

A SELF-REPORT OF UNIVERSITY NURSING STUDENTS' COMPETENCE IN LEARNING SKILLS AND PROCESSES AS A RESULT OF PROBLEM-BASED LEARNING

Nthabiseng Maureen Bomvana

A Research Report submitted to the
Faculty of Health Sciences, University of the Witwatersrand, Johannesburg
in partial fulfilment of the requirements for the degree
of
Master of Science in Nursing

Johannesburg, 2013

DECLARATION

I, Nthabiseng Maureen Bomvana, declare that this research report is my own work. It is being submitted for the Degree of Master of Science in Nursing at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other University.

Signature: Nthabiseng Bomvana Date: 23/08/2013

DEDICATION

To my late husband, Thamsanqa Sylvester Bomvana
(1948-2008)

For his love and support

ABSTRACT

Problem-based learning is recognized as an appropriate teaching-learning strategy for the preparation and development of health professionals in South Africa. Four university nursing schools have adopted a problem-based learning (PBL) model for the design and implementation of their Bachelor of Nursing curricula. Problem-based learning is learning by facilitating the acquisition of knowledge and skills such as communication, team work, self-directed learning, problem-solving and critical thinking. Although competence is implied in students' academic marks, it is not known how students feel about problem-based learning or whether they are satisfied with their PBL courses and how they view their own competence as a result of PBL.

The purpose of the study was to determine the level of undergraduate nursing students' satisfaction with their problem-based learning course as well as their reported competence in learning skills and processes as a result of problem-based learning. A quantitative, descriptive survey was used to collect data. The study population consisted of all nursing students enrolled in the second, third and fourth year of the Bachelor of Nursing degree in the 2010 academic year (N=42). Students who agreed to participate completed questionnaires per year of study and per PBL course. The final number of questionnaires that were analysed amounted to 92 (n=92).

Data were analysed using STATA version 11. The results showed that overall, students were satisfied with the organizational aspects of their PBL course, facilitator expertise and quality of facilitation. They were less satisfied with facilitator attitude in the senior years of study. Students reported with certainty their competence in the learning processes and skills as a result of PBL; some senior students (16.3%) did not feel competent to access and use literature sources and to integrate information into and plan nursing care (17.3%). Students reported that PBL is useful, empowering, enlightening and felt that the structured use of core lectures and more practise opportunities would enhance their competence.

ACKNOWLEDGEMENTS

To my supervisor, Professor Judy Bruce, thank you for always being there to help and guide me to complete the research.

A special thanks to Mr Lwando Kondlo for his valuable assistance with data analysis.

To all the Bachelor in Nursing students who agreed to participate in the research; your input was highly appreciated.

A special thanks to the library staff for their assistance in the Wits Health Sciences library for the literature needed for the research.

A sincere thank you to Miss Anne Young for the support and editing of the research report.

I would like to thank my family for their support and encouragement during this study.

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CHAPTER ONE

INTRODUCTION TO THE STUDY

1.1 BACKGROUND

In South Africa the health profile of the population is constantly changing making it almost impossible for health professionals to remain current and proactive. There are multiple challenges facing health care providers and consumers, as evidenced by local epidemiological studies, World Health Organization reports, clinical trials, advances in technology and socio-political change interface with the continuing effort to strive for quality care and positive outcomes (Urden, Stacy & Lough, 2006).

Learning outcomes specified in nursing curricula must be able to meet the changing health needs of the country by producing nurses who are caring, self-directed practitioners, critical thinkers and creative problem-solvers. Problem based learning (PBL) is not about problem solving per se, but rather uses appropriate problems to increase knowledge and understanding (Wood, 2003). It is a systematic process of reasoning, hypothesising, planning and evaluating (Bruce, Klopper & Mellish, 2011). Problem-based learning (PBL) is recognised globally, as an educational approach designed to enable learners to acquire these skills in order to meet the demands for appropriately trained health professionals. In South Africa only four university nursing schools have adopted a Problem-Based Learning (PBL) approach for their nursing programmes, namely the University of Natal in 1994 (now the University of KwaZulu-Natal), the University of the Witwatersrand in 1995, the University of Transkei (now the Walter Sisulu University) in 1997 and the University of the Free State in 1997 (Uys, Gwele, McInerney, Van Rhyn & Tanga, 2004). Subsequently, two more universities followed suit, namely Fort Hare University and Northwest University, Mafikeng Campus.

In the institution under study, problem-based learning applies to the Bachelor of Nursing programme, which is offered on a parallel teaching track. This means that the programme makes use of problem-based learning for its nursing courses and traditional methods for its basic science and ancillary courses. The nursing curriculum consists of the following three courses:

- Comprehensive Nursing Science, which comprises community health nursing and general nursing.
- Women's Health, which consists of courses in midwifery and gender-specific health issues.
- Psychosocial Health, which covers the following components: family therapy, psychotherapy, psychosocial disorders, counselling and psychiatry disorders.

These courses span over four years of study, except Women's Health and Psychosocial Health, which are offered in the third and fourth year of the degree. A problem-based learning curriculum is used to present these courses.

Problem-based learning can be described as a small group teaching method that combines the acquisition of knowledge with the development of skills related to team work, communication, problem- solving and self- directed learning. The presentation of clinical material as the stimulus for learning enables students to understand the relevance of the underlying scientific knowledge and principles of clinical practice. When problem-based learning is introduced into a curriculum, several other issues related to curriculum design and implementation need to be tackled (Wood, 2003). These include perspectives from the students' regarding their readiness, competence and learning approaches.

Students taught by means of problem-based learning methods may show less surface learning combined with a greater degree of versatility of learning style and deep learning when compared with students taught by traditional didactic methods (McParland, Noble & Livingstone, 2004). Problem-based learning has been identified as an ideal teaching-learning strategy for both teachers and students, particularly in the health professions. Problem-based learning uses tutorial groups that follow a sequence of steps (processes), which enable students to become skilled in each of the identified processes as they proceed. These steps are processes of learning that were implemented in tutorial session for Bachelor of Nursing curriculum in 2010 and are listed as follows:

- Identify key concepts or information about the patient in the "trigger". They may underline or highlight in the case of paper problems. Students list these "cues" on the board. Check for and clarify any unfamiliar terms before proceeding to the next step.

- Identify and define the patient's problems by brainstorm ideas, organise and synthesize these into a concise statement on the board.
- Generate hypothesis./Once the problems have been identified, the next stage in the process is to generate a list of possible hypotheses (causes) or tentative explanation, which explain or might account for the problems.
- Discuss and organise hypotheses. The group discusses and elaborates on the hypotheses generated. For each hypothesis, the group is required to develop a possible rationale or mechanism to explain the casual relationship to the patient's problem or health issue.
- Formulate learning topics or learning objectives. Throughout the tutorial process, the group will identify learning topics or knowledge and skills that they need to acquire in order to complete their mechanisms and fully explain the patient's problems.
- Access relevant literature/evidence. Students break away from the classroom to locate and access resources for learning. Students should consider the question "what further information from history questions, physical examination and investigations do you require to help you refine your hypotheses?"
- The group will then review learning topics from the previous session and any questions that students have been required to answer. The facilitator should assist the group to establish rules for reporting back.
- Problem design and packages. Problems or situation are designed and reviewed by the curriculum working group of the Bachelor's programme. Criteria used to choose and design problems include those which are: Of high health priority or commonly seen. Urgent with high morbidity or mortality etc.

However, it is not known how well students master these sequential processes or competencies. It is also important to be cognizant of the shortcomings of the course and the teacher's ability to handle the problem-based learning approach (Olerup, 2006). Therefore an assessment of nursing students' competence in learning skills and processes as a result of problem-based learning will assist teachers to identify areas that can potentially improve curriculum implementation and consequently student learning skills acquisition.

1.2 **PROBLEM STATEMENT**

In problem-based learning a series of patient problems are presented to students who must learn to manage these problems under the guidance of a facilitator. Guidance or facilitation varies as group members become more confident with the subject matter and more

competent in the learning procedure (Merrill, 2007). Competence in this regard is related to students' ability to identify and solve health problems and to use relevant literature to integrate into practice, to collaborate as a team and to develop comprehensive care plans. Although competence is implied in students' academic marks, it is not known how students feel about their competence or whether they are satisfied with problem-based learning. This study addressed the following questions:

- What are nursing students' reported competence in learning skills and processes as a result of problem-based learning?
- How do students feel about problem-based learning and how satisfied are they with their problem-based learning courses?

1.3 **PURPOSE OF THE STUDY**

The purpose of the study was to determine undergraduate nursing students' satisfaction with their problem-based learning courses and their reported competence in learning skills and processes as a result of problem-based learning.

1.4 **OBJECTIVES**

The objectives of the study were as follows:

- To determine the level of satisfaction with problem-based learning as reported by undergraduate nursing students in the following courses:
 - Comprehensive Nursing
 - Women's Health
 - Psychosocial Health
- To determine how nursing students feel about problem-based learning, using a semantic differential scale.
- To describe nursing students' reported competence in learning skills and processes during problem-based learning tutorials.

1.5 OPERATIONAL DEFINITIONS

A student is a person who is studying at a university or college (Horn, 2005). In this study “student” refers to a nursing student enrolled in a problem-based learning curriculum towards a Bachelor of Nursing degree at a university.

Problem-based learning (PBL) is a learning process using small group methods that combine the acquisition of knowledge with the development of generic skills and attitudes (Wood, 2003). In this study, it refers to students working collaboratively in small PBL tutorial groups to solve paper-based patient problems by following sequential learning steps.

Competence refers to the ability to do something well and refers especially to abilities acquired through education, training or experience (Encarta Dictionary, 2009). In this study competence refers to doing well in:

- Generic skills such as communication, problem solving and team work.
- Processes mastered during problem-based learning tutorials such as identification of patients’ problems and the ability to focus on relevant discussion of patients’ problems in case presentations.

Learning skills: The behaviourist lens sees learning as the acquisition of knowledge and skills that changes a person’s behaviour (De Young, 2001). Three domains of learning, cognitive domain, affective domain and psychomotor domain need to be considered when implementing any strategies for the educational process. In this study learning skills are integrated with learning processes that illustrate how students use their thinking (cognitive), feelings (affective) and actions (psychomotor) during small group learning.

Learning processes refer to the acquisition of knowledge and skills that will facilitate a learner to have more information about a subject or a concept to become an expert (De Young, 2001) There are different approaches for learning, rote learning is a process of reproduce the materials learned, while students using deep learning try to understand the meaning of the material being studied and relate it to previous knowledge and personal experiences. The other approach is strategic learning that focus on achieving high grades, learners’ uses surface and deep approach. Most successful learners uses either deep or

strategic approaches. In this study PBL processes refer to the sequential steps followed in tutorial groups from identifying key issues through to leading within the team.

Self-Report is used in obtaining information (Burns & Grove, 2001). In this study it was used to obtain information from the students about their courses Comprehensive Nursing, Women's Health and Psychosocial Health in different level of their study.

1.6 SIGNIFICANCE OF THE STUDY

The significance of the study relates to its importance to nursing's body of knowledge (Burns & Grove, 2001). The research findings will contribute towards a greater understanding of students' perspectives of problem-based learning. Specifically, changes in the development of skills, competence and processes will be identified by students from different levels of study and undertaking a variety of nursing courses. Constructive feedback obtained about problem-based learning can be used by the nursing school in curriculum development and course implementation. The recommendations will identify areas for continuous research in problem-based learning, particularly in other institutions using problem-based learning as part of the educational process. Students exposed to problem-based learning methods, may show less surface learning, more deep learning and more versatility in learning style, in comparison with students taught by means of traditional didactic methods (McParland, Noble & Livingston,, 2004). A growing body of literature suggests that the management of curricular content is one of the key challenges facing the education of health professionals (Giddens & Brady, 2007). Although students need a large body of knowledge to make sense of their work world, active engagement is critical for them to learn the ways in which professionals think and solve problems (Hodges, 2011).

1.7 CONCLUSION

An important outcome of any nursing education curriculum is to produce nurses who will be focused, independent, self-directed, creative, critical thinkers, problem solvers and competent decision makers during their care of patients or clients. Problem-based learning is student-centred and takes place in small groups that are guided by facilitators. Continuous assessment, feedback and briefing are important to inform students and facilitators, whether these outcomes have been achieved. Feedback from students on the course or the skills or processes that they have learned is an important aspect too.

This chapter provided a background to the study and outlined the purpose, objectives and significance of the research. The research problem was described and operational variables were defined. The next chapter presents the literature reviewed during the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

There is an increasing need for professional nurses to be autonomous, capable of independent thought and able to make their own assumptions and decisions (Gabr & Mohamed, 2011). Nursing education too faces the challenge of preparing new graduates with abilities to adapt to change in environments of escalating complexity; nurses must be proactive problem solvers and be able to work collaborative in multidisciplinary teams (Hodges, 2011). Using problem-based learning (PBL) will possibly meet the demands of changing health care environments in which nurses practice.

In this chapter the literature sources reviewed are discussed. The discussion includes aspects of small groups learning, the PBL processes and the role of the facilitator. Issues around competence are briefly outlined to situate it in the context of PBL. Figure 2.1 shows the framework that guided the literature review.

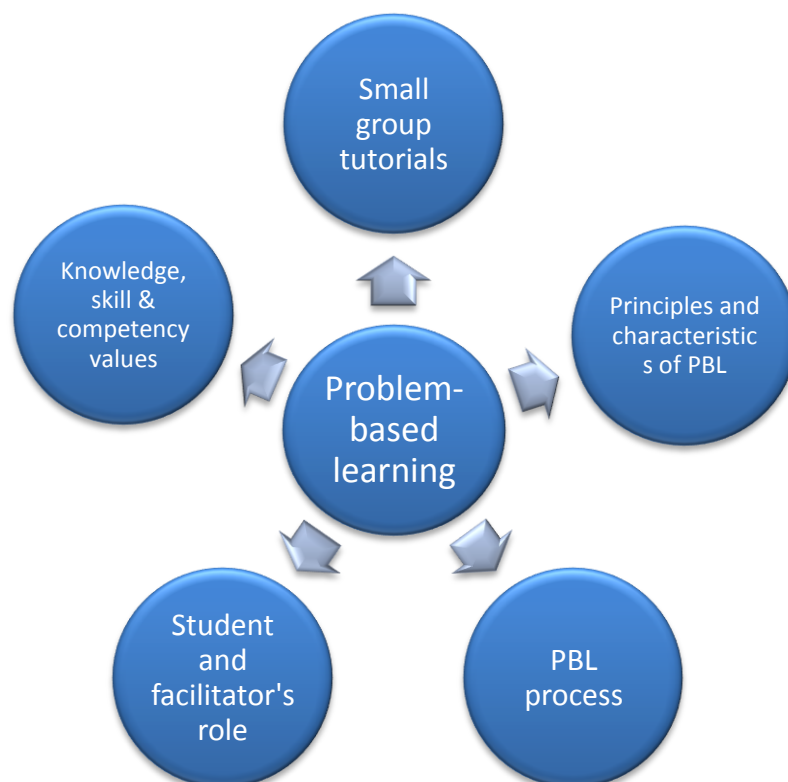


Figure 2.1: Framework for Literature Review

2.2 **PROBLEM-BASED LEARNING**

Problem-based learning (PBL) is a student-centred instructional strategy in which students collaboratively solve problems and reflect on their experiences (Gabr & Mohamed, 2011). Students are encouraged to take responsibility for their group, as well as organize and direct their learning process with the support from a tutor or facilitator. Learning is driven by means of open-ended problems, and students work in small collaborative groups called tutorial groups. Lecturers assume the role of a facilitator of learning (Merrill, 2007).

PBL addresses the request by the South African Nursing Council to integrate various fields of study in the undergraduate programme (Becker, Viljoen, Botma & Bester, 2003). In problem-based learning tutorials, students use “triggers” from the problem cases or scenarios to define their learning objectives. Subsequent to the “trigger” presentations, students engage in independent and self-directed study before returning to their group to discuss and refine the knowledge acquired. Problem-based learning is not about problem solving per se, but uses appropriate problems as a means of increasing knowledge and understanding (Wood, 2003)..

Group learning facilitates not only the acquisition of knowledge but several other desirable attributes as well, including communication skills, teamwork, problem solving, independent responsibility for learning, sharing information and respect for others (Wood, 2003). Problem-based learning provides a framework for the development of meaningful learning that incorporates collaborative learning, peer assessment and the ability to monitor their own capacity to think critically within a group (Hodges, 2011).

Outcomes evaluation regarding problem-based learning is necessary, since South African nurses in health care institutions are expected to provide a competent comprehensive primary level service on completion of their basic nursing education. It has become increasingly apparent that nursing professionals should be self-directed learners, who are competent to continue their own learning and professional development after graduation (Gwele, McInerney, Van Rhyn, Uys & Tanga, 2003). Ongoing learning is thus an important outcome of PBL.

Problem-based learning requires lecturers to function as facilitators for small group learning rather than acting as providers of information. Staff development is essential for the shift from instruction to facilitation and should focus on enabling lecturers using problem-based

learning to acquire the necessary skills in facilitation and the management of group dynamics (Wood, 2003). Problem-based learning also contributes to the development of self-evaluation and peer evaluation skills which are invaluable in the nursing profession (Gabr & Mohamed, 2011); the tutorial group provides the environment for students assessing their own and their peers' contributions to the group. Problem-based learning also addresses the requirement of the South African Nursing Council for the integration of various fields of study in the undergraduate programme (Becker, Viljoen, Botma & Bester, 2003). In this regard knowledge of the basic sciences and related disciplines are constantly integrated for holistic management of patients' problems.

2.2.1 Characteristics of PBL

In a PBL approach students collaboratively solve problems and reflect on their experiences. PBL also encourages students to become active and independent, to take greater responsibility for their own learning process in clinical practice. Clinical education should thus be organised in such a way that students have opportunities to use their theoretical knowledge in practice and to reflect during their practical work.

PBL involves learning in small group tutorial or tutorial sessions, which are facilitated by a tutor or lecturer also referred to as the facilitator. Students may be assisted to understand the essentials that need to be covered by core lectures and clinical teaching according to the curriculum requirements (Gabr & Mohamed, 2011).

The characteristics that are emphasised in PBL tutorials are as follows:

- Learners must assume responsibility for their own learning. During PBL tutorials students must identify what need to be learned, identify the most appropriate resources for self-directed learning and, search, evaluate and integrate knowledge and evidence during the learning process.
- Simulated problems trigger learning; these should be open- ended and ill- structured, and should closely resemble real life problems.
- Collaboration in small group discussions is a learning opportunity; collaboration encourages social interaction, as it forms part of cooperative learning, where students learn to work together towards the accomplishment of a common goal.

- Learning should derive from a range of disciplines, subjects and sources and as a combined action of these sources. Students identify patient problems or issues and plan a way to solve these.
- Self-directed learning is the key for accessing resources, active learning and applying what they have learnt back to the problem. Self-directed learning requires students to plan and organise their learning. In PBL tutorial sessions the information that the student collects is shared among the group. In this process, learners construct their own knowledge through discussions, concept mapping and assessment (Vasuthevan & Viljoen, 2003).
- Facilitators stimulate students towards self-directed learning and enquiry. During PBL sessions the facilitator keeps track of all activities for the learning process. Stimulation is done by asking questions, encouraging interaction and clarifying concepts. Facilitators monitor students' progress for learning and address problems that students might have. As students are enrolled in the course for four years this process is done to guide the student throughout the duration of the course, including record keeping of all learning activities.
- Facilitators use a facilitator's guide to guide the students during PBL tutorials according to the learning outcomes of the course. All processes are clearly stated in their curriculum.
- Students are required to do self- and peer evaluation on completion of each problem and each tutorial session. This process is important for the students to reflect on what they know and what still needs to be learned (Bruce, Kloppe & Mellish, 2011). Learning by receiving feedback, especially positive feedback, enhance motivation and learning.

2.2.2 Theoretical Principles of PBL

Implementation of a PBL curriculum must be in line with current philosophical views of human learning particularly constructivism. The primary constructivist principles are to understand that interaction through the learning environment in PBL tutorials and in the clinical setting are ideal to gain knowledge. Learning principles in PBL have their origin in both cognitive and constructive perspectives. From the latter perspective, learning results

from active participation (Hmelo-Silva & Barrow, 2006). From a cognitive perspective, PBL problems trigger learners' thinking (cognition) in order to access prior and existing knowledge and integrating that information into a knowledge base that fits and helps shape new cognitive models (Hmelo-Silva, Duncan & Chinn, 2007).

The instructional principles of PBL are based on the assumption of constructivism. These have been summarised in the early eighties by (Schmidt, 1983) as follows:

- Activation of prior knowledge, current learning is affected by past learning.
- Encoding specificity: The closer the resemblance between the situation in which something is learned and the situation in which it will be applied, the more likely it is that transfer of knowledge will occur and learning will take place.
- Elaboration on knowledge: discussion especially within small groups and reflection help to consolidate the learning experience.

These instructional principles are especially necessary as a basis for designing patient problems to trigger learning in PBL tutorial groups.

2.2.3 Problem-Based Learning Process

A process is series of steps or activities, usually sequential that are carried out in order to achieve a particular result (Hornby, 2005). Problem-based learning is a learning method characterised by the use of patient problems as a context for students to acquire knowledge and learn problem-solving skills (McParland, Noble & Livingstone, 2004). Problems are worked through in a series of sequential steps.

The basic steps of the problem-based learning process are as follows:

- Encountering the problem prior to study.
- Engaging pre-existing knowledge relevant to the problem.
- Problem solving within clinical reasoning skills and hypothesis generation.
- Identifying learning needs in a structured, interactive process.
- Self-study, peer teaching and applying newly gained knowledge to the problem.
- Hypothesis testing.

- Synthesizing what has been learned.
- Evaluate the experience, process evaluation is an integral part of each tutorial session, culminating with evaluation of the case during the final session. The final session also includes evaluation of the learning resources, the tutor/facilitator, the group and the student (Chaves, Baker, Chaves & Fisher, 2006).

2.3 PBL TUTORIALS

Small groups of students, usually eight to ten or more are used for problem-based learning tutorials. Nursing students work in these small groups in order to increase their knowledge by identifying learning objectives and engaging in self-directed work. Nursing students also work outside the small group to seek information from external resources to facilitate the group's knowledge development. The problem-based learning environment provides students with greater information, support, resources, flexible approaches to learning, collaborative learning activities, and opportunities for self-development. Greater access to these conditions in the learning environment results in high levels of structural empowerment (Sui, Laschinger & Vingilis, 2005) Group participation is vital for group learning and can be accomplished in different ways, namely consensual decision-making, brainstorming and nominal group techniques (Muller, 2003).

Assessment of the student's activities in problem-based learning groups is advisable and groups should be encouraged to reflect on their performance, including its adherence to the process, communication skills, respect for others, and individual contribution. Formative and summative assessment schedules should follow the basic principle of testing the students in relation to the curriculum outcomes. Testing should utilize an appropriate range of assessment methods. Feedback should be given by the facilitator (Wood, 2003). Ideally, the facilitator only offers support, but it is sometimes necessary to direct the group towards decision-making and problem-solving (Muller, 2003).

Students who have been exposed to PBL have reported that this method promotes their communication skills, critical thinking, interacting with various individuals, and active group participation (Wood, 2003). Students also feel motivated by problem-based learning. Further benefits of this method include the development of self-evaluation and peer evaluation skills, which are valuable in the nursing profession (Gabr & Mohamed, 2011). Self-assessment can provide an opportunity for students to evaluate their own behaviours,

communication and interaction skills, by reviewing the videotapes or other instruments of their own performances. The group should be able to assess their own ability to get things done, as well as the degree of cohesion within the group, namely the feeling of belonging on the part of members, and the degree of commitment to achieving group objectives (Muller, 2003).

To maintain effective teamwork the following guidelines are important:

- Clearly defined goals and roles.
- Mutual support and motivation
- Relaxed atmosphere- creative, friendly and trusting.
- Willingness to listen and work together
- Being open-minded and flexible
- Taking positive action in implementing decisions
- Evaluate achievements (Steyn & Van Niekerk, 2008).

A PBL group or team needs to remain together doing enough in order to develop good group skills (Wood, 2003) and team work. It also allows all group participants to fulfil different roles and responsibilities of the tutorial group. These roles are discussed below.

2.4 ROLES AND RESPONSIBILITIES IN PBL

Participants in PBL groups assume various roles within associated responsibilities. Some of these are related to facilitating (the tutor's role), writing, recording (scribe's role), leading the group (the chairperson's role) and learning (all members). Figure 2.2 depicts a summary of these roles. Those of the facilitator and students are explained further.

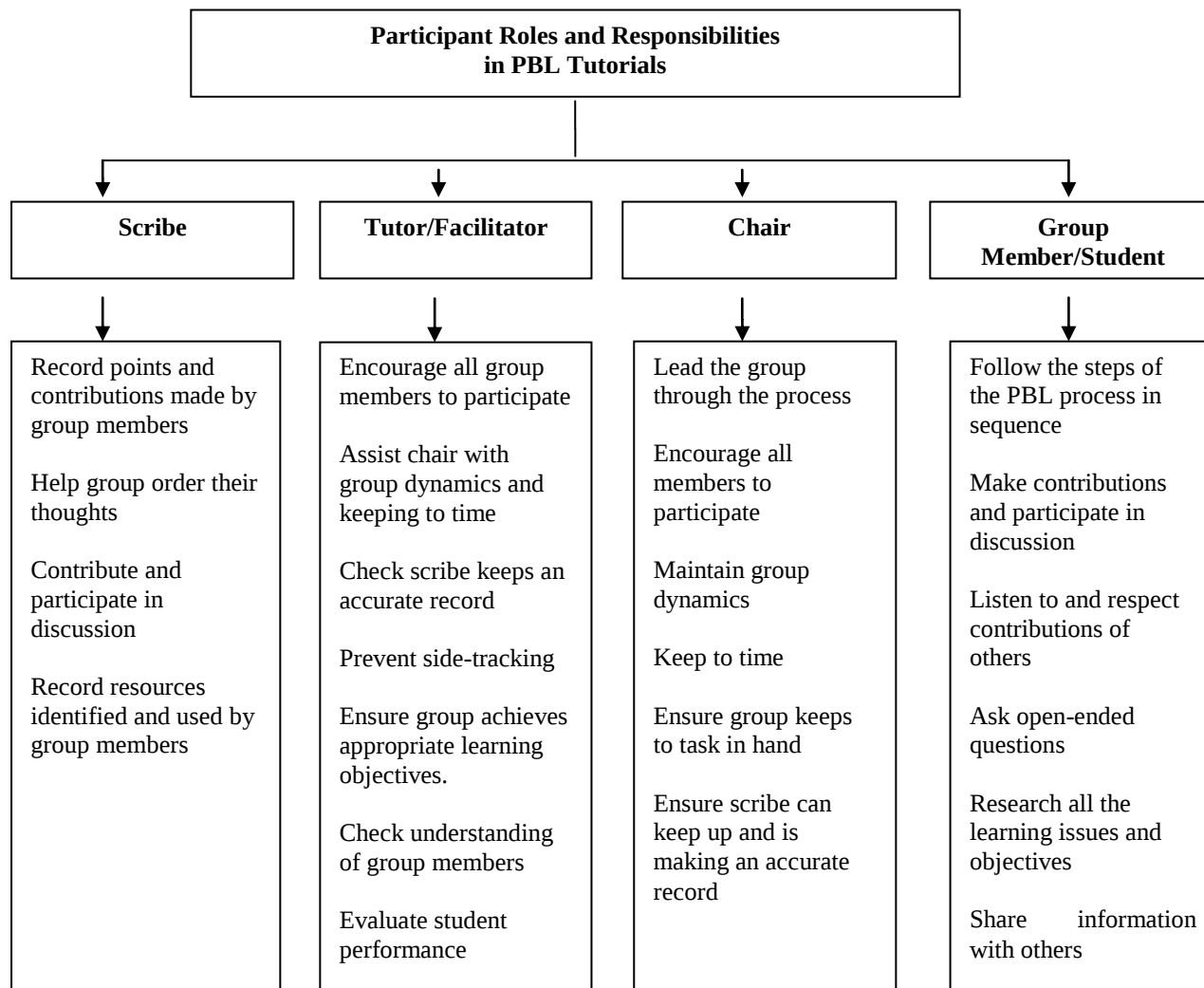


Figure 2.2: Roles of Participants in a PBL Tutorial (adopted from Wood, 2003)

2.4.1 Facilitator's Role

Facilitators are lecturers who assist the tutorial group during problem-based learning sessions. They help the chairperson of the group (a student) to maintain group dynamics, help the group to achieve appropriate learning outcomes and ensure that all the students have done the work. The facilitator must give students feedback after each tutorial sessions (Woods, 2003). PBL is not teacher- centred but facilitators need to be well trained to facilitate the learning process (Vasuthevan & Viljoen, 2004). The facilitator guides the students in the implementation of the curriculum and problem-based learning processes in order to develop relevant knowledge and skills (Hodges, 2011). Bruce, Kloppe & Mellish, 2011) summarise, the role of the facilitator as follows:

- Help the students to keep track of the discussion
- Reflect regularly on the steps in the problem-based learning process and the relevance of the discussions
- Encourage students to summarize regularly
- Encourage the use of drawings, diagrams and flow charts where appropriate
- Encourage the use of simple language and check that students understand the related terminology.

2.4.2 Student's Role

Problem-based learning involves student-centred strategies during which students collaboratively solve patients' problems or issues and reflect on their experiences. The PBL strategy encourages students to become active, independent and to take more responsibility for their own learning process (Gabr & Mohamed, 2011). In PBL tutorials, as students work with a problem, they should be able to identify what they need to learn and what resources they are going to use to accomplish their learning. In the process of learning new information students are required to relate what they have learned about prior problems and how it prepared them for future problems. Self and peer evaluation should be carried out at the end of each tutorial session and on completion of each problem (Bruce, Klopper & Mellish, 2011).

2.5 ADVANTAGES OF PBL

Students are more active and independent in learning. PBL positively influences learning outcomes and the development of thinking skills such as creative thinking, problem solving, logical thinking and decision making (Gabr & Mohamed, 2011). PBL contribute to an integrated curriculum by enhancing gathering of information from various sources and a holistic view of information from various view of a situation. PBL also increases the ability to consider problems from various viewpoints and taught students clinical reasoning (Becker, Viljoen, Botma & Bester, 2003). In PBL the student develops a higher level of comprehension and better learning of knowledge, communication skills, leadership skills, self-directedness and intercultural awareness and related social interaction skills. The most important advantages of PBL are summarised as follows:

- Enables students to develop problem- solving skills and to apply or test solutions in real life.

- Promotes the integration of knowledge and transference of knowledge to learning in clinical settings when they are nursing patients in clinical practice.
- Promotes the development of communication skills when taking a patients' history and particularly during tutorial discussions among small groups.
- Promotes critical thinking and reasoning skills in problem solving and in decision making.
- Fosters a deep approach and not a surface approach to learning when identifying resources and managing their learning tasks in order to achieve their learning outcomes.
- Promotes information literacy and information management through self-directed, life-long learning when applying problem solving strategies.
- Encourages reflective learning and reflective practice, mainly through self- and peer evaluation within groups and at the end of the learning process itself. Constructive and positive feedback is important for learning from and with others.
- Fosters teamwork and collaboration in groups and learning to work as a team. In leading and sharing information PBL helps students to develop professionally and socially through professional interaction in tutorial sessions.
- Fosters understanding of and respect for others, in diverse groups and cultures; students learn to handle group dynamics preparing them for the real work environment.
- Brings about willingness to be open to others' viewpoints and opinions during scholarly debate and discussion during PBL tutorial sessions (Bruce, Klopper & Mellish, 2011).

PBL contribute to the development of independent problem solving and thinking skills for the assessment , diagnosis, planning and evaluation of nursing care. The students become active participants in the learning process and learned work together as a team (Mogale & Botes, 2001)

2.6 **DISADVANTAGES OF PBL**

PBL students may be uncomfortable with group dynamics and groups may need to be changed because occasionally there may be personality clashes or other dysfunctional behaviour (Wood, 2003). The disadvantages of the PBL approach are as follows:

- Requires students and educators to change their mindset from the start, and they may find such a change too demanding (Uys & Gwele, 2005). Educators take on the role as facilitator and students take responsibility for their learning as a student-centred approach and self-directed learning being implemented.
- Students may feel anxious due to the lack of structural guidance as clearly stated by Rowan, McCourt, Bick & Beale, 2008). Anxiety in turn may affect student performance.
- Students rely on others for their resources and this in turn may increase anxiety and stress.
- The course is expensive in terms of resources and technology.
- The course is demanding in terms of time and effort.
- Requires students to find resources and rely on other group members for other areas of learning, which may make them feel uncertain, frustrated and stressed.

The above disadvantages can affect learning negatively and contribute to poor performance (Bruce, Kloppe & Mellish, 2011).

2.7 **COMPETENCE**

Competence is one of the study variables and requires a description of its role in this study. Competence is the state or quality of being adequately or well qualified and is a function of “worthy performance” (Teodorescu, 2006). Competencies on the other hand are those characteristics (knowledge, skills, mind-sets, thought patterns etc) that result in worthy or successful performance by an individual (Dubois, 1998).

Competence is defined as a generic quality referring to a person's overall capacity, as well as specific capabilities such as leadership, which are made up of knowledge, attitude and skills (www.kcl.ac.uk/school/nursing/nnr/policy 2009). When educating professionals such as nurses, these capabilities constitute professional competence. Problem-based learning facilitates the development of professional competence such as critical thinking, communication skills, interpersonal relations, and self- assessment (Chaves, Bakker, Chaves & Fisher, 2006). The development of professional competence has been found to require a trio of abilities that include cognitive, psychomotor and affective competencies specified during the educational process (Nkosi & Uys, 2005). Quality in nursing practice is dependent upon the educational preparation of nurses to be able to solve problems, think critically and make decisions in today's health care system (Gabr & Mohamed, 2011). The responsibility of a nursing school is to provide a safe, controlled environment in which students can acquire and practise the clinical skills necessary to become clinically competent nurses. Competence is often thought of as being mere manual dexterity involving the psychomotor domain. However, the concept also embraces knowledge and thinking skills as well as cognitive, interpersonal, social and emotional skills derived from the affective domain (Pera & van Tonder, 2008).

Within the context of this study, competence is applied to the use of the PBL approach. Students' competence in certain skills, processes and characteristics that are normally attributed to PBL are shown in Figure 2.3.

Learning Skills and Processes	
▪ Identify key issues in patient/community ▪ Define the health issues	
▪ Formulate hypotheses about the health issues ▪ Prioritize the importance of issues	
▪ Identify learning needs ▪ Access resources/use evidence	
▪ Integrate information into care plan ▪ Develop a plan of care/intervention	
▪ Collaborate within team ▪ Take the lead within the team	

Figure 2.3: Skills and Processes of PBL

2.8 CONCLUSION

Problem-based learning involves small group learning that promotes professional development. Students working in small groups interact in learning different skills such as problem-solving skills and self-directed learning. PBL encourages active participation and active learning from group members during tutorials. Formative evaluation at the end of each PBL tutorial and at completion of each problem is important in order to give students feedback regarding their performance. Student feedback in problem-based learning is important to improve identified areas of weakness and to understand the benefits for learning.

This section concludes the literature review; the next chapter presents the design and methods used for this study.

CHAPTER THREE

RESEARCH METHODS

3.1 INTRODUCTION

The aim of this project was to collect data on undergraduate students' reported competence in learning skills and processes acquired through problem-based learning programmes. For both teachers and students evidence of scientific evaluation of courses and of learning is important in order to validate good practice and to put in place improvement measures that are evidence-based (Olerup, 2006).

In this chapter the research methods are discussed. It includes an elucidation of the overall design, population and sample, data collection and data analysis. The pilot study and ethical principles observed during the study are described.

3.2 RESEARCH DESIGN

A quantitative, descriptive survey design was used to collect data, from nursing students enrolled in the Bachelor of Nursing programme at a University. For the purposes of this study a survey design was the most advantageous as this design allowed information to be obtained from a sample of students by means of a self-report; that is, study participants responded to a series of questions posed by the researcher. The design can be applied to many populations; it can focus on a wide range of topics, and the resulting information can be used for a variety of purposes (Polit & Beck, 2008). In this study the results may be used to inform curriculum review and improve the quality of the curriculum. The questionnaire also required students to comment on the quality of the course by providing a qualitative response as the basis for content analysis. Content analysis involves the researcher identifying specific words used or ideas expressed (Mayan, 2002).

3.3 RESEARCH METHODS

This text below describes the specific steps and procedures for collecting and analyzing data during the research investigation from an identified study population.

3.3.1 Population and Sample

A population is defined as the entire set of individuals or objects that share characteristics in which the researcher is interested. Sampling is the process whereby a portion of the population is selected to represent the entire population, which will allow inferences to be drawn about the population (Polit & Beck, 2008). In this study the population consisted of all nursing students enrolled in the second, third and fourth year of the Bachelor of Nursing programme in the 2010 academic year (N=42). No specific sampling method was used due to the limited size of the target population. All the nursing students were thus invited to participate. Only those who agreed and gave their informed consent were included in the study. All students who agreed to participate completed and returned their questionnaires, resulted in the final sample (n=38). A response rate of 90.4% was recorded.

3.3.2 Data Collection

Data collection is the process of selecting subjects and gathering data from them (Burns & Grove, 2001). A structured questionnaire (Annexure A) was used to collect data. The tool consisted of two parts:

- Part A: Demographic data. This part of the questionnaire asked students to indicate their level of study in the degree and which course they were responding to, that is, Comprehensive Nursing, Women's Health or Psychosocial Health. The age group was changed to one category 18- 28 years on the recommendation of the Human Research Ethics Committee. However, it produced data that could not be analysed.
- Part B: Problem- based learning data included students' report on course satisfaction, their competence in learning skills and processes and their opinion about the course quality. Four open-ended questions were asked to explore further issues around their competence. Students were asked to respond by indicating whether the course was stimulating or boring, very easy or very difficult, useful or a waste of time, empowering or disempowering and enlightening or confusing. A semantic differential (SD) scale was used to measure the students' opinions, with +3 being the most positive and -3 the most negative response (Burns & Grove, 2001).

After obtaining institutional permission and informed consent from prospective participants data collecting commenced. Questionnaires were issued to the students with the assistance of their course coordinator according to prior arrangements. Approximately 30 minutes were

allowed after a PBL tutorial session for completion of the questionnaire. Completed questionnaires were placed in an envelope and posted in a box provided by the researcher.

3.3.3 Data Analysis

Data analysis is conducted to reduce, organise and give meaning to data (Burns & Grove, 2001). Data were checked and corrected before it was captured. MS Excel spread sheet was used to record the data. The computer programme STATA version 11 was used for data analysis. Descriptive statistics was used to analyse the data according to the level of study and per course. The first method of analysis involved the use of semantic differential scales with positive-negative polarity to obtain the average score per level of the study and per course. The ratings of the semantic differential scale are as follows; 3, 2, 1, 0, -1, -2, -3. The average score was calculated in order to determine the value of the concept

(Kovach Computing Services www.kovcomp.co.uk/support/XL.Tul/semantic-differential-hart.html). The scale ranged from +3 to -3, with 0 representing the middle (neutral) value. A 4-point Likert scale was also used in which respondents were asked to express their views by rating their perceived competence in skills and processes as a result of problem-based learning— see Part B of the questionnaire (Annexure A).

Qualitative content analysis was carried out on data from open-ended questions by identifying defined units that had something in common (Polit & Beck, 2008). Specifically, the process of qualitative content analysis involved the identification of persistent words, phrases, theme, or concepts within the data to enable underlying patterns to be identified (Mayan, 2002) and analysed in relation to problem-based learning.

3.3.4 Pilot Study

The questionnaire was piloted by using volunteers from the 2009 cohort of students to determine the feasibility of the study and to check students' understanding of the components of the questionnaire. Ten second-year nursing students (n=10) completed the questionnaires. It took approximately 30 minutes to complete the questionnaire. No adjustments were made as a result of the pilot study.

The content of the tool was derived from recent literature and course evaluation documents used by the University Nursing School. Following peer review of the tool by experienced nurse educators (n=8) it was accepted and deemed to have content validity. Due to the self-

report nature of this study reliability measures were not implemented; however this data set will be used for future reliability testing of the tool.

3.4 ETHICAL CONSIDERATIONS

The study and its title change were approved by the Graduate Studies Committee of the Faculty of Health Sciences (Annexure B). Ethical clearance was obtained from the Human Research Ethics Committee of the University of the Witwatersrand. An ethical clearance certificate (Annexure C) was issued. Permission to conduct the study was obtained from the Head of the School of Therapeutic Sciences, where the Department of Nursing Education is located (Annexure D).

To obtain written informed consent from the participants an information sheet (Annexure E) was used. To maintain privacy, anonymity and confidentiality the participants' names or any form of identification were not revealed. Questionnaires were returned anonymously in an envelope a postage box provided for this purpose.

Participants were given an opportunity to ask questions after reading the information sheet. They were also informed about their right to withdraw from the study if they wished. The Graduate Studies Committee recommended that the age group in Part A demographic profile of the tool should be between 18-28. This data were thus not considered for analysis.

3.5 CONCLUSION

A quantitative, descriptive survey was used to collect data on nursing students' reported competence in learning skills and processes as a result of a problem-based learning programme. The research design and methods were described in this chapter. Data obtained from the questionnaires were analysed in order to answer the research questions. The data analysis approach and results of the study are presented in the next chapter.

CHAPTER FOUR

RESULTS

4.1 INTRODUCTION

Data analysis and the results of the study are described in this chapter. Descriptive statistics were used to analyze and present the findings in relation to frequencies, percentages, cumulative frequencies, the number of student responses according to the level of study and the course. Latent content analysis (Mayan, 2002) was used to analyse students' qualitative responses to specific open-ended questions related to problem-based learning.

4.2 RESULTS

4.2.1 Part A: Demographic Data

In this part of the questionnaire, nursing students were asked to indicate their level of study, type of courses, as well as their age. According to subject type 92 questionnaires were the units of analysis and were returned as follows: second years, 11.96% (n=11), third years, 35.87% (n=33), and fourth years 52.17% (n=48). Since all three major subjects are taught in the third and fourth year, these levels also produced the most questionnaires for analysis. The actual number of students included in the sample (n=38) were as follows: second year =11 students (28.94%), third year =11 students (28.94%) and fourth year = 16 students (42.12%). See figure 4.1

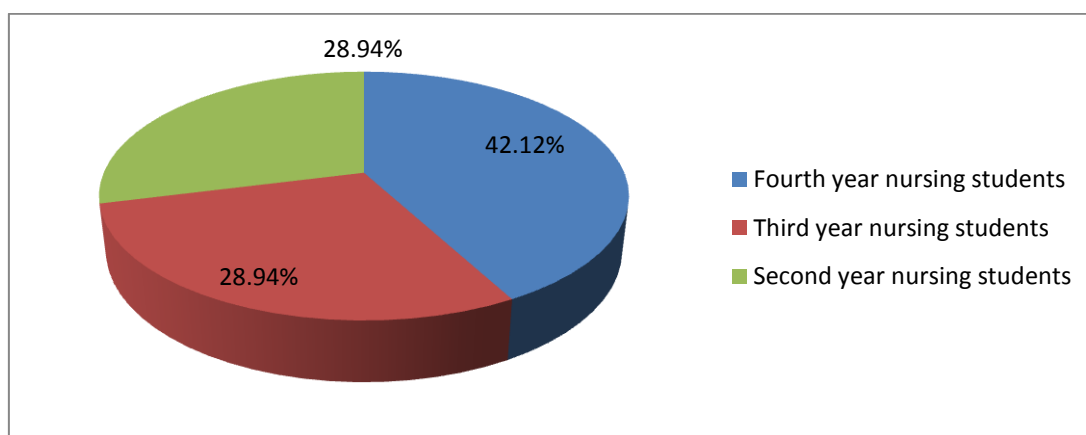


Figure 4.1: Nursing Students' Responses According to Year of Study (n=92)

The findings related to the level of the study indicate that the highest number of responses were from fourth year nursing students (n=48), followed by third year students (n=33) and the lowest number of responses were from second year students (n=11).

Regarding students' responses about the course(s) being followed, the results were as follows: Comprehensive nursing = 55.43% (n=51), Women's health = 20.65% (n=19) and Psychosocial health = 23.91% (n=22). See figure 4.2.

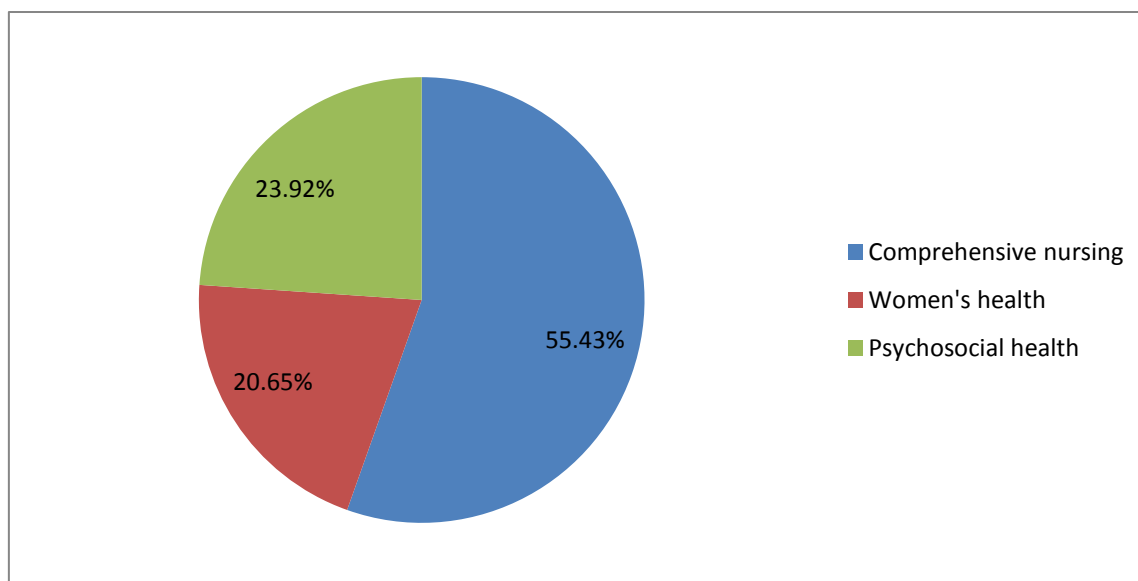


Figure 4.2: Nursing Students' Responses According to the Type of Course (n=92)

The findings regarding the courses were as follows. The highest number of responses (n=51) indicated comprehensive nursing as this is a compulsory course across all four years of study. Psychosocial nursing included third year students (psychosocial nursing I) and fourth year students (psychosocial nursing II) and the total was 22 responses (n=22). The lowest number of responses was for women's health which involved third and fourth year students.

All students were between 18-28 years of age. In the light of the ethical concerns expressed by the HREC age categories were not indicated in the questionnaire. Instead only a range was indicated. This data set was not intended for analysis.

4.2.2 Part B: Problem-Based Learning Data

Students were asked to rate their satisfaction with various elements of the course, the PBL method and facilitators' contribution. The results are presented in frequencies and

percentages, firstly for the whole group (sample), secondly, according to the year of study and finally per course.

4.2.2.1 Students' satisfaction according to course type

The results for overall satisfaction with the course for students' responses in rating the elements of the course following exposure to problem-based learning were as follows:

The total number of questionnaires was 92 (n=92). In all eight components the highest number of students indicated that they were satisfied, followed by very satisfied. The lowest score obtained was unsatisfactory or very unsatisfactory. Some students did not comment. The three outstanding results about students' satisfaction with the elements of PBL were facilitators' knowledge (100%), facilitators' skill (94.57%) and course outline (91.30%), followed by essential reading (90.21%), facilitators' attitude (83.7%) and course content (82.64%). Elements that they were mostly dissatisfied with include:

- course organization (20.65%); and
- teaching-learning method (20.66%). See table 4.1.

Table 4.1: Students' Satisfaction with Elements of the PBL Course (n=92)

Overall score	Very Unsatisfactory		Unsatisfactory		Satisfactory		Very Satisfactory	
	Freq	%	Freq	%	Freq	%	Freq	%
1. Course outline	1	1.09	7	7.61	65	70.65	19	20.65
2. Essential reading	0	0	9	9.78	61	66.30	22	23.91
3. Course organization	0	0	19	20.65	52	56.52	21	22.83
4. Course content	0	0	16	17.39	44	47.83	32	34.78
5. Teaching-learning method	1	1.09	18	19.57	49	53.26	24	26.09
6. Facilitator's skill	0	0	5	5.43	43	46.74	44	47.83
7. Facilitator's knowledge	0	0	0	0	40	43.48	52	56.52
8. Facilitator' attitude	1	1.09	14	15.22	46	50.00	31	33.70

4.2.2.2 Students' satisfaction according to year of study

Senior students (third and fourth year) indicated that they were satisfied with their courses the fourth years indicated that they were very satisfied. The lowest score obtained in all levels of the study was unsatisfactory and very unsatisfactory. See table 4.2.

Table 4.2: Students' Satisfaction According to Year of Study (n=92)

Level of Study	Very Unsatisfactory			Unsatisfactory			Satisfactory			Very Satisfactory		
	2 nd	3 rd	4 th	2 nd	3 rd	4 th	2 nd	3 rd	4 th	2 nd	3 rd	4 th
1. Course outline	0	0	1	0	4	3	11	24	30	0	5	14
2. Essential reading	0	0	0	2	4	3	9	24	28	0	5	17
3. Course organization	0	0	0	3	9	7	7	19	26	1	5	15
4. Course content	0	0	0	0	8	8	9	14	21	2	11	19
5. Teaching-learning method	0	1	0	2	5	11	8	20	21	1	7	16
6. Facilitator's skill	0	0	0	0	1	4	9	15	19	2	17	25
7. Facilitator's knowledge	0	0	0	0	0	0	8	13	19	3	20	29
8. Facilitator' attitude	0	1	0	0	6	8	4	16	26	7	10	14

4.2.2.3 Students' satisfaction according to nursing major

The rating of students' satisfaction according to their major nursing courses was as follows: Comprehensive nursing (n=51), Women's health (n=19) and Psychosocial health (n=22). Comprehensive nursing obtained the highest in the "satisfactory" category followed by Psychosocial Health. Responses to Women's Health were high in the "very satisfactory" category and the lowest number for all the courses was "unsatisfactory" or "very unsatisfactory". See table 4.3.

Table 4.3: Students' Satisfaction According to the Type of Course (n=92)

Courses	Very Unsatisfactory			Unsatisfactory			Satisfactory			Very Satisfactory		
	CN	WH	PH	CN	WH	PH	CN	WH	PH	CN	WH	PH
1. Course outline	1	0	0	7	0	0	39	7	19	4	12	3
2. Essential reading	0	0	0	8	0	1	28	8	16	5	11	5
3. Course organization	0	0	0	18	0	1	28	8	16	5	11	5
4. Course content	0	0	0	15	0	1	25	6	13	11	13	8
5. Teaching-learning method	1	0	0	15	0	3	28	7	14	7	12	5
6. Facilitator's skill	0	0	0	5	0	0	29	5	9	17	14	13
7. Facilitator's knowledge	0	0	0	0	0	0	27	7	6	24	12	16
8. Facilitator' attitude	1	0	0	12	0	2	25	5	16	13	14	4

Key: CN – Comprehensive Nursing; WH – Women's Health; PH – Psychosocial Health

4.2.2.4 Qualitative comments regarding elements of PBL

Four open-ended questions were asked to probe students' responses to competence and learning issues that may affect the quality of their learning. The majority (80%) did not respond so the analysis applies to only 20% of the sample. The research identified persistent words within the data which were analysed according to the underlying pattern (Mayan, 2002). These words were combined to form themes as follows:

- **Interesting/challenging course** (7.61%; n=8)

Students stated that PBL is stimulating because they learn new concepts at different levels of their course and are able to expand their knowledge by using a variety of sources e.g. journal, internet and text books. The following were students view on PBL :

“The course is well done and very interesting/challenging because all objectives are covered.”

“PBL is very stimulating. It allow us to go beyond conventional reading i.e. instead of just reading a textbook we found other sources (journal and internet) etc.”

“Psychosocial help us to understand concepts in reality, it even explain some of the issues that we do not understand in day to day life.”

- **Facilitators supportive** (4.35%; n=4)

Students found facilitators to be supportive during PBL tutorials and their communication skills were good, enabling clear explanations. The following quotes illustrated their views:

“Facilitator is very good when it comes to teaching and is very understanding, meaning that she takes into consideration that we are still students.”

“She is a supportive and understanding lecturer who explains concepts clearly to me and my class mates.”

“She is a well organised lecturer. I like her attitude, she is energetic, interested in the course. She is able to teach at student level.”

- **More guidance needed** (3.26%; n=3).

Students mentioned that they need guidance during the course and that more time is also needed with the facilitator to explain difficult concepts. Little feedback is given during tutorial sessions.

“When doing PBL sessions most lecturers leave us to guess some of the content, it will be nice for them to guide us towards the correct things instead of sitting silently, watching us scramble around, trying to figure out what is expected.”

- **Increased anxiety** (2.17%; n=2).

Some students felt that their anxiety increases under certain circumstances for example:

“A new method of facilitation increases my anxiety. Students need time before they understand a new teaching style.”

The results are illustrated in figure 4.3.

Fifty students did not comment, but overall, the results indicated that the course was interesting and challenging (highest score). The response rate makes it difficult to generalise the results

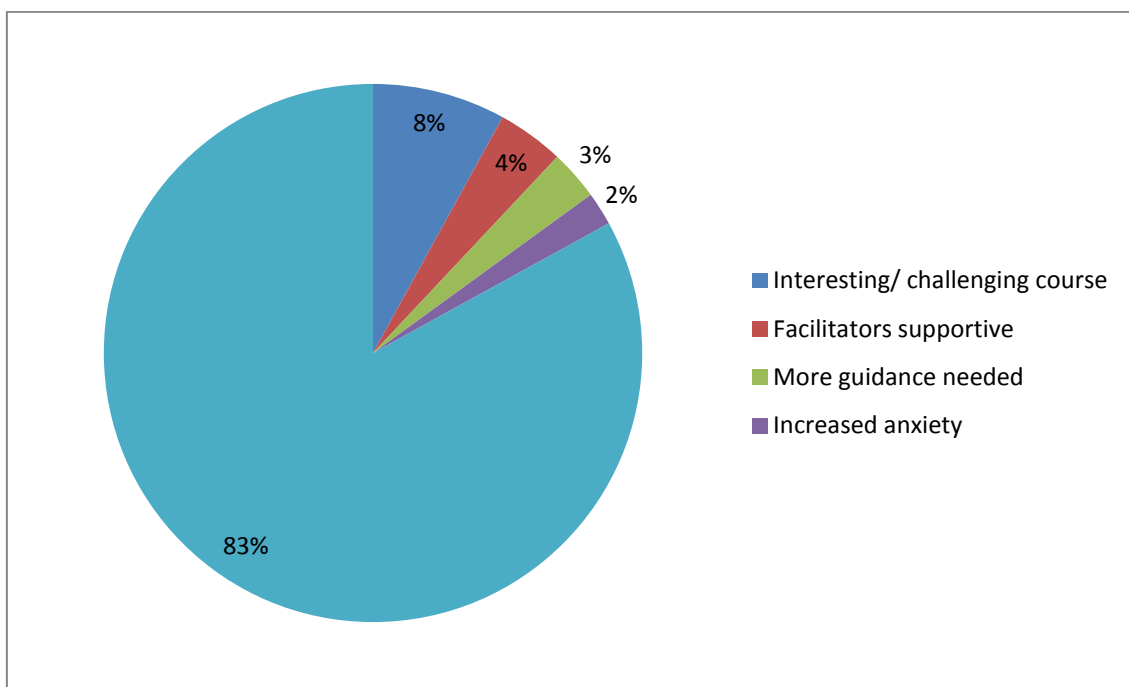


Figure 4.3: Comments on the Elements of PBL (n=42)

4.2.2.5 SD scale: Students' feelings about PBL

A 7- point semantic differential (SD) scale consisted of five bipolar pairs of adjectives that characterize students' opinions about PBL was used. The scale ranged from +3 to -3, with 0 representing the middle (neutral value) of the scale. Five positively weighted and five negatively weighted adjective pairs are used to present the results as follows:

Stimulating vs Boring

The majority of students (59%; n=55) indicated that the course was stimulating, with most students giving a rating of +3 and 0 neutral (23%; n=21) respectively. Only a small portion rated PBL to be boring (17%; n=16). See Figure 4.4.

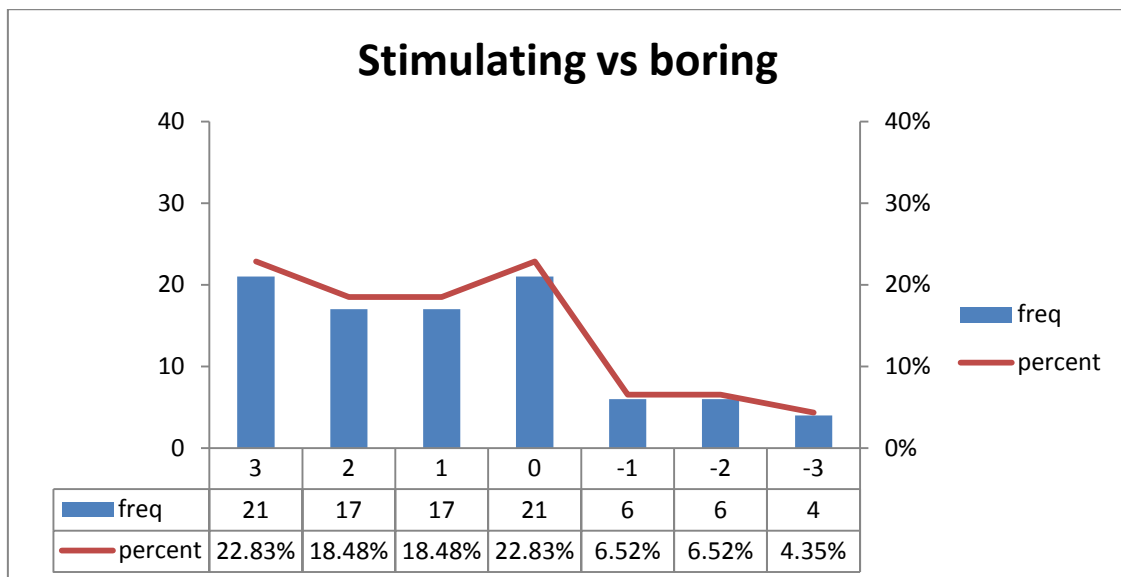


Figure 4.4: Students' Response Regarding PBL Stimulating vs Boring (n=92)

Very easy vs very difficulty

The students' responses in relation to the level of difficulty of the course i.e. very easy vs very difficult were mostly neutral (around the middle); over a third (34.78%) found PBL course neither too easy nor too difficult and only a quarter (25%; n=23) found the course difficult. See Figure 4.5.

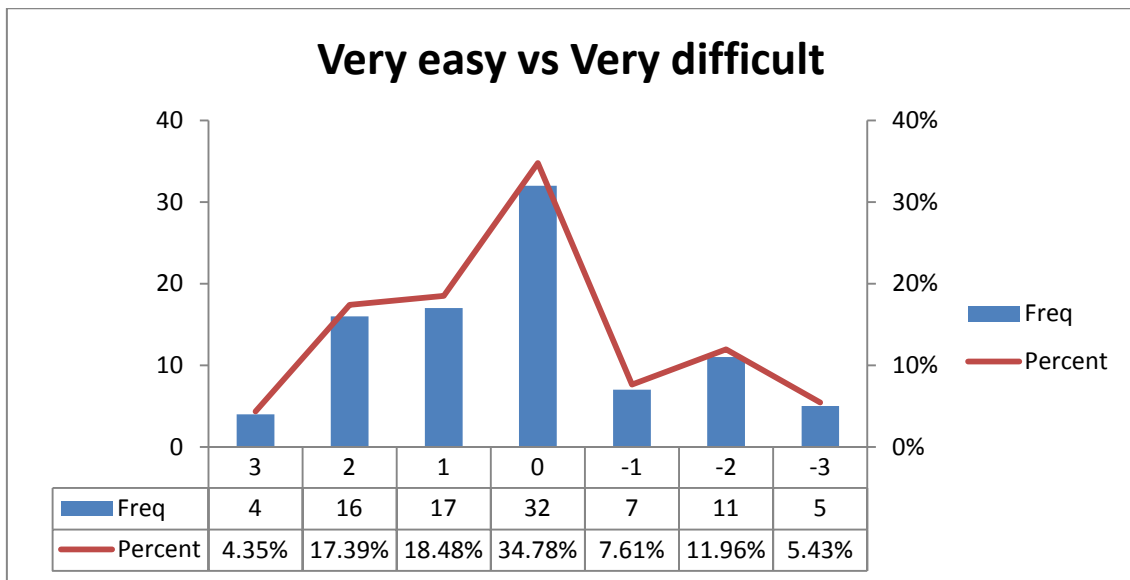


Figure 4.5: Students' Responses Regarding PBL Very Easy vs Very Difficult (n=92)

Useful vs waste of time

The results indicate that students found the PBL course useful. The highest rating (+3) was selected by 35.87% (n=33) of students. Only a small proportion of students (11.95%; n=11) found the course not so useful. See Figure 4.6.

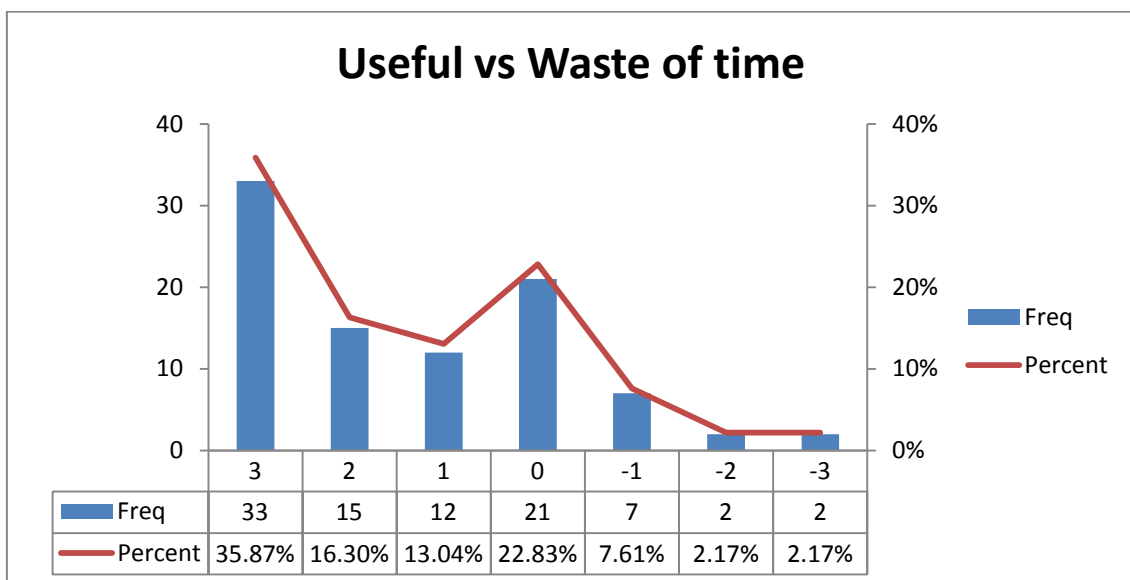


Figure 4.6: Students' Responses Regarding PBL Useful vs Waste of Time (n=92)

Empowerment vs disempowering

The results indicate that the majority of the students found the PBL course to be empowering. The highest rating was (30.43%; n=28) and only small proportion of students (12%; n=11) found PBL disempowering. See Figure 4.7.

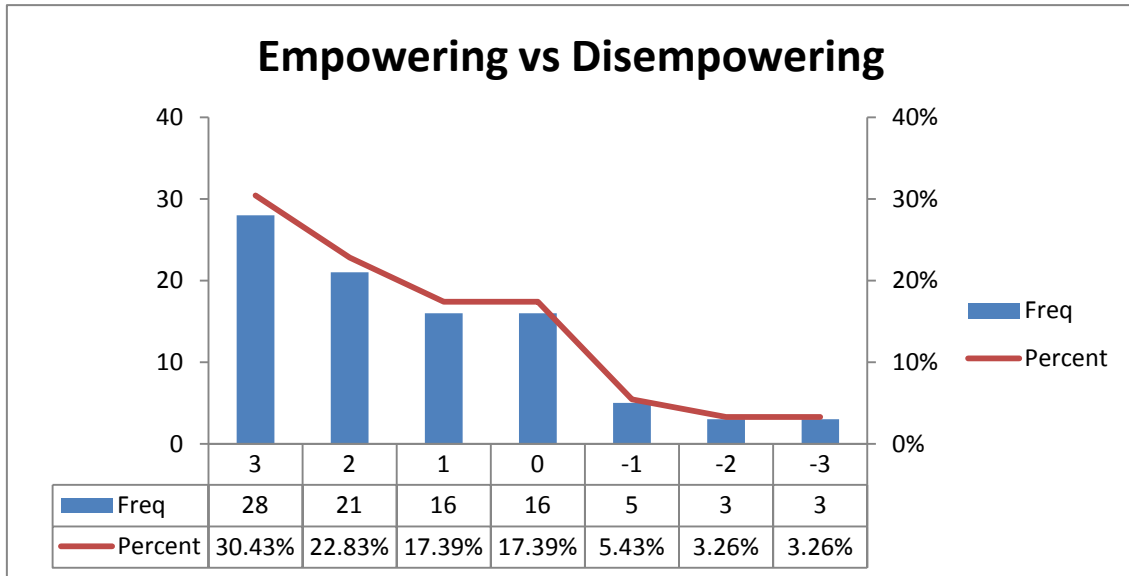


Figure 4.7: Students' Responses Regarding PBL Empowerment vs Disempowering (n=92)

Enlightening vs confusing

The result indicates that most students found PBL course to be enlightening. The highest rating was 26% (n=24) with 15%(n=15) students reporting that the PBL course is confusing. See Figure 4.8

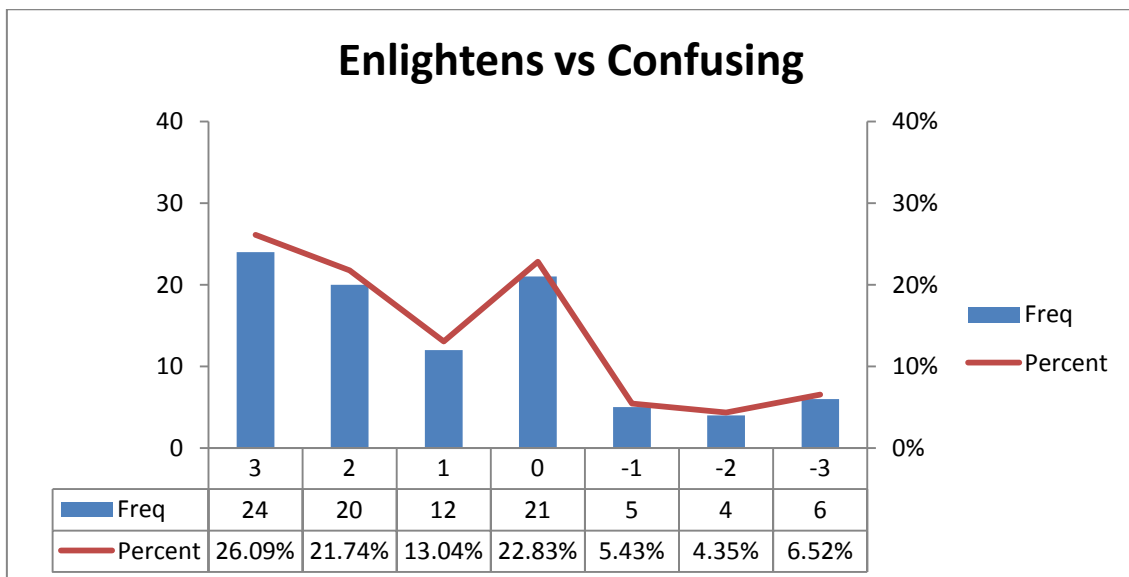


Figure 4.8: Students' Responses Regarding PBL Enlightening vs Confusing (n=92)

4.2.2.6 SD scale results: Students' opinion according to year of study

The average score of students' responses according to year of study indicates a positive response for all five components. The most junior group, the second year students, were neutral toward the degree of stimulation of the course and its level of difficulty. They were slightly more positive (≥ 1) towards the usefulness of the course and its ability to empower and to enlighten them.

Third and fourth year students reported more positive feelings towards the degree of stimulation the course offers, its usefulness and its ability to both empower and enlighten, Both groups found their PBL course neither too easy nor too difficult. See Figure 4.9.

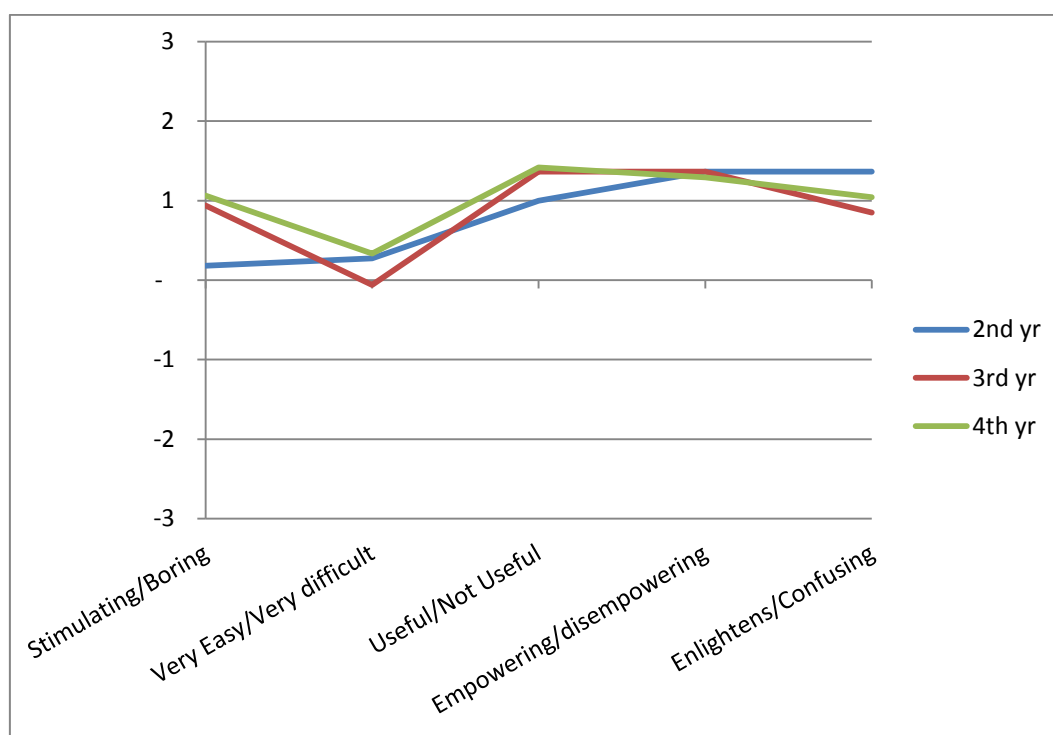


Figure 4.9: Students' Feelings towards PBL According to Year of Study

4.2.2.7 SD scale results: Students' opinion according to the type of course major

The students found the PBL courses to be stimulating, useful, empowering and enlightening. Students in Comprehensive Nursing and Psychosocial Health were neutral towards the course being easy and Women's Health students reportedly found the course to be easy. See Figure 4.10.

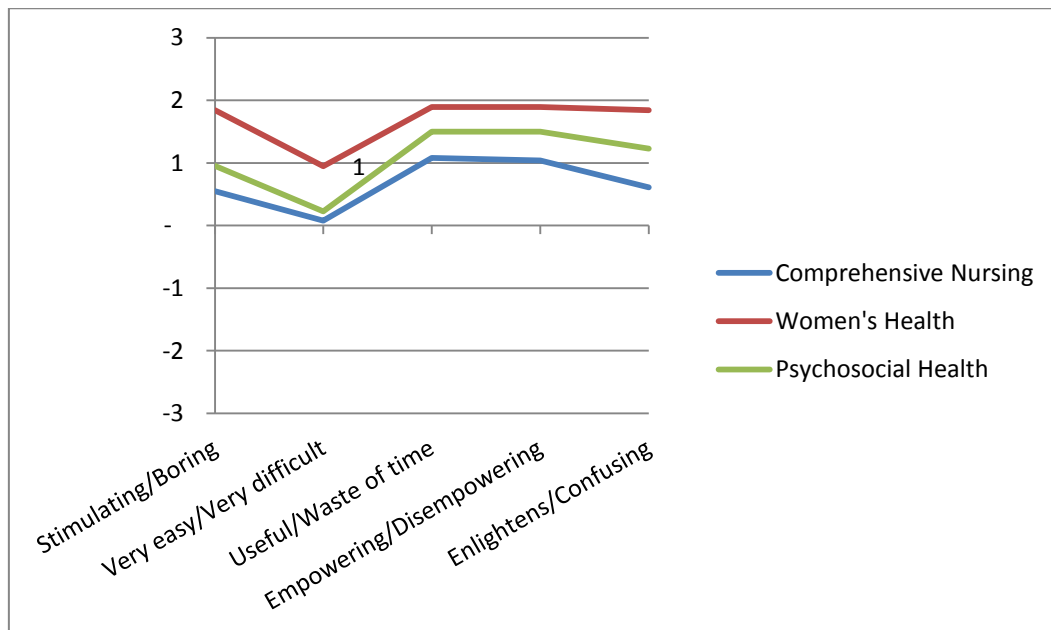


Figure 4.10: Students' Feeling towards PBL According to the Type of Course Major

4.2.2.8 Students' competence as a result of PBL

These results are presented according to students' overall competence, as well as their competence according to year of study and type of course.

Students were asked to rate their competence in various components of PBL. The components were grouped according to similarities in learning, PBL skills and processes as follows:

- *Learning process* with regard to identifying issues in a patient/community, defining or formulating the health problem/issue and generating hypothesis/explanation for problems.
- *Priority* with regard to what is important for the patient/ community and identifying what I need to learn.
- *Literature/evidence* included access to relevant literature/evidence and choice of resources to obtain information/evidence.
- *Care* consisted of integrating information into nursing care, deciding on best options for the patient/ community and developing a plan of care/ intervention.
- *Team work* as collaborative/ work within a team and take the lead within a team.

The results were presented in terms of frequencies and percentages. Regarding the overall rating of competence, the majority of students' rating was high for the learning process, prioritization and literature evidence (54.35%), followed by care and team work with a score of (45.65%). A small number of students indicated less benefit for accessing literature/evidence (9.78%). See Table 4.4.

Table 4.4: Overall Rating of Competence in PBL Skills and Processes (n=92)

Overall score	I am sure I can do this		I think can do this		I don't think I can do this		I am sure I cannot do this	
	Freq	%	Freq	%	Freq	%	Freq	%
▪ Identify key issues in a patient/ community	50	54.35	40	43.48	2	2.17	0	0
▪ Define/formulate the health problem/ issue	45	48.91	46	50.00	1	1.09	0	0
▪ Generate hypothesis/explanations for problems	40	43.48	49	53.26	3	3.26	0	0
▪ Prioritise what is important for the patient/ community	42	45.65	46	50.00	4	4.35	0	0
▪ Identify what I need to learn	45	48.91	44	47.83	3	3.26	0	0
▪ Access relevant literature/ evidence	49	53.26	34	36.96	9	9.78	0	0
▪ Choose resources to obtain information/evidence	56	60.87	30	32.61	6	6.52	0	0
▪ Integrate information into nursing care	35	38.04	52	56.52	5	5.43	0	0
▪ Decide on best options for the patient/ community	28	30.43	59	64.13	5	5.43	0	0
▪ Develop a plan of care/intervention.	40	43.48	46	50.00	6	6.52	0	0
▪ Collaborate/work within a team	42	45.65	48	52.17	1	1.09	1	1.09
▪ Take the lead within a team.	31	33.70	59	64.13	1.09	1	1.09	0

Key: Freq - Frequency; % - Percentage

Regarding the results according to the year of study, the competency for the most senior students (fourth and third year) were high on all elements viz learning processes, priority, literature evidence, caring and team work, while junior students' ratings indicated small number in all components of competence. See Table 4.5.

Table 4.5: Students' Rating of Competence According to Year of Study (n=92)

Level of the study	I am sure I can do this			I think can do this			I don't think I can do this			I am sure I cannot do this		
	2 nd	3 rd	4 th	2 nd	3 rd	4 th	2 nd	3 rd	4 th	2 nd	3 rd	4 th
▪ Identify key issues in a patient/community	8	11	31	3	21	16	0	1	1	0	0	0
▪ Define/formulate the health problem/issue	7	7	31	4	26	16	0		1	0	0	0
▪ Generate hypothesis/explanations for problems	5	7	28	6	25	18	0	1	2	0	0	0
▪ Prioritise what is important for the patient/community	7	10	25	3	21	22	1	2	1	0	0	0
▪ Identify what I need to learn	8	11	26	2	21	21	1	1	1	0	0	0
▪ Access relevant literature/evidence	3	16	30	8	10	16	0	7	2	0	0	0
▪ Choose resources to obtain information/evidence	7	20	29	4	8	18	0	5	1	0	0	0
▪ Integrate information into nursing care	4	6	25	7	23	22	0	4	1	0	0	0
▪ Decide on best options for patient/community	3	6	19	8	23	28	0	4	1	0	0	0
▪ Develop a plan of care/intervention.	7	4	29	4	24	18	0	5	1	0	0	0
▪ Collaborate/work within a team	6	11	25	4	22	22	0	0	1	1	0	0
▪ Take the lead within a team.	4	7	20	6	26	27	0	0	1	1	0	0

Key: 2nd - Second Year; 3rd - Third Year; 4th - Fourth Year

Students rating according to the course majors were as follows: Comprehensive Nursing results were high in learning processes, prioritization, literature evidence, care and team work. The results for Comprehensive Nursing include the second, third and fourth year students. The response for Women's' Health and Psychosocial Health was lower in all components because it included third and fourth year students. See Table 4.6.

Table 4.6: Students' Rating of Competence According to Type of Course Major (n=92)

Courses	I am sure I can do this			I think can do this			I don't think I can do this			I am sure I cannot do this		
	CN	WH	PH	CN	WH	PH	CN	WH	PH	CN	WH	PH
▪ Identify key issues in a patient community	26	10	14	23	9	8	2	0	0	0	0	0
▪ Define/ formulate the health problem/ issue	23	9	13	27	10	9	1	0	0	0	0	0
▪ Generate hypothesis/ explanations for problems	22	9	9	27	10	12	2	0	1	0	0	0
▪ Prioritise what is important for the patient/community	24	10	8	23	9	14	4	0	0	0	0	0
▪ Identify what I need to learn	24	11	10	24	8	12	3	0	0	0	0	0
▪ Access relevant literature/ evidence	25	11	13	20	7	7	6	1	2	0	0	0
▪ Choose resources to obtain information/evidence	30	12	14	17	6	7	4	1	1	0	0	0
▪ Integrate information into nursing care	21	9	5	26	10	16	4	0	1	0	0	0
▪ Decide on best options for the patient/ community	17	6	5	30	13	16	4	0	1	0	0	0
▪ Develop a plan of care/ intervention.	23	9	8	24	9	13	4	1	1	0	0	0
▪ Collaborate/work within a team	21	8	13	28	11	9	1	0	0	1	0	0
▪ Take the lead within a team.	19	7	5	30	12	17	1	0	0	1	0	0

Key: CN - Comprehensive Nursing; WH - Women's Health; PH - Psychosocial Health

4.2.2.9 Qualitative comments regarding competence

This component was analysed by means of a qualitative content analysis. Specific words used or ideas expressed were identified (Mayan, 2002). The most important areas in this part, the result were positive in maintaining team work and understanding patients' problems was the highest with 41.30%, followed by need more practice (17.39%), need core lectures (18.48%) and need guidance on research topics (14.13%). The results are indicated in Table 4.7.

Table 4.7: Students' Comments about PBL (n=42)

	Frequency	Percentage
Do well as a result of Problem-based learning		
▪ Good team work	7	7.61
▪ Develop leadership skills	4	4.35
▪ Confidence/ independence	7	7.61
▪ Understanding patient's problem	38	41.30
▪ Able to give feedback	5	5.43
Cannot do well/ would like to have learnt more		
▪ Unable to explain difficult concepts	11	11.96
▪ Need more practise	16	17.39
▪ Unable to prioritise patient's needs	6	6.52
Changes would like to see in Problem-based learning skills and processes		
▪ To be given feedback	2	2.17
▪ Briefing session	4	4.35
▪ Need core lecture	17	18.48
▪ Need guidance on research topics	13	14.13
Language barrier experienced in Problem-based learning Groups		
▪ Understand concepts explained in their own language	6	6.52
▪ Difficult to explain medical terms	12	13.04

4.3 CONCLUSION

Statistical analysis was carried out using the STATA method. The results included the level of the study, age and the courses followed in the second year, third year and fourth year. The courses studied included Comprehensive Nursing, Women's Health and Psychosocial Health.

The next chapter presents a discussion of the study findings, the limitations of the study and its recommendations.

CHAPTER FIVE

DISCUSSION OF FINDINGS, LIMITATIONS, RECOMMENDATIONS AND CONCLUSION

5.1 INTRODUCTION

This final chapter of the research report concludes the study; it presents the discussion of the findings together with the limitations of the study, conclusions and recommendations for PBL. By way of summary, the purpose of the study was to determine undergraduate nursing students' level of satisfaction with their problem-based learning course and their reported competence in learning skills and processes as a result of problem-based learning.

The objectives of the study were as follows:

- To determine nursing students' level of satisfaction with problem-based learning as reported by undergraduate nursing students in the following courses:
 - Comprehensive Nursing
 - Women's Health
 - Psychosocial Health
- To determine nursing students' feelings regarding problem-based learning, using a semantic differential scale.
- To determine nursing students' reported competence in problem-based learning skills and processes.

The main findings in relation to the study objectives are discussed in the text that follows.

5.2 DISCUSSION OF FINDINGS

The number of questionnaires that was analysed amounted to 92 and the total number of students who participated amounted to 38 (n=38).

The number of students who responded according to the level of the study, was the highest for the fourth year (42.12%; n=16) followed by the third year (28.94%; n=11) and second year (28.94%; n=11) students. The following are the number of questionnaires completed according to the courses: Comprehensive Nursing (55.43%; n=51), Psychosocial Health (23.91%; n=22) and Women's Health (20.65%; n=19).

5.2.1 Satisfaction with PBL Course

Overall, students were positive about the level of satisfaction with PBL. PBL elements that scored >90% when combining "satisfactory" and "very satisfactory" are reflected in four key results: satisfaction with facilitators' knowledge (100%), facilitators' skill (94.57%, course outline (91.30). This was followed by facilitator's attitude (83.7%) and course content (82.6%). Facilitator knowledge and skill are highly regarded for successful facilitation and keeping students motivated (Azer, 2005). On the contrary, these are also the most challenging for facilitators particularly in new PBL courses. In a study on the barriers to implementing PBL in Iran, facilitator/lecturer competence was a concern for 98% of staff (Vahidi, Azamian & Valizadeh, 2007).

Aspects of PBL that students were mostly dissatisfied with include course organization (20.65%), course content (17.39%) and teaching and learning method (20.65%). Student satisfaction with PBL as method has been an issue for most institutions globally. In a study in the Free State University after the introduction of PBL, negative feelings about PBL lack of structure, and adequacy of content were main themes that emerged (Fichardt & du Rand, 2000).

With reference to satisfaction with the PBL course according to the year of study, most senior students (third and fourth year) reported high satisfaction with course outlines, essential readings and teaching-learning method. Course organization, course content, facilitators; skills, facilitators' knowledge and facilitators' attitude were rated similarly. Senior students reported facilitator's attitude mostly in the course, Comprehensive Nursing (n=15) to be "unsatisfactory"; only two such reports were noted for Psychosocial Health. There was no evidence in the literature to support or refute this result.

Students' satisfaction according to the type of course major was reported as the highest for Comprehensive Nursing; Psychosocial Health was rated the next highest and the lowest rating was for Women's Health. This finding is different to that of Rowan, McCourt, Bick

and Beale (2007) who found students in midwifery generally to be happy with PBL facilitation. Only a few students were able to provide their comments as follows, 'PBL interesting/challenging course' (8%), 'facilitators is supportive' (4%), 'more guidance/feedback needed' (3%) and 'increases anxiety' (2%). These comments are constructive as they can be of assistance in identifying the advantages and the disadvantages of PBL in facilitating change. The benefits of PBL have been identified in various ways as promoting interaction and knowledge transferral both in the clinical setting and during tutorial sessions in small groups. The converse applies to lack of structural guidance by the facilitator and this can affect students' performance (Bruce, Klopper & Mellish, 2011).

5.2.2 Opinions and Feelings Regarding PBL

A semantic differential scale is a way of self-reporting that asks respondents to indicate their attitude towards or feeling about something (Brink, Van der Walt & Van Rensburg, 2009). The students' ratings indicated that the majority of students (60%) found PBL stimulating followed by 22.83% who were neutral about the course. More than a third of the students (34.78%) rated the course as neither easy nor difficult and 40% of students found the course to be easy. With regard to the usefulness of the PBL course the majority (64%) found course to be useful, with only 12% reported PBL to be a waste of time. The majority of students found their courses to be empowering and a small number indicated that the course was disempowering. Lastly, the students rated their PBL courses to be enlightening (61%) followed by feelings of neutrality by 22.8% and a small number found the course to be confusing (16%). The benefits of PBL as expressed by students across disciplines are supported in the literature by Alper (2008) and Roche et al (2003) for Medical students and by Seymour (2013) and Komwendo and Tornquist (2001) for Occupational Therapy students.

According to the year of study, the second years were mostly neutral while the senior (third and fourth years) reported positive feeling, indicating the level of understanding the PBL approach. The senior students rated the course as 'stimulating', 'very easy', 'useful', 'empowering' and 'enlightening'. The lowest score for all the level of the study was negative as indicated by responses of 'boring', 'very difficult', 'waste of time', 'disempowering' and 'confusing'. The responses indicated that the more senior the students the greater their level of development and understanding of PBL. In this component students were able to do self evaluation and reflect on their experiences, indicating that PBL encourages students to be active and to reflect on the knowledge and experiences gained

(Gabr & Mahomed, 2011). This finding is similar to that of Lack (2009) who conducted a study on PBL tutorial performance in the same study context.

5.2.3 Competence in PBL Skills and Processes

The majority of responses showed high (“I am sure I can do this”) to moderately, high (“I think can do this”) level of certainty of their competence in PBL. Mostly, students were certain of their ability/competence in identifying key health issues (54%), accessing literature/ evidence (53%) and choosing appropriate resources (60%). A small number (n=6) of senior students, however, reported uncertainty in their competence to identify key issues (problems) in the community and to generate hypotheses for their problems. This skill, together with the ability to prioritise what is important for patients, is important for problem-solving. According to (Jonassen, 2011), there are several factors in a PBL context that affect problem-solving. Some of these include learning prior knowledge, cognitive style, reasoning ability and many more (Jonassen, 2011) and might require further exploration. The result indicates the positive effect and the influence PBL strategy has on the students’, competence (Gabr & Mahomed, 2011).

It is of concern to note that only senior students reported uncertainty (I don’t think I can do this) about their ability to access and use literature/evidence (16.3%) and to use these for planning and implementing patient care (17.3%). This result is supported by students’ expression of need for “further practice” in their qualitative responses. However, in a study by Lack (2009) senior students were found to be more competent in learning processes and skills in PBL than their junior counterparts. Latest research in an undergraduate chemistry course also shows that students’ levels of accessing and using literature and knowledge improves as a result of PBL (Tosun and Taskesenligil, 2013).

The overall responses from participants regarding the open-ended questions related to problem-based learning were as follows:

What participants can do well as a result of problem-based learning:

The students’ comments were positive, as it was indicated that they have a better understanding of patients’ problems and can work well in a team. PBL is a team-based approach to create knowledge for the members and for itself as a system (Chaves, et. al, 2006; Seymour, 2013); this result is therefore supported.

What participants cannot do well/would like to have learnt more about:

The students reportedly are ‘unable to explain difficult concepts’, ‘need more clarity’ and ‘unable to prioritise’; all of these are identified as being disadvantages of PBL. These responses may point to several factors, i.e. PBL demands on students, lack of commitment and resources etc. (Bruce et. al., 2011; Vahidi et. al., 2007).

Changes that respondents would like to see in skills and processes related to problem-based learning:

The students’ response was that there was a need for core lectures, better guidance, feedback and briefing sessions. If these are lacking it can cause anxiety and stress for the students. The facilitator for the PBL session needs to clarify these aspects for the students as these components can affect students’ performance. Further, the combining of methods by the inclusion of lectures were also expressed by midwifery students in a UK-based study (Rowan et al., 2007). This is worthwhile as a basis to recommend lectures to augment PBL sessions.

Language barriers experienced in problem-based learning groups:

The students’ response was ‘understands concepts explained in their own language’ and ‘difficult to understand medical terms’. A small percentage responded and this can be addressed by evaluating whether the students understand what is expected from them in tutorial lectures. From the qualitative responses the student did not appear to experience any language barriers in their learning groups.

5.3 LIMITATIONS

The limitations of this study were as follows:

- Sample size was limited so findings cannot be generalised to similar contexts.
- Many open-ended questionnaires were returned without a responses or comment; this limited the extent of the response and data saturation was not likely to be achieved.
- This is a self report-study and as such, the results are not a direct measure of students’ competence in skills and processes related to PBL

- Although the tool is primarily a course evaluation tool it should be subjected to reliability testing for future research purposes.

5.4 **RECOMMENDATIONS**

The recommendations of this study are as follows:

For future research:

The study needs to be expanded to include other universities where problem-based learning is utilised. By comparing and correlating self-report data with actual assessment data may enhance the usefulness of future study results.

For nursing education:

The use of core lectures related to PBL problems must be strengthened to help students understand difficult concepts better and to improve their understanding of professional core and the development of care plans.

Identifying key issues in problems; hypothesis generation, access to a use of information must be better supported in PBL; it is recommended that focussed training for facilitators and students be explored. All of these ultimately affects problem-solving. Also, that paper problems be reviewed to ensure that they are sufficiently open-ended to enable problem-solving.

It is further recommended that “practise opportunities” be revisited for adequacy and relevance to meet the students learning needs and skills development in PBL.

5.5 **CONCLUSION**

Problem-based learning is an important tool for the development of caring health professionals who will be able to identify the health of patients’ problem-solve as well as develop and implement problem- oriented nursing care plans. It may be concluded from this study that this sample of nursing students are overall satisfied with elements of the PBL course as far as they relate to organizational aspects, facilitator expertise and quality of facilitation. Senior students reported higher levels of satisfaction with PBL and expressed greater certainty about their competence in skills and processes as a result of PBL.

On probing their competence qualitatively, it may be concluded that students feel competent in really understanding their patients' problems and that more core lectures, opportunities to practice and guidance in research will enhance their competence. These are what students would like to see changed in their PBL course in the future.

BIBLIOGRAPHY

- Alper A. 2008. Attitudes toward problem based learning in a new Turkish medicine curriculum. *World Applied Sciences Journal* 4(6): 830-836.
- Azer SA. 2005 Challenges facing PBL tutors: 12 tips for successful group facilitation. *Medical Teacher* 27(8); 676-681.
- Becker S, Viljoen MJ, Botma Y & Bester IJ. 2003. Integration of study material in the Problem-Based Learning material in the Problem-Based Learning method. *Curation* 26(1): 57-70.
- Brink H, van der Walt C & van Rensburg G. 2009. Fundamentals of Methodology for Health Care Professionals. 6th Impression. Landowne. Juta & Co,
- Bruce JC, Kloppe HC & Mellish JM. 2011 Teaching and Learning the Practice of Nursing. 5th ed. Pietermaritzburg, Heinemann.
- Bruce JC, & Lack ML. 2009. Using subject judgement to determine the validity of a tutorial performance evaluation instrument. *Health South Africa Gesondheid* 14(1): 7-12.
- Burns N & Grove SK. 2001. *The Practice of Nursing Research*. 4th ed. Philadelphia. W.B. Saunders Company.
- Chaves J, Baker C, Chaves JA & Fisher ML. 2006. Self, Peer and Tutor Assessments of MSN Competencies using PBL-Evaluator. *Journal of Nursing Education* 45(1): 25-31.
- Cheung RY & Au TK. 2011. Nursing Students' Anxiety and Clinical Performance. *Journal of Nursing Education* 50(6): 286-288.
- De Young S. 2009. Teaching Strategies for Nurse Educators. 2nd ed. Canada. Pearson Education.
- Dubois D. 1998. The competency casebook. Amherst, MA: HRD & Silver Spring MD, International Society for Performance Improvement.
- Encarta World English Dictionary. 2009. [Http://enrta.msnint.com/nlank.htm](http://enrta.msnint.com/nlank.htm). Accessed 27 November 2009.
- Fichardt AE and du Rand PP. 2000. Facilitators' perceptions of problem-based learning and community-based education. *Health SA Gesondheid* 5(2): 3-10.
- Gabr H & Mahomed N. 2011. Effect of Problem-Based Learning on Undergraduate Nursing Students Enrolled in Nursing Administration Course. *International Journal of Academic Research* 3(1): 154-162.
- Giddens JF & Brady DP. 2007 Rescuing Nursing Education from Content Saturation: The Case for a Concept-Based Curriculum. *Journal of Nursing Education* 46(2): 65-68.
- Gwele N, McInerney P, van Rhyn L, Uys LR & Tanga T. 2003. Selected Outcomes of Community-Orientated, Problem-Based Nursing Programmes in South Africa. *Curationis* 26(3): 21-31.

- Hmelo-Silva CE & Barrow HS. 2006. Goals and Strategies of a Problem-Based Learning Facilitation. *Interdisciplinary Journal of Problem-Based Learning* 1: 21-39.
- Hmelo-Silver CE, Duncan R & Chinn CA. 2007. Scaffolding and Achievement in Problem-Based and Inquiry Learning. *Educational Psychologist* 42(2): 99-107.
- Hornby AS. 2005. Oxford Dictionary. 7th Edition. International Student Edition.
- Hodges HF. 2011. Preparing New Nurses with Complexity Science and Problem-Based Learning . *Journal of Nursing Education* 50(1): 7- 12.
- Jonassen D. 2011. Supporting problem solving in PBL. Interdisciplinary. *Journal of Problem-Based Learning* 5(2): 95-119.
- Kamwendo K & Törnquist K. 2001. Do occupational therapy and physiotherapy students care about research? A survey of perceptions and attitudes to research. *Scandinavian Journal of Caring Sciences* 15(4): 295-302.
- Kovach Computer Services Anglesey, Wales, Modification www.kovcomp.co.uk/support/XL.Tul/semantic-differential-hart.html. Accessed 10 May 2012.
- Lack ML. 2009. Instrument validation and evaluation of problem-based learning tutorial performance of undergraduate nursing students (Dissertation). University of the Witwatersrand, Johannesburg
- Mayan MJ. 2001. An Introduction to Qualitative Method: A Training Module for Students and Professionals. Amazon. University of Alberta Press.
- McParland M, Noble LM & Livingstone G. 2004. The effectiveness of Problem-Based Learning compared to traditional Teaching in undergraduate psychiatry. *Medical Education* 38: 859-867..
- Merrill J. 2007. A Task-Centred Instructional Strategy. *Journal of Research on Technology in Education* 40(1): 33-55.
- Moeti MR, van Niekerk S & Velden C. 2004. Perception of Clinical Competence of Newly Registered Nurse in the North West Province. *Curationis* 21(3): 72-83.
- Mogale NM & Botes AC, 2001 Problem- based case study to enhance critical thinking in student nurses. *Curationis* 24(3): 27-35.
- Morton PG, Fontaine DK, Hudak CM & Gallo BM. 2005. Critical Care Nursing: A Holistic Approach. 8th ed. United State of America. Lippincott William & Wilkins.
- Muller M. 2003. *Nursing Dynamics*. 3th ed, Cape Town. Heinemann.
- Nkosi ZZ & Uys LR. 2005 . A Comparative Study of Professional Competence of Nurses who have completed Different Bridging Programmes. *Curationis* 28(1): 6-12.
- Olerup A. 2006. Student and teacher satisfaction survey: Faculty of Medicine. Lund University, Sweden.
- Pera SA & van Tonder S. 2008. Ethics in Health. 2nd ed. Pretoria.Juta Academic.

- Policy plus evidence, Issues and opinions in health 2009. www.ac.uk/school/nursing/nnru/polic.
- Polit D & Beck CT. 2008. Nursing Research: Generating and Assessing Evidence for Nursing Practice. Wolters & Kluwer.
- Rafferty M & Lindell D. 2011. How Nursing Managers Rate the Clinical Competencies of Accelerated (second degree) Graduates. *Journal of Nursing Education* 50(6): 355-357.
- Roche WP 3rd, Scheetz AP, Dane FC, Parish DC & O'Shea JT. 2003. Medical students' attitudes in a PBL curriculum: trust, altruism, and cynicism. *Academic Medicine* 78(4):398-402.
- Rossouw D. 2003. Intellectual Tools and Skills for the human sciences. 1st ed. Cape Town. Van Schaik.
- Rowan CJ, McCourt C, Bick D & Beale S. 2007. Problem-based learning in midwifery: The teachers perspective. *Nurse Education Today* 27: 131-138.
- Schmidt HG. 1983. Problem-Based Learning: Rationale and description: *Medicine Education* 17: 11-16.
- Seymour A. 2013. A qualitative investigation into how problem-based learning impacts on the development of team-working skills in occupational therapy students. *Journal of Further and Higher Education* 37(1): 1-20.
- Steyn GM & van Niekerk EJ. 2008. Human Resource Management in Education. 2nd ed. Cape Town. ABC Press.
- Sui HM, Laschinger HKS & Vingilis E. 2005. The Effect of Problem-Based Learning on Nursing Students' Perception of Empowerment. *Journal of Nursing Education* 44(10): 459-461.
- Tang F, Chou S & Chiang H. 2005. Students' Perceptions of Effective and Ineffective Clinical Instruction. *Journal of Nursing Education* 44(4): 187-192.
- Teodorescu T. 2006. Competence versus Competency. What is the difference? *Performance Improvement* 45(10): 27-30.
- Tosun C & Taskesenligil Y. 2013. The effects of problem-based learning on undergraduate students' learning about solutions and their physical properties and scientific processing skills. *Chemistry Education Research and Practice* 14(1): 36-50.
- Urden LD, Stacy KM & Lough ME. 2006. Thelan's Critical Care Nursing Diagnosis and Management. 5th ed. Mosby Elsevier United States of America.
- Ustun B. 2006. Communication Skills Training as Part of a Problem- Based Learning Curriculum. *Journal of Nursing Education* 45(10): 421-424.
- Uys LR, Gwele NS, van Rhyn L & Tanga T. 2003. The Competence of Nursing Graduates from Problem-Based programmes in South Africa. *Journal of Nursing Education* 43(8): 352-361.
- Vahidi RG, Azamien A & Valizadeh S. 2007. Opinions of an Iranian nursing faculty on barriers to implementing PBL. *Eastern Mediterranean Health Journal* 13(1): 193-196.

Vasuthevan S, Viljoen M. 2003. Education For Better Health A Handbook for Health Professional. Lansdowne. Juta.

Wood DF. 2003. ABC of Learning and Teaching in Medicine: Problem-Based Learning. *British Medical Journal* 326: 328-330.

ANNEXURE A

- **STUDENT QUESTIONNAIRE**

STUDENT QUESTIONNAIRE

INSTRUCTIONS

Please respond to the statements/ questions below by marking with an X where indicated.

PART A: DEMOGRAPHIC DATA

RESPOND TO EACH OF THE FOLLOWING by placing an (X) in the appropriate box:

LEVEL OF STUDY:

Second year	
Third year	
Fourth year	

COURSE:

Comprehensive Nursing	
Women's Health	
Psychosocial Health	

AGE GROUP:

18-28	
-------	--

PART B: PROBLEM BASED LEARNING DATA

RATE EACH OF THE FOLLOWING by placing an (X) in the appropriate box

	Very Unsatisfactory	Unsatisfactory	Satisfactory	Very Satisfactory
▪ Course outline				
▪ Essential reading				
▪ Course organization				
▪ Course content				
▪ Teaching-learning method				
▪ Facilitator's skill				
▪ Facilitator's knowledge				
▪ Facilitator's attitude				

Please add your comments:

GIVE YOUR OPINION OF THE PROBLEM-BASED LEARNING COURSE by making a cross (X) at the place on the line that corresponds to your opinion.

	3	2	1	0	1	2	3	
Stimulating								Boring
Very easy								Very difficult
Useful								Waste of time
Empowering								Disempowering
Enlightens								Confusing

RATE YOUR COMPETENCE in each of the following skills and processes as a result of **Problem -Based Learning**.

	I <u>am sure</u> I can do this	I <u>think</u> can do this	I <u>don't think</u> I can do this	I <u>am sure</u> I cannot do this
▪ Identify key issues in a patient/ community				
▪ Define/ formulate the health problem/issue				
▪ Generate hypothesis/ explanations for problems				
▪ Prioritise what is important for the patient/ community				
▪ Identify what I need to learn				
▪ Access relevant literature/ evidence				
▪ Choose resources to obtain information/ evidence				
▪ Integrate information into nursing care				
▪ Decide on best options for the patient/ community				
▪ Develop a plan of care/ intervention.				
▪ Collaborate/ work within a team				
▪ Take the lead within a team.				

Please add what you can do well as a result of Problem-Based Learning.

Please add what you cannot do well/would like to have learnt more about.

What changes would you like to see in Problem-based learning to improve your learning skills and processes.

Please add any comments about language barriers you have experienced in Problem-based learning.

THANK YOU FOR PARTICIPATING

ANNEXURE B

- **APPROVAL OF CHANGE OF TITLE OF THE STUDY**



Faculty of Health Sciences
Medical School, 7 York Road, Parktown, 2193
Fax: (011) 717-2119
Tel: (011)717-2075/6

Reference: Ms Tania van Leeve
E-mail: tania.vanleeve@wits.ac.za
30 April 2010
Person No: 9301627K
TAA

Ms NM Bomvana
P O Box 388
Orlando
1804
South Africa

Dear Ms Bomvana

Master of Science in Nursing: Change of title of research

I am pleased to inform you that the following change of title of your research report for the degree of **Master of Science in Nursing** has been approved:

FROM: A self - report of university nursing students' opinion of and perceived competencies as a result of Problem-Based Learning.

TO: A self report of University nursing students' competence in learning skills and processes as a result of problem-based learning.

Yours sincerely

A handwritten signature in cursive script, appearing to read "Sandra Benn".

Mrs Sandra Benn
Faculty Registrar
Faculty of Health Sciences

ANNEXURE C

- **ETHICAL CLEARANCE**

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG
Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
R14/49 Mrs Nthabiseng M Bomvana

CLEARANCE CERTIFICATE

M10108

PROJECT

A Self Report of University Nursing Students' Competence in Learning Skills and Processes as a Result of Problem-Based Learning

INVESTIGATORS

Mrs Nthabiseng M Bomvana.

DEPARTMENT

Department of Nursing Education

DATE CONSIDERED

29/01/2010

DECISION OF THE COMMITTEE*

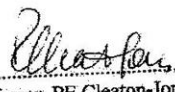
Approved unconditionally

Unless otherwise specified this ethical clearance is valid for 5 years and may be renewed upon application.

DATE

24/06/2010

CHAIRPERSON


(Professor PE Cleaton-Jones)

*Guidelines for written 'informed consent' attached where applicable
cc: Supervisor : Prof J Bruce

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and ONE COPY returned to the Secretary at Room 10004, 10th Floor, Senate House, University.
I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to a completion of a yearly progress report.**

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES...

ANNEXURE D

- **APPROVAL FROM THERAPEUTIC SCIENCE, FACULTY OF HEALTH SCIENCE**

Prof A. Rothberg
Head of the School of Therapeutic Science
Faculty of Health Sciences
University of the Witwatersrand
Johannesburg.

Dear Prof A. Rothberg

**RE: REQUEST TO CONDUCT A RESEARCH STUDY IN THE DEPARTMENT OF
NURSING EDUCATION UNIVERSITY OF THE WITWATERSRAND.**

I am a Masters student at the University of the Witwatersrand in the Department of Nursing Education. As part of my studies I am conducting a study on nursing students' opinion of and perceived competencies as a result of Problem -Based Learning. Results of the study will assist the department to develop strategies to review the curriculum design. For the teachers and the students appropriate course evaluation feedback is important, for improvement in order to provide information about which measure have been taken with regard to findings from previous course evaluations.

I would like to conduct the study on the current (2010) nursing students enrolled for Bachelor of Nursing at the University of the Witwatersrand. Data will be collected using a structured instrument. Participation will be entirely voluntarily, students may withdraw from completing the questionnaire without penalty.

Should you require any further information please do not hesitate to contact me at: Tel: (011) 462- 4765 or cell: 084 600 3346 or Email: 93016271K@ students.wits.ac.za

Yours sincerely

Maureen Bomvana


Approved
28/4/10

ANNEXURE E

- **PARTICIPANTS INFORMATION SHEET AND CONSENT FORM**

Participants' Information Sheet & Consent Form

Dear prospective participant

I am a Masters student in the Department of Nursing Education at the University of the Witwatersrand. As part of my studies I am required to conduct a study on nursing students' competence in learning skills and processes as a result of problem-based learning.

The findings of the study are important as they will help the Department develop strategies in curriculum design that will meet the expected level of competence as well as the needs of students. Your input is thus important.

I would like to request your participation in the study which will take place in November 2009. If you agree to participate you will be required to fill in a questionnaire which will take approximately 20 minutes to complete. Once completed please place the questionnaire in the envelope provided and hand it to your course coordinator.

Should you decide not to participate or should you withdraw from the study at any time, it will not affect your performance or relationship with the Department in any way. Information obtained will be confidential; your name and any identifying characteristics will not be divulged. Should you require any further information, kindly contact me:'

Tel phone: 011 462- 4765

Cell phone: 084 600 3346

Email: 93016271K@students.wits.ac.za

Yours sincerely

Maureen Bomvana

I have read and understand the contents of the letter and wish to participate voluntarily in the study.

Participant's signature:_____ date _____

I have explained the study to the participant and sought his/her understanding of informed consent.

Researcher's signature:_____ date _____

A self-report of university nursing students' opinion of and perceived competencies as a result of problem -based learning.

N.M. Bomvana

Student number: 93016271K

Supervisor: Prof J. Bruce