHS Guide to Assignment (2011) or APA referencing format fully.   | In-text and end- references are cited according to SHS Guide to Assignment (2011) or APA referencing format mostly. Minor referencing errors.                        | text and end-references are cited according to SHS Guide to Assignment (2011) or APA referencing format partially. Some referencing errors.   | text and end-references are cited according to SHS Guide to Assignment (2011) or APA referencing format partially. Many referencing errors.   | Fails to adhere to SHS Guide to Assignment (2011) or APA referencing format. Extensive errors.   |
| <b>30 marks</b>   | <b>24-30 marks</b>   | <b>21-23.5 marks</b>   | <b>18-20.5 marks</b>  | <b>15-17.5 marks</b>  | <b>0-14.5 marks</b>  |
| <b><u>Planning &amp; organisation</u></b><br>Format of assignment | Adheres to format and structure for assignment as outlined/instructed fully; Margins, spacing and indentations are correct; paper shows attention to details, is neat, correctly assembled with professional look. | Adheres to format and structure for assignment as outlined/instructed mostly; Margins, spacing, and indentations are correct; paper is neat and correctly assembled. | Adheres to format and structure for assignment as outlined/instructed generally; Margins, spacing, and indentations are generally correct; Paper is neat with some assembly errors. | Adheres to format and structure for assignment as outlined/instructed partially; Some errors in margins, spacing, and indentations; Paper is not neat and has some assembly errors. | Fails to follow format and structure for assignment as outlined/instructed; Incorrect margins, spacing and indentation; Neatness and assembly of paper need improvement. |
| Coherence and connectedness of ideas                              | Writing shows coherence and smooth connection and transition of ideas throughout.  | Writing shows coherence and connection and transition of ideas in most parts of the assignment.  | Writing shows some coherence and connectedness of ideas.  | Writing shows some coherence but lack connectedness of ideas.   | Writing lacks coherence; ideas are randomly presented and not connected.   |
| <b>10 marks</b>   | <b>8-10 marks</b>  | <b>7-7.5 marks</b>   | <b>6-6.5 marks</b>  | <b>5-5.5 marks</b>  | <b>0-4.5 marks</b>   |
| <b><u>Writing ability</u></b><br>Style and Sentence construction  | Sentences are well structured and succinct.  | Sentences are generally well structured though not succinct.   | Some sentences are not well structured.   | Sentences are generally not well structured.  | Sentences are poorly structured.   |
| Grammar, spelling and Punctuation                                 | significant grammatical, spelling and punctuation errors.  | Minor grammatical, spelling and punctuation errors.  | Some grammatical, spelling and punctuation errors.  | Frequent grammatical, spelling and punctuation errors.  | Extensive grammatical, spelling and punctuation errors.  |
| <b>10 marks</b>   | <b>8-10 marks</b>  | <b>7-7.5 marks</b>   | <b>6-6.5 marks</b>  | <b>5-5.5 marks</b>  | <b>0-4.5 marks</b>   |