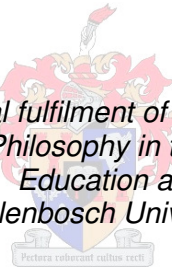


Exploring the potential theory-practice gap in the teaching methods of nurse educators

by
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Master of Philosophy in the Faculty of
Education at
Stellenbosch University*



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DECLARATION

By submitting this thesis electronically, I declare that the entirety of the work contained therein is my own original work, that I am the authorship owner thereof (unless to the extent explicitly otherwise stated) and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

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Date:

SUMMARY

The lack of theory-practice integration has a long-standing history in nursing education due to many factors and causes. It is continuously indicated in research studies that there is no easy or perfect solution. The causes for this theory-practice gap seem to be in the theoretical and/or clinical environment. In literature teaching methods are identified as one of the most important causes of the theory-practice gap.

In view of the informal feedback received from nurse educators and nursing managers it was necessary to investigate the lack of theory-practice integration. The aim of the study was thus to explore in which respects current teaching methods utilised by nurse educators at a higher education institution comply or do not comply with teaching methods suggested in literature as essential for theory-practice integration.

An exploratory descriptive research design was used to investigate the nature of the teaching methods utilised by nurse educators facilitating theoretical learning. Questionnaires were sent to nurse educators and student nurses registered for the Diploma in General Nursing Science programme. The questionnaire that mainly consisted of closed questions was used to collect and analyse the data. The data were generated at four learning sites of a higher education institution. The validity of the results was verified by an observer in the field for which a structured checklist was used.

Results indicated that a wide spectrum of teaching methods were utilised by the nurse educators and that the student nurses had limited internet access at the learning centres. Eight (8) teaching methods, complying with teaching methods identified by literature as essential to enhance theory-practice integration, were used. However, it was evident that formal lectures were overused. It raises concerns as this method does not comply with teaching methods essential to enhance theory-practice integration. In fact, it limits the students' ability to develop critical thinking and is seen as one of the possible causes of the theory-practice gap. Feedback relating to the teaching aids used showed that the data projector with PowerPoint slides, whiteboard and textbooks were the three teaching aids used most frequently. According to literature, the overuse of textbooks is generally viewed as the starting point of the theory-practice gap.

The results of this study imply that an increased awareness and training of nurse educators regarding their teaching methods may increase their teaching and facilitation skills. It seems to be the nurse educator's responsibility to ensure that teaching methods are used that are essential to enhance theory-practice integration and it is the responsibility of management at any higher educational institution to ensure that the necessary educational and information technology resources are available. It is recommended that further studies be conducted to determine whether nurse educators do indeed apply the teaching methods effectively to narrow the theory-practice gap.

OPSOMMING

Die gebrek aan teorie-praktyk integrasie in verpleegkunde het 'n lang gekiedenis in verpleegonderwys as gevolg van verskeie faktore en oorsake. Navorsing toon deurgaans dat daar nie 'n maklike of perfekte oplossing vir hierdie probleem is nie. Die oorsake vir die teorie-praktyk gaping kan teoretiese en/of klinies van aard wees. Onderrigmetodes word deur navorsing as een van die belangrikste oorsake vir die teorie-praktyk gaping aangedui.

Die informele terugvoer van dosente en verpleegdiensbestuurders het getoon dat teorie- en praktyk integrasie nie voldoende is nie. Dit was dus noodsaaklik om die onderrigmetodes van dosente in verpleegkunde te ondersoek. Die doel van die studie was om te bepaal tot watter mate die huidige onderrigmetodes van die dosente wat verbonde is aan 'n hoër onderrig instelling voldoen of nie voldoen nie aan onderrigmetodes wat in literatuur aangedui word as essensieël vir die bevordering van teorie-praktyk integrasie.

In hierdie studie is beskrywende en ondersoekende navorsingsmetodes gebruik om die onderrigmetodes van die dosente in verpleegkunde te ondersoek. Vraelyste is uitgestuur na dosente en student-verpleegkundiges wat besig is met die Diploma in Algemene Verpleegkunde. Die vraelys, wat hoofsaaklik geslote vrae bevat het, is gebruik om die nodige data te versamel en te analiseer. Die data is by vier van die hoër onderrig instellings se leersentrums versamel. Die geldigheid van die resultate is geverifieër deur 'n waarnemer in die veld wat 'n gestruktureerde kontrolelys vir hierdie doel gebruik het.

Die resultate het getoon dat 'n wye spektrum van onderrigmetodes deur die dosente in verpleegkunde gebruik is en dat die student verpleegkundiges beperkte internet toegang by die leersentrums het. Van die literatuur geïdentifiseerde onderrigmetodes wat as essensieël vir die bevordering van teorie-praktyk integrasie is, het die dosente agt (8) metodes gebruik. Dit was duidelik dat formele lesings grootliks oorbenut is. Dit is kommerwekkend aangesien die lesingmetode nie voldoen aan die onderrigmetodes wat essensieël is vir die bevordering van teorie-praktyk integrasie nie. Inteendeel, die metode beperk studente se vermoë om kritiese denke te ontwikkel en word beskou as een van die moontlike oorsake vir die teorie-praktyk gaping. Die resultate het verder getoon dat die meeste onderrighulpmiddels wat gebruik is, is die data-projektor met PowerPoint skyfies, die witbord en handboeke. Die oorbenutting van handboeke word algemeen in literatuur beskou as die beginpunt van die teorie-praktyk gaping.

Die studieresultate impliseer dat 'n toenemende bewusmaking en opleiding van die dosente in verpleegkunde ten opsigte van hul onderrigmetodes moontlik onderrig- en fasiliteringsvaardighede kan bevorder. Dit blyk dat dit individuele dosente se verantwoordelikheid is om te verseker dat die essensiële onderrigmetodes vir die bevordering van teorie-praktyk integrasie gebruik word en dit is die bestuur van enige hoër onderrig instelling se verantwoordelikheid om te verseker dat die nodige opvoedkundige- en informasietegnologie beskikbaar is. Dit word aanbeveel dat verdere studies gedoen word om vas te stel of dosente in verpleegkunde onderrigmetodes effektief aanwend ten einde die teorie-praktyk gaping te verklein.

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LIST OF ABBREVIATIONS AND ACRONYMS

CHE	Council on Higher Education
CT	Critical thinking
DGNS	Diploma in General Nursing Science
DHET	Department of Higher Education and Training
EL	Experiential learning
EBP	Evidence-based practice
HEI	Higher Education Institution
NPBL	Non-problem-based learning
OBE	Outcomes-based education
PBL	Problem-based learning
PS	Problem-solving
RL	Reflective learning
SANC	South African Nursing Council
SAQA	South African Qualifications Authority
SDL	Self-directed learning

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CHAPTER 1

ORIENTATION TO THE STUDY

1.1 INTRODUCTION

The main aim of professional education in professions such as teaching, the legal field, medicine and other health-related careers - for example in nursing - is to produce skilled and competent professional practitioners who are able to apply theoretical knowledge and skills in the workplace once they have completed their studies. Furthermore, attitudes, values, moral integrity and skills such as the capacity to make informed decisions and judgements are often preferred to be based on solid theoretical bases (Mellish, Brink & Paton, 1998:6; Cooper, 2003:89; Gwee, 2009:231; Ribeiro, 2011:1).

A literature search on professional education revealed a common concern that the education and training of students in various professional fields such as teaching, medicine, legal education, engineering and air pilot training seems to fall short on how to integrate theory and practice and thus afford professionals to function as competent skilled practitioners in the workplace (Cooper, 2003:51; Gaba, 2004: i2; Quinn & Hughes, 2007:354; Gwee, 2009:238; Ribeiro, 2011:1). It seems that in all these fields of education and training, the students' ability to integrate theory and practice is a source of concern. Cooper (2003:51) as well as Hattingh and Killen (2003:3) point out that this concern has been raised for many years and is not a newly identified or recently encountered problem. Indeed, in the healthcare field, studies as far back as the early nineties indicated that student nurses, nurse educators, and nurse practitioners have been sharing the same concern, namely that a gap exists between theory and practice. Although most students may have sufficient theoretical knowledge they are apparently unable to implement it in practice and integrate their knowledge with their practical skills (Jarvis, 1992:258; Ferguson & Jinks, 1994:687; Greenwood & Winifreyda, 1995:184; Hewison & Wildman, 1996:754; Magginis & Croxon, 2010:2).

In nursing education the integration of theory and practice is a valid and worrying concern. Nursing education significantly involves a combination of theory and practice and requires an integration of the two components (Jarvis, 1992:258; Morgan 2006:155; Magginis & Croxon, 2010:2). In this regard, the nurse educators at the Higher Education Institution (HEI) and the nursing managers at the hospitals concurred. They were of the opinion that student nurses who had successfully

completed their studies seem to be unable to integrate the knowledge they had acquired within the clinical reality of the patient. This observation draws attention to the importance of Meyer and Van Niekerk's (2008:81) statement that "the inability of nurses to apply theoretical concepts in the planning and execution of patient care is a general phenomenon in nursing".

According to McCaugherty (1991a:1061) and Ferguson and Jinks (1994:693), a theory-practice gap may exist because student nurses experience learning from a theoretical as well as a clinical perspective since they are constantly moving between the classroom (knowledge) and the different nursing units (practical). Each of these domains has its own characteristics; subsequently each poses different challenges for the students' understanding and integration of theory and practice.

Numerous studies have investigated the causes of the so-called 'theory-practice' gap (Ajani & Moez, 2011:3927; Cook, 1991:1462; Corlett, Palfreyman, Staines & Marr, 2003:183; Dale, 1994:521; Ferguson & Jinks, 1994:687; Hewison & Wildman, 1996:754; McCaugherty, 1991a:10551; Upton, 1999:549). The findings revealed that an understanding of the theory and principles of nursing do not guarantee the application thereof in patient care. Being taught how to do a physical examination, for example, may be easier and simpler than putting it into practice in a clinical environment where one faces other challenges as well; challenges such as staff shortages, difficult patients, time constraints and compiling specific individualised care plans for patients with complex health problems. Herein lays the potential gap and the challenge to narrow or close it.

McCaugherty (1991a:1056) believes that the notion of a symbol-object dichotomy (textbooks) and teacher-centred approach may also be a cause for the gap. Probably the most logical place then to search for the theory-practice problem is among educators, the learning content, teaching methods, and the curriculum design itself (McCaugherty, 1991a:1056). Rafferty, Allcock and Lathlean (1996:685) also wrote that various solutions had been introduced in an effort to narrow this gap, but with only partial success. McCaugherty (1991b:541) emphasised that nurse educators and their teaching methods do play a crucial role in the integration of theory and practice. It was proposed that a multidimensional student-centred model emphasising the utilisation of a variety of innovative teaching and learning methods that builds on the students' pre-knowledge and clinical experience and encourages interactive student participation thereby fostering their problem-solving, decision making, critical thinking skills and meaningful learning, would address the problem (Ferguson & Jinks, 1994:691; Distler, 2007:56; Meyer & Van Niekerk, 2008:81; Chang, Chang, Kuo, Yang & Chou, 2011:3224).

Through the literature review it became evident to the researcher that nursing education has changed from the traditional teacher-centred approach to a student-centred approach. This approach requires the implementation of different teaching and learning approaches, strategies and methods. Over the years, the role of the nurse practitioner also became more complex and required more critical thinking and clinical judgment skills to fully enable the nurse practitioner to provide professional and safe patient care. This placed more pressure on the higher education sector to consider new teaching and learning approaches, strategies and methods. This, in turn, implied the nurse educator had to, and still now have to, adapt to the current teaching methods to facilitate critical thinking, a skill which seems to be crucial for student nurses to integrate theory to practice (Landers, 2000:1555).

It is therefore essential for nurse educators to have the necessary educational knowledge and experience to select and utilise the appropriate teaching methods in the classroom to enhance the integration of theory to practice. It is the responsibility of nursing education institutions to meet their clients' (student nurses and nursing managers) expectations by developing competent nurse practitioners who are able to apply theoretical knowledge to provide professional and safe patient care in their practices.

1.2 BACKGROUND AND PROBLEM DESCRIPTION

This study was conducted in the teaching-learning environment of a higher education institution responsible for nursing education. Informal feedback received from the nursing managers of the hospitals accredited as clinical facilities of the HEI where the study was done implied that student nurses who had recently completed their studies were unable to integrate theory and practice successfully. They were unable to effectively apply theoretical concepts in the planning and implementation of patient care. It was observed that newly qualified nurses experienced the same problem, because they were often unable to make theory-informed decisions regarding patient-related problems and patient care.

These nursing managers from the hospitals associated with the HEI raised their concerns about nurse practitioners and student nurses being unable to effectively assess patients' health, analyse this data, make decisions regarding patient care, and formulate effective nursing care plans. The patients' clinical record was not completed with insight. Equally important, the nurse educators expressed the same concern about the student nurses' apparent inability to apply theoretical

knowledge to practice. Meyer and Van Niekerk (2008:17) stipulate that nurses must be able to “identify and solve problems, and show responsible decision making skills by means of critical and creative thinking”. Critical and creative thinking plays an important role in the ability of student nurses and nurse practitioners to identify and solve problems and make sound decisions (Chang *et al.*, 2011:3224).

Critical thinking ability seems to have a positive correlation with theory-practice integration. Popil (2011:204) states that it is essential for bridging the gap between theory and practice. It is therefore important that students are assisted to develop this skill. Certain active student-centred teaching methods such as problem-based/problem-solving activities, case study discussions, project work, and the utilisation of the nursing process as teaching method enhance critical thinking, problem-solving, and decision-making skills (Popil, 2011:205; Ferguson & Jinks, 1994: 692; Sedlak & Ludwick, 1996:19). These skills are important to effectively apply theoretical concepts in the planning, implementation and evaluation of patient care, thus linking theory to practice. It seems important that nurse educators give students the opportunity to link theory to practice by utilising active student-centred teaching methods that enhance the integration of theory and practice when facilitating learning (Popil, 2011: 207).

In view of the informal feedback received from nursing managers and nurse educators that student nurses and qualified nurse practitioners were unable to integrate theoretical knowledge into practice, it was essential to explore the nature of the current teaching methods utilised by the nurse educators. It was important to determine whether the teaching methods used were effective and in accordance with the teaching methods found in literature that renders successful theory-practice integration outcomes.

1.3 RESEARCH QUESTION

Against the background of the preceding broad problem description the primary research question for this project was formulated as follows:

Do nurse educators use teaching methods which enhance the closing of the potential theory-practice gap in a nursing education programme?

This question was explored by posing and answering the following two subsidiary questions:

- i. What current teaching methods are used by nurse educators to teach theoretical knowledge in a selected nursing education programme?
- ii. Do the teaching methods of nurse educators comply with teaching methods identified by literature as essential for enhancing theory-practice integration?

1.4 PROBLEM STATEMENT

It seemed as if the theoretical teaching methods currently utilised by the HEI nurse educators to facilitate learning in the classrooms are not sufficiently effective to contribute to the enhancement of an integration of theory and practice. If such failure or weakness does exist, it may cause problems for the effectiveness of training programmes and its practical outcomes.

1.5 AIM OF THE STUDY

The aim of this study was to explore in which respects current teaching methods utilised by nurse educators at the HEI comply or do not comply with teaching methods essential for theory-practice integration in an outcomes-based nursing education programme.

1.6 STUDY OBJECTIVES

The objectives set for this study were:

- i. to establish which teaching methods nurse educators currently use in classrooms

- ii. to establish whether the teaching methods used by nurse educators comply or do not comply with the teaching methods identified by literature as essential methods to enhance theory-practice integration.

1.7 RESEARCH DESIGN AND METHODOLOGY

1.7.1 Research design

For the purpose of this study an exploratory and descriptive research design was used to explore the nature of the teaching methods utilised by nurse educators facilitating theoretical learning for the Diploma in General Nursing Science (DGNS) students at the HEI. The findings from the data were compared to those teaching methods found in literature to be effective and which productively integrated theoretical knowledge and practical skills in nursing education. The research generated data on the teaching experiences of nurse educators who facilitated learning of students enrolled in the two-year DGNS at the HEI and focussed on:

- i. learning experiences of students in the DGNS
- ii. the teaching methods of nurse educators' in the DGNS.

1.7.2 Study population

The study population considered for participation in this study comprised of two groups. The one group constituted nurse educators (N=26) who facilitated theoretical learning for the DGNS students. The second group consisted of all first- and second-year nursing students (N=214) who were registered for the two-year DGNS programme.

1.7.3 Sampling

A non-probability convenience sampling method was used to select the nurse educators (n=24) and nursing students (n=209) for the questionnaire survey (Brink, 2006:132; Maree, 2007:177; Polit & Beck, 2012:276). The participants were readily and conveniently available. The non-probability convenience sampling method was considered useful in this exploratory study because the researcher was interested in getting an estimate of the current situation. Furthermore, only a few respondents were needed for the pilot run (Brink, 2006:132; Maree, 2007:177).

This study included two samples, namely the nurse educators who facilitated theoretical learning for the DGNS programme and the student nurses in the DGNS programme. Twenty-six nurse educators and 214 student nurses were invited to participate in the study. The sample size of each group was determined by the number of completed useable questionnaires the researcher received back. Twenty-four nurse educators and 210 student nurses completed the questionnaire (209 completed and one incomplete).

1.7.4 Data collection method and instrument

Quantitative data were collected by means of researcher-designed and self-administered questionnaires that consisted of closed- and open-ended questions. These were distributed to the managers at the different HEI education/training sites via email. The managers of the learning centres provided the nurse educators and nursing diploma students with printed copies of the questionnaires to complete at the HEI learning centres. The data obtained from the respondents were kept confidential at all times, the respondents' anonymity was maintained throughout the study process and all the respondents signed an informed consent form to demonstrate their voluntary participation in the study (Brink, 2006:143).

A group consisting of a senior nurse educator and a senior training and development specialist (who each hold a master's degree in the higher education and nursing field respectively) at the HEI, the statistician and the research specialist from the Stellenbosch University reviewed the questionnaires for face and content validity. This was done before a pilot run was conducted at delivery sites (also referred to as learning centres or learning sites) where nurse educators facilitated the DGNS programme, as suggested by Brink (2006:160) and Creswell (2009:149). The

data generated from the nurse educators were validated by means of data and method triangulation which consisted of a structured questionnaire administered to first- and second-year DGNS students as well as structured observations conducted by one trained non-research observer at each of the four HEI delivery sites (Brink, 2006:144; Polit & Beck, 2012:590). As with the questionnaires, a group consisting of the same two HEI employees who reviewed the questionnaires and the research specialist from the Stellenbosch University also reviewed the structured observation checklist for face and content validity (Brink, 2006:160; Creswell, 2009:149).

1.7.5 Data analysis and interpretation of results

The research results were described by means of descriptive statistics after the data were coded, computerised, and analysed. This was done with the assistance of the statistical consultation service at Stellenbosch University. The data obtained from the completed questionnaires were computed thus warranting an analysis of the descriptive statistics. The aim was to explore (a) the profile of current teaching methods used by the nurse educators, and (b) correlations among educator reported teaching methods and those observed by the student nurses. Additionally, the observation data were computed to enable the analysis of the descriptive statistics. The aim was to explore the correlations among educator and student reported teaching methods on the questionnaires and those observed during the observation schedules. Pie diagrams, bar diagrams, and percentages were used to interpret, correlate and communicate the questionnaires and observation data, as suggested by De Vos (1998:202) and Brink (2006:171). A detailed description of the data analysis and results are given in Chapter 4.

1.7.6 Ethical considerations

The necessary ethical clearance requirements of the Stellenbosch University, as stipulated by the Social Sciences Ethics Committee, were adhered to in this study.

Participants were asked to give informed consent before completing the questionnaire and participating in the structured observation classes. They were not forced to participate in the study and were assured that anonymity and confidentiality would be maintained. They were also assured that they could withdraw from the study at any stage without being penalised.

1.8 SIGNIFICANCE OF THE STUDY

The significance of a study in health science is defined as the meaningful contribution a study may make to health sciences knowledge and / or practices (Brink, 2006:61). The significance of this study lay therein that if student nurses who have completed their nursing education programme are more sensitised towards and adept at integrating theory and practice, they will be able to provide professional and safe patient care in the clinical (or practical) environment in a competent manner. It was envisaged that the results of this study may also contribute towards the professional development of the nurse educators at the HEI. In particular, the results may contribute to the body of practice and knowledge in nursing in that it could provide useful feedback to support nurse educators in implementing appropriate teaching methods to reduce or narrow the theory-practice gap in the DGNS programme and in clinical practice.

1.9 SCOPE OF THE STUDY

The study was conducted in only one higher education institution, but the data were generated at four delivery sites (learning centres). The exploration included an investigation into the extent to which the teaching methods utilised by the nurse educators complied with the teaching methods recommended by literature sources to enhance the integration of theory and practice. The target population focussed on the nurse educators who facilitated contact sessions for the first- and second-year DGNS students at the HEI.

The study was confined to the field of nursing education within higher education studies involving most, but not all, of the nurse educators who completed the research questionnaire and participated in the validation check of the teaching methods and teaching aids used. The DGNS students who attended a block session during the period 22 April 2013 to 30 June 2013 completed questionnaires.

1.10 CLARIFICATION OF KEY TERMS

In this section, the following terms used in this study are clarified by means of a brief working definition of each.

1.10.1 Diploma in General Nursing Science

The DGNS is a two-year diploma programme for enrolled nurses to upgrade from an enrolled nurse to a registered nurse. An enrolled nurse is a person who completed the two year Course leading to enrolment as a nurse and who are enrolled as a nurse by the South African Nursing Council (SANC) (SANC, 1993:2). A registered nurse is a person who completed a diploma or degree programme and is registered as a registered nurse by the SANC (SANC, 1985:1; 1989:1).

The DGNS programme is registered by the Department of Higher Education and Training (DHET) (Qonde, 2011:2) as a Diploma in General Nursing Science and accredited by the SANC (Regulation no. 683 of 14 April 1989, as amended) as the Bridging Course for enrolled nurses leading to registration as a general nurse (Skosana, 2012:1). The DGNS programme concerned with in this study was the Bridging Course for enrolled nurses leading to registration as a general nurses.

1.10.2 Nurse educator

A 'nurse educator' is a registered nurse with a formal qualification in nursing education who teaches nursing (Mellish *et al.*, 1998:12). In this study the term 'nurse educator' refers to a registered nurse with a formal qualification in nursing education, appointed by the HEI and fulfilling a dual role as (a) facilitator facilitating theoretical learning in the classroom and, (b) doing clinical accompaniment of the student nurse in the clinical (or practical) environment.

1.10.3 Practice

'Practice' is defined as the implementation of the daily nursing actions in a professional and competent way; 'practice' means demonstrating appropriate psychomotor skills, attitudes and values in a clinical environment (Jarvis, 1992:260; Munnukka, Pukuri, Linnainmaa, & Kilku, 2002:9; Ousey & Gallagher, 2007:200; Ajani & Moez, 2011:3927). In this study the term 'practice' refers to the nursing actions performed by the nurse practitioner on a daily basis while caring for the patient.

1.10.4 Teaching strategies and methods

Jacobs, Vakalisa and Gawe (2004:71) define a 'teaching strategy' as a "series of teaching actions designed by the educator to assist the students to achieve the learning outcomes". According to these authors, a 'teaching method' is the teaching activity the educator uses to present the learning content to the student. No general agreement exists on the terms 'teaching strategies' and 'teaching methods' among researchers and practitioners in the field. The terms, 'teaching strategies' and 'teaching methods' are used interchangeably in literature sources. Hence, for the purpose of this study, the term 'teaching methods' refers to activities used by nurse educators to facilitate learning content with students.

1.10.5 Theory

According to Ajani and Moez (2011:816), the term 'theory' refers to statements or principles which explain facts or phenomena. Jarvis (1992:260); Mellish *et al.* (1998:14); Munnukka *et al.* (2002:6) and Ousey and Gallagher (2007:200) define 'nursing theory' as a combination of theoretical knowledge and practical knowledge, which is the foundation of nursing. In this study the term 'theory' refers to the subject matter nursing that is taught in the classroom and / or simulation laboratory.

1.10.6 Theory-practice gap

The 'theory-practice gap' is the nursing students' inability to apply theory or classroom knowledge to practice in the clinical (or practical) environment (Dale, 1994:522). The term 'theory-practice gap' is used in this study to reflect the nurse practitioners' and student nurses' inability to integrate the theoretical knowledge and practice in the clinical (or practical) environment.

1.10.7 Theory-practice integration

According to Mellish *et al.* (1998:207), 'theory-practice integration' is the ability of student nurses to apply the theoretical knowledge gained in the classroom to practice and to make educated

judgements and skilled observations during patient care delivery. In the current study the term 'theory-practice integration' refers to the application of the theoretical knowledge of nursing to the practice of nursing.

1.11 CHAPTER OVERVIEW

Chapter 1 provides an orientation to the study in which the background, research problem, statement, aim, objectives, research design, methodology and significance of the study are explained.

A theoretical perspective to the theory-practice relationship (the theory-practice gap and its causes) and theory-practice integration (the teaching methods to enhance the integration of theory and practice) are explored and discussed in Chapter 2.

Chapter 3 constitutes the research design and methodology. The research design, method, sampling, data collection methods and instruments, the reliability and validity, data analysis, as well as ethical considerations are discussed in detail.

This is followed by the data analysis and results in Chapter 4. The results of the different data collection instruments are presented, compared, and discussed as well as compared to the findings in the literature. Various methods, such as tables, pie diagrams, and figures are used to illustrate and communicate the results to the reader.

In Chapter 5 conclusions are drawn based on the findings of the study. The implications of the findings and conclusions of the study are discussed with a focus on the enhancement of theory-practice integration and implications for future research.

1.12 CONCLUSION

The gap between theory and practice has long been a source of concern. It seems important that nursing education and training should be able to equip student nurses with the skills that enable

them to function as competent, independent, and assertive healthcare practitioners who are up to combining theory and practice in a variety of settings in the healthcare environment. In the fast changing educational and clinical environments, it is essential that both nurse practitioners and nursing students acquire the necessary skills to analyse all the problems and situations they encounter and react accordingly to ensure safe and competent patient care.

CHAPTER 2: THEORETICAL PERSPECTIVES

2.1 INTRODUCTION

The results of an overview based on a literature search of nursing, education, nursing education, and medical-, nursing-, and educational journals are reported on in this chapter. The time span of the literature search was 22 years between 1991 and 2013. There are numerous literature sources related to nursing theory, nursing practice, the theory-practice gap perception, and methods to bridge the gap and integrate theory and practice. Key words used for finding information from these sources included nursing, theory-practice gap, theory-practice integration, teaching strategies and methods, experiential learning, problem-based learning, self-directed learning, reflection, and methods to bridge the gap.

Nursing education programmes are aimed at producing competent, independent nurse practitioners who are able to function in a variety of settings in the healthcare environment. This can only be achieved if the student nurse masters the necessary cognitive, affective and psychomotor skills and is able to correlate the theory and practice (Ajani & Moez, 2011:817). These authors ascertain that it is vital for nurse practitioners to combine theory with practice since “nursing is considered as caring for a person in a variety of health related situations. This caring involves teaching about health and prevention of illness: hence, nurses play a key role in promoting high standards of health (Ajani & Moez, 2011:817). Therefore, nurse practitioners need theoretical knowledge as well as clinical skills to fulfil the role of caregiver and health promoter in various health domains (Ajan & Moez, 2011:817). It is extremely important, as Maginnis and Croxon (2010:2) also point out, that nurses need to apply what they were taught in the classroom in the clinical (or practical) environment.

Considering the concerns raised by authors such as Ferguson and Jinks (1994:687), Cooper (2003:51) and Magginis and Croxon (2010:2), it can be posited that the claim of nurse practitioners and nurse educators that nurse practitioners and student nurse are unable to apply the academic (classroom) knowledge to the practice is indeed valid. Magginis and Croxon (2010:2), who found similar results supporting the view that what is taught to student nurses in the classroom conflict with the reality of the real life situation in the clinical (or practical) environment, refer to this as

“cognitive dissonance”. Morgan’s (2006:159) stance is that students do have the ability to link theory to the practice, but are not always equipped to apply their knowledge to practice.

The dispute on whether a theory-practice gap exists or not and the relationship between the two (the theory and practice) have been widely discussed and debated for many years. Wilson (2008:2) notes in the United Kingdom (UK) concerns about the issues surrounding the theory-practice gap have prevailed for 50 years. In their deliberation on the existence of the theory-practice gap, Ousey and Gallagher (2007:199) similarly discovered that the theory-practice gap debate is very much an ongoing reality. Although no studies regarding the existence of this gap have been conducted in South Africa, earlier as well as current researchers in the United States of America (USA) like Ferguson and Jinks (1994:687) and Hewison and Wildman (1996:754), in the UK such as Cook (1991:1462) and Rafferty *et al.* (1996:685), and Fealy (1997:1061) in Ireland and Ousey and Gallagher (2007:199) in New Zealand have researched this topic over many years. The fact that this phenomenon has been extensively studied worldwide for almost two decades is evidence that it has been, and still is, a widespread international concern.

As mentioned, nursing has two distinct aspects, namely the practical (what is practised in the clinical environment) and the theoretical (what students learn in the classroom). These two aspects are, however, not exclusive single entities. According to Upton (1999:549), they are inseparable. Mellish *et al.* (1998:97) accepted that successful nursing education blends these two aspects so that a sound theoretical knowledge forms the basis of practice; the one cannot exist without the other.

It is, however, vital to engage in a more specific exploration of the definitions of theory and practice and theory-practice integration. It is also important to understand what is meant when referring to the ‘theory-practice gap’, the causes of the theory-practice gap, theory-practice integration, and the teaching methods that can be utilised to integrate theoretical knowledge with practice to possibly narrow the theory-practice gap. The literature review revealed many factors that have been held responsible for the theory-practice problem as well as teaching methods that can be used at the learning centre to integrate the theory to practice and subsequently narrow this gap.

2.2 THEORY AND PRACTICE

The literature search undertaken revealed that there are many definitions which apply to the concepts 'theory' and 'practice'. Ajani and Moez (2011:3927) provide very simplistic definitions for these two concepts: 'theory' is statements or principles which explain facts or phenomena whereas 'practise' is the act or process of doing something which demonstrates psychomotor skills. To the authors, these two definitions do not speak to each other, but when considered from a professional viewpoint they have to enable the student to apply the theory to practice (Anjani & Moez, 2011:3927).

Nursing theory is defined as the foundation of nursing that consists of a combination of theoretical knowledge and practical knowledge which provides a theoretical framework to teach student nurses how to base practice on knowledge for the purpose of describing, explaining, predicting or prescribing nursing care (Jarvis, 1992:260; Mellish *et al.*, 1998:14; Munnukka *et al.*, 2002:6; Ousey & Gallagher, 2007:200). It also gives direction to the practice, education, management and research of nursing. Nursing practice is defined as the implementation of the daily nursing actions in a professional and competent way and which demonstrates appropriate skills, attitudes and values (Jarvis, 1992:260; Munnukka *et al.*, 2002:9; Ousey & Gallagher, 2007:200; Ajani & Moez, 2011:3927). However, for the purpose of this study 'theory' is defined as the subject matter of nursing that is taught in the classroom and / or simulation laboratory. For the same reason, 'practice' is defined as the nursing actions performed by the nurse practitioner on a daily basis while caring for the patient.

Although nursing education strives to correlate the practical and the theoretical aspects of nursing, studies conducted in the 1990s (Ferguson & Jinks, 1994:687; Hewison & Wildman, 1996:754; Fealy, 1997:1061) and the 2000s (Ousey & Gallagher, 2007:199) reveal the theory-practice gap in nursing is still evident. To understand the gap, an understanding of the relationship between theory and practice is necessary. Having explored the meaning of 'theory' and 'practice', Jarvis (1992:258) took it a step further and explored the relationship between these two concepts.

2.2.1 Theory-practice relationship

'What is the relationship between theory and practice?' This question is frequently asked by student nurses, nurse educators, and nurse practitioners. Carr (1986) (in Fealy, 1997:1062; 1999:75) identified four principal approaches to explain the theory-practice relationship within education. All four are within the explicit perception related to the nature of theory. A summary of the four approaches to describe the theory-practice relationship is presented in Table 2.1.

Table 2.1: Description of theory and practice and the theory-practice relationship

Approach	Theory and practice	Theory-practice relationship
Applied-science approach	Theory is the general rules and principles whereas practice is a practical activity where pre-specified outcomes must be achieved.	Practice is guided and regulated by theory, which is seen as the principles of an abstract nature.
Common-sense approach	The theory is seen as knowledge obtained from practice whereas practice is seen as the beliefs, concepts and understanding which the practitioner holds.	The theoretical knowledge is recovered from good practice. It is used as the basis to identify practical competence and to correct deficiencies in practical performance.
Practical approach	Knowledge is derived from a practical social activity which guides the practitioner's moral values whereas practice is a complex and vague ethical human activity ruled by technical rules. It represents wisdom and deliberation.	The practitioner uses the theory as a means of what is right. This theory-practice relationship offers the practitioner the means to act in an ethical way and according to good practice.
Critical approach	The practitioners' autonomy is increased through critical self-reflection and reflection of their practical experience.	The theory does not derive from practice and vice versa, but from illogicality to logic, from lack of knowledge and habit to knowledge and reflection.

Source: Carr (1986) in Fealy (1997:1062; 1999:75)

A study by Fealy (1999:75) in the 1990s confirmed Carr's typology of theories regarding theory and practice. Fealy (1999:74) showed how Carr's four theories which illustrated the theory-practice relationship in education are conceptualised in nursing education. In the 'common-sense' approach the nurse is seen as a theorist whereas the 'applied-science' approach supports a theory-to-practice way of functioning. The 'practical' approach is confirmed in the essence that nursing is essentially seen as an ethical activity which requires moral judgement and decision-making skills. Nursing is inherently seen as a complex, problematic, social discipline which requires the nurse practitioner to apply critical thinking and self-reflection activities that confirms Carr's 'critical approach' to the theory-practice relationship (Fealy, 1999:75).

In a study by Jarvis (1992:260) the author identified eight possible relationships between nursing theory and practice, but regarded only four as the true reflection of the relationship. This was based on Gervero's (1991) (in Jarvis, 1992:259) theory regarding adult education, namely that the relationship between theory and practice is a human invention. This relationship changes as the field of practice changes. Jarvis (1992:263) identified the following four true reflections of the relationships between theory and practice:

- i. theory is an analysis of practice which comes first, but not determined by it
- ii. practice is determined by theory which comes first
- iii. both theory and practice can contribute to practice
- iv. both theory and practice contribute to theory.

Ousey and Gallagher (2007:200) opine that the theory-practice relationship consists of three entities, namely (a) theory founded in textbooks and other activities associated with formal education; (b) practice which is associated with the daily work experience of the nurse, and (c) the theory-practice gap which is the difference between the first two entities.

In summary, theory and practice appear to have important effects on each other and do not exist in isolation (Rafferty *et al.*, 1996:686). Although the relationship between theory and practice, Jarvis (1992:263) holds that "there is never a perfect integration between theory and practice". There will always be a gap. Figure 2.1 shows how Jarvis' (1992:263) sees the relationship between theory and practice over time.

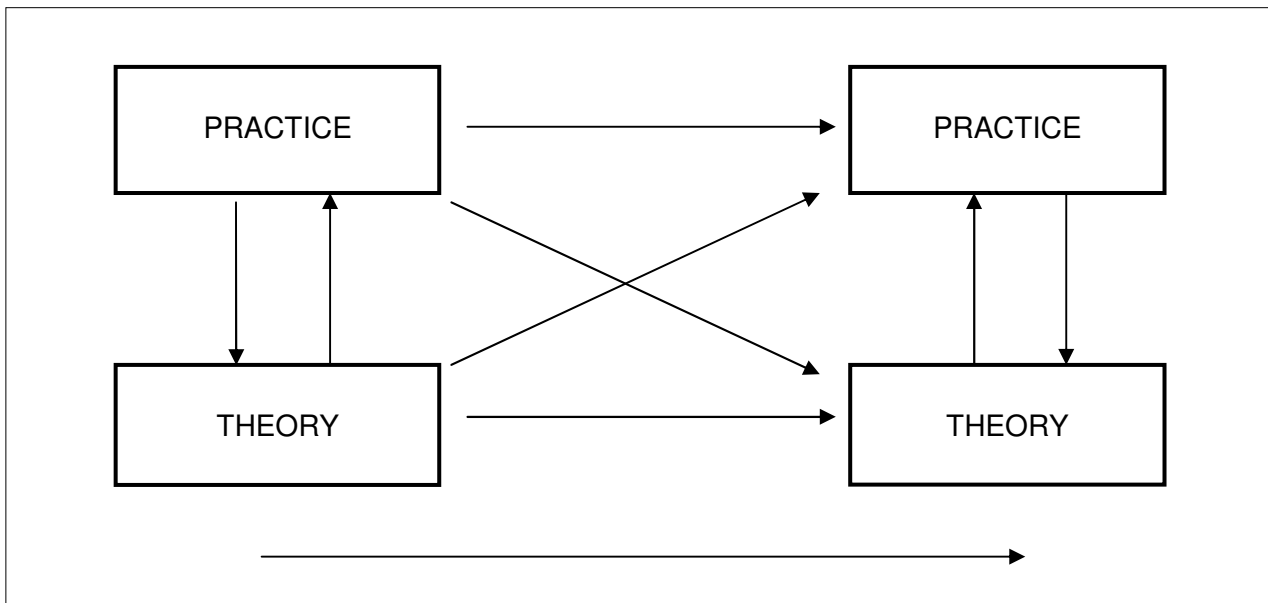


Figure 2.1: The relationship between theory and practice over time (Jarvis, 1992:263)

As illustrated in Figure 2.1 the relationship between theory and practice is not static. Changes occur continuously because researchers and theoreticians analyse practice and implement new theoretical approaches. Practice also changes frequently due to the fact that practitioners constantly experiment with new ways to execute and refine their skills to become more skilled. There is never a close or constant relationship between the theory and practice (Jarvis, 1992:263).

The relationship between theory and practice has generated numerous studies in an effort to explore the extent of this relationship and to identify the causes of the theory-practice disruption – or the so-called ‘theory-practice gap’ (Fealy, 1997:1061; 1999:74).

2.2.2 Theory-practice gap

The explored literature indicated that there does not seem to be a clear model or definition and exact explanation of the theory-practice gap. Landers (2000:1554) and Corlett *et al.* (2003:183) state the theory-practice gap is a multifaceted problem. Although the term ‘theory-practice gap’ is commonly used in nursing, the complex nature of it seems not to be fully understood. This statement concurs with Ferguson and Jinks’ (1994:687) earlier comment that “the theory-practice gap is deeply rooted in the history of nursing education and remains a source of concern”.

The theory-practice gap can be defined as student nurses' inability to apply theory to clinical rotations in the clinical environment which then points to a lack of experiential knowledge (Dale, 1994:521). Experiential knowledge is the product of the integration of the theoretical and clinical (practical) knowledge (Dale, 1994:522). Jones (1997) as cited in Corlett *et al.* (2003:183) agrees by stating that students struggle to gain experiential knowledge due to various reasons; for example, the discrepancy there seems to be between what they experience in the clinical (or practical) environment when placed in the clinical areas as opposed to what they have been taught in the classroom.

Nursing is taught in three dimensions as identified by Dale (1994:52). The author explains that in the nursing curriculum the student nurses are taught three types of knowledge: (a) theoretical knowledge taught in the classroom, (b) clinical (practical) knowledge taught in the clinical environment and during simulation in the simulation laboratory, and (c) experiential knowledge. The first two types of knowledge are both important but they may be viewed differently by the nurse educator and the nurse practitioner and this leads to the lack of experiential knowledge. This, according to Dale (1994:521), is what constitutes the theory-practice gap.

According to Cook (1991:1462), the theory-practice gap in nursing is a by-product of the development of nursing and is the result of the conflict caused by the different viewpoints of nursing theorists and nurse practitioners. The hierarchical relationship of theory to practice is seen as the problem. Various other studies propose that the theory-practice gap is the by-product of factors that can be encountered in either the educational or the clinical (or practical) environment in which the student nurse learns. In the classroom it may be caused by the utilisation of traditional teaching methods such as formal lectures which is teacher-centred. In the clinical setting it may be caused by the nurse practitioner having to function in accordance with theories that are aimed at meeting the goals of the clinical environment (Cook, 1991:1468; Corlett *et al.*, 2003:183). Ferguson and Jinks (1994:687) are of the same opinion and consider this as the reason why student nurses are not able to link the "know that" theoretical knowledge and the "know what" practical knowledge.

Moreover, literature sources reveal that the reasons causing the theory-practice gap can originate from various areas or situations. According to McCaugherty (1991a:1056), the cause for this gap may be in the classroom (theory) and / or in the clinical (or practical) environment because these are the two areas where students spend most of their time. Both of these areas may pose a potential risk to the understanding and integrating of nursing theory and practice. Therefore, the ward staff should be examined for their possible contribution to the theory-practice problems while

in the nursing education institution the nurse educators, textbooks, teaching strategies / methods, and curriculum may be the source of the problem. From the student nurse's viewpoint McCaugherty (1991a:1056) identified two main fundamental reasons for the theory-practice gap. Firstly, the characteristic of theory represents an incomplete picture of the nursing 'practice' because it comes from textbooks and, secondly, the characteristic of nursing practice which makes it more complex than how it is portrayed in theoretical descriptions. In summary, the student nurse is unable to deal with the complexity of the real life situations and the ways in which to integrate the knowledge they have within the clinical reality of the patient.

McCaugherty's (1991a:1056) view is that the root of the theory-practice problem was to be found in the classroom and / or clinical environment. Upton (1999:550) interprets that this problem mainly lies with nursing management, nursing education, nursing research and / or nursing practice as nursing consists of these four pillars. All of these pillars play an important role in the integration of theory and practice; therefore all of these pillars need to be investigated to determine the cause of the gap. Since both McCaugherty (1991a:1056) and Upton (1999:550) mention that the problem may originate in the classroom, the logical place to start searching for the basic cause of it is in the classroom; in other words, in the educational domain comprising of nurse educators, textbooks, teaching strategies and methods, and the curriculum.

2.2.2.1 Theoretical environment

The topic of determining whether the theory-practice problem originates in the classroom has been extensively studied over years. Researchers like McCaugherty (1991a:1056), Ferguson and Jinks (1994: 688), Hewison and Wildman (1996:755) and Fealy (1999:76) identified various factors that may play a prominent part in facilitating the theory-practice gap. These factors include textbooks and lectures, the curriculum, study block contents, teaching methodologies and the nurse educators and are discussed next.

(a) Textbooks and lectures

Symbol-object dichotomy refers to textbooks (words and symbols) that are different to real life situations. McCaugherty (1991a:1056) opines that the overuse of textbooks may be the root of the theory-practice problem as it represents an incomplete picture of the nursing 'practice' because the

latter is more complex than how it is portrayed in theoretical descriptions. Hence, textbooks can never present the real situation as it is experienced in nursing practice; the practical hands-on environment is far more challenging and complicated than any theoretical description thereof. Obviously, the contrast between having textbook knowledge and the reality of what the nurse student experiences in the demanding real life situation is a problem. Knowledge generated in the classroom from textbooks bear little relationship to what the student nurse experiences in practice. Russell (1967) as mentioned by McCaugherty (1991a:1056) referred to it as “knowledge by description”. It is very different to the knowledge the student gains by experience while working in the clinical (or practical) environment. The textbook descriptions can never be the same as the real life situation or experience. Therefore, a full understanding of the theory (knowledge) does not guarantee that the student nurse has the ability to apply the knowledge in the clinical (or practical) environment.

Furthermore, lectures and textbooks have shortcomings when used to teach holistic patient care. It does not capture the psychological and social dimensions unique to each patient. It is a rather difficult and abstract way to communicate some of the problems patients experience whereas experiencing something in practice results in a better understanding of it. This may be the reason why the student nurses may find it difficult to apply their acquired textbook knowledge to nursing practice. According to McCaugherty (1991a:1057), a potential gap between the theory and the practice lies therein that, from a student nurse’s viewpoint, practice (the patient) can appear very different from theory (books and lectures).

McCaugherty (1991a:1056) emphasises that although it may seem as if the use of textbooks and lectures do not have any value when learning nursing, this is only true when they are relied on too heavily. It is only the overuse of textbooks and lectures that leads to theory being an imperfect representation of nursing practice. Textbooks and lectures do indeed have value in the sense that it is an excellent transmitter of knowledge and gives guidance to student nurses; it is only when over-relied on that it can foster a theory-practice gap (McCaugherty, 1991a:1056).

(b) Curriculum

The way in which a curriculum is structured can either narrow the theory-practice gap or widen it. If the theory and practice is captured as separate entities in the curriculum and assessed as such, it may cause the assumption that they are separate and integration is not a primary consideration

(McCaugherty, 1991a:1058). This may widen the gap instead of enhancing theory/practice integration.

(c) Study block contents

Poor sequencing of theoretical (study) blocks and practice with theoretical input preceding the placement of the student has been identified as a cause for the theory-practice gap. The sequencing of study blocks and planning of content can also be a problem according to some authors (McCaugherty, 1991a:1059; Ferguson & Jinks, 1994:691) but Corlett *et al.* (2003:189) disagree. An empirical study conducted by these authors revealed surprising results which indicated that there was no difference between the theoretical knowledge of student nurses who went straight to the clinical (or practical) environment and those who had a delayed clinical placement. On the contrary, the former study revealed that student nurses who had a delayed clinical placement had a more in-depth theoretical knowledge basis than those who were immediately placed in the relevant clinical (or practical) environment.

(d) Teaching methods

The use of teacher-centred teaching methods such as formal lectures and heavily structured days facilitates the theory-practice gap. This was described by Treacy (1987) in Ferguson and Jinks (1994:689) as “teaching that fails to touch the students’ reality”. When students are passive receivers of the information provided by the educator they do not actively participate in the teaching session and give little or no feedback. Instead, it enhances the competencies of listening, note-taking and rapid reading (Frost, 1996:1048) and does not foster application of knowledge to practice and critical thinking (CT) which is very important in the nursing profession (see discussion under section 2.4) (Kumar, 2003: 20; Meyer & Van Niekerk, 2008:63; Applin, Williams, Day & Buro, 2011:130). Formal lectures tend to encourage the memorising of facts and have a negative effect on the student’s ability to correlate theory and practice. Moreover, textbooks are synonymous with lectures but if over-used it unwittingly provides the starting point for the theory practice gap. The reason being that it paints a generalised and incomplete picture of patient care which is usually far removed from the reality of the clinical (or practical) environment (McCaugherty, 1991a:1057).

(e) Nurse educators

McCaugherty (1991a:1058) supports the notion that the title 'nurse educator' indicates a dual role, that of educator (time spent on classroom teaching) and that of nurse (the accompaniment of the student nurse in the clinical environment [practice]). According to MacNeil (1997:641), these are two demanding and diverse roles. As nurse educators, they must have the appropriate range of knowledge and skills to function in the classroom as well as in the clinical (or practical) environment. Thus, they must have expert knowledge of the general nursing principles, knowledge of specific branches of nursing and educational principles while they are at the same time expected to be competent nurse practitioners and role models to the student nurses. This implies that nurse educators indeed have a dual responsibility.

Although the title 'nurse educator' indicates a dual role as explained by McCaugherty (1991a:1058), the average nurse educator is predominantly based in the nursing education institution and busy with lecture preparations (textbooks), facilitating learning and assessments, and performing associated administrative tasks. This may result in the nurse educator lacking enough time, or no time at all, to spend with the student nurse in the clinical (or practical) environment. Consequently, it causes a lack of clinical supervision of student nurses in the clinical environment. This means that the clinical teaching is delegated to the unit staff members who are already struggling under the burden of the clinical environment workload (Ferguson & Jinks, 1994:688).

Another implication of the lack of clinical supervision is that the nurse educator is separated from the practice. This questions the clinical credibility of the educator as she or he is perceived as a 'visitor' to the clinical environment with limited knowledge of the patient. Ferguson and Jinks (1994:692) identified this lack of clinical supervision and clinical credibility as two causes of the theory-practice gap.

2.2.2.2 Clinical environment

The problem in which the theory-practice gap is embedded may be in the clinical environment because it is a forever changing environment (McCaugherty, 1991a:1059). The clinical environment forms an important component of the student nurse's learning environment (Meyer &

Van Niekerk, 2008:168). The clinical environment as a reason related to the theory-practice gap is not discussed in detail because it was not the focus area for this study. Only a list is provided containing the reasons identified by the various authors for poor theory-practice integration in the clinical environment.

- Actual deficiencies in the practice of nursing (Elkan & Robinson (1993); Teracy (1987) in Fealy, 1999:76).
- Contrasting approach to nursing care. Nurse educators educate student nurses to be autonomous, self-directed, professional and independent and provide holistic individualised patient care. The practice, however, focuses on a businesslike approach that demonstrates achievement in terms of efficiency, effectiveness and economy. This perpetuates a task-oriented and fragmented approach to patient care (Hewison & Wildman, 1996:758).
- A focus which is on the service needs and not the students' needs. The practice is geared for the care of patients and not on providing a learning environment for students to learn in (Hewison & Wildman, 1996:759).
- Increased teaching responsibilities for clinical staff members and their lack in educational skills, theoretical knowledge, and time. The teaching of students in the clinical environment is doomed to fail because the unit staff are not always aware of the theory content of the course or do not have time to do the clinical accompaniment of the students. Thus, it is not designed as a setting to learn the practice (Reynolds (1990) in Ferguson & Jinks, 1994: 688).
- The strong influence of the hidden curriculum in the clinical (or practical) environment also seems to be a cause of the theory-practice gap (Cook (1992) in Ferguson & Jinks, 1994:689). The hidden curriculum is defined as the "unspoken values and message within the curriculum" (Meighan (1981) in Ferguson & Jinks, 1994:689). This is portrayed in the conflicting philosophies of nursing in the classroom and what the student experiences in the clinical environment. While the theory focuses on healthcare which benefits the patient, the services rendered the clinical environment serves to meet the requirement of the clinical environment (organisation) rather than the patients' requirements (Ferguson & Jinks,

1994:689,693). Therefore, the focus in the clinical (or practical) environment is a task-oriented and fragmented approach (which is the most cost-effective approach) and not on the comprehensive care of the patient (Hewison & Wildman, 1996:759). Student nurses tend to adopt the work ethic of the clinical environment as a way to fit in. They will therefore learn the routine, work quickly and look busy because if they question the standards and / or practice they face the possibility of rejection by the unit staff members (Ferguson & Jinks, 1994:689). For these reasons the professional socialisation of student nurses as a basis for their actions in the clinical environment seems to facilitate the theory-practice gap.

- The physical separation of nurse practitioners and nurse educators with the former responsible for patient care and the latter for teaching nursing theory with the student nurse struggling in-between (Ferguson & Jinks, 1994: 688).

2.2.3 Theory-practice integration

According to McCaugherty (1991a:1060), many researchers stated they achieved better theory-practice integration by using appropriate teaching methods. These methods were related to 'clinical' instruction and the presentation of 'theory' to maximise theoretical knowledge and skills development and to close the theory-practice gap. Numerous research studies found by the researcher revealed that student nurses should learn from the classroom as well from the practice. Dale (1994:523) stated theory provides the basis for the understanding of nursing science. Therefore, nurse educators should make effort to reduce the theory-practice gap when it exists. According to Mellish *et al.* (1998:207), student nurses must "learn to apply the theory of nursing so that an integration of theoretical knowledge and practical skills in the clinical environment becomes the art and science of nursing".

Successful nursing education blends the practical and theoretical components of nursing. Nursing education consists of two aspects, namely clinical teaching which is seen as the teaching that takes place by the patient's bedside, and the presentation of theory through the means of academic teaching methods. These two aspects must not be seen as separate entities, but as a whole because student nurses must be able to apply the theoretical knowledge gained in the classroom to make educated judgements and skilled observations during patient care delivery (Mellish *et al.*, 1998:207).

Many initiatives have been implemented to reduce the theory-practice gap but only partial success was achieved (Rafferty *et al.*, 1996:685). To Cook (1991:1462), Upton (1999:554) and Ousey and Gallagher (2007:204) this was not problematic as these authors conceded that the gap must not be fully bridged. A fully bridged gap will make it difficult for the nurse educator to ensure that student nurses develop a questioning frame of mind which stimulates them to question the practice. The aforementioned authors shared the viewpoint that a gap is essential to ensure that change in the clinical (or practical) environment occurs. The learning of the student nurses must, however, be facilitated in such a way that it helps them to adapt to the constant changes and to integrate the theory with practice. This will ensure that a safe competent practitioner, who has the ability to focus on individualised comprehensive patient care, is developed. It is therefore essential that the nurse educator recaps the theory while teaching the student nurse clinical skills in the simulation laboratory. This will reduce the fear the student nurses may experience before entering the clinical (or practical) environment where they will come face-to-face with real life situations (Maginnis & Croxon, 2010:2).

The nurse educator is the most suitable person to assist the student nurse to link theory to practice due to his or her dual role (Gerrish, 1992:227). It is therefore essential that the nurse educator utilises appropriate teaching methods to enhance the student nurses' ability to link the theory to practice. Apart from facilitating the theoretical knowledge, the nurse educator must further fulfil his or her dual role by doing the clinical accompaniment of the student in the clinical environment. Research showed that a division in the dual role widened the theory-gap instead of narrowing it (Ferguson & Jinks, 1994:688).

The actual transfer of theory to practice is not an easy process. It is a complicated process influenced by many factors such as learning styles, preferred learning senses, and teaching methods. As mentioned, various studies over many years have been conducted to find solutions for the transfer of theory to practice. These studies identified approaches to teaching and learning which enhance the integration of theory and practice and narrow the gap. McCaugherty (1991b:534) emphasised that nurse educators and the teaching methods they use play an important role in integrating theory and practice. This is a role that cannot easily be filled by others. Not only do nurse educators have to ensure that theoretical knowledge is structurally aligned, but they must also demonstrate how such knowledge can be integrated and applied in practice (Landers, 2000:1551).

The most favoured teaching methods in nursing education are those that link theory to practice (Akinsanya & Williams, 2003:41). Educationalists have identified various teaching methods to help the student to make this transfer (Phillips, Donald, Mousseau-Gershman & Powell, 1998:12). Meyer and Van Niekerk (2008:82) point out these are methods that are student-centred, entail active student involvement, problem identification, and facilitation of the learning process. This viewpoint concurs with that of Mashaba and Brink (1994:272) in that a variety of teaching methods must be used as no one teaching method is suitable for the learning needs, learning senses, and learning style of every individual student in the classroom. The nurse educator must decide which teaching method is suitable for the subject type in question and also how to enhance the transfer of theory to the practice.

2.2.3.1 South African context

In an effort to ensure that student nurses integrate the knowledge, skills, attitudes and values they learnt in the classroom in the clinical environments, outcomes-based education (OBE) was introduced in South Africa in 1994. This is a student-centred and result-oriented learning approach that includes seven critical cross-field outcomes as set by the South African Qualifications Authority (SAQA). With the emphasis on cognitive, affective and psychomotor skills these outcomes form the basis for the development of more specific learning outcomes such as correlating theory to practice. Two of the seven critical cross-field outcomes in OBE, namely the identification and solving of problems by using critical and creative thinking skills, and the collection, analysing, organising and critical evaluation of information (Van der Horst & McDonald, 2008:47) are directly related to the students' critical thinking abilities which, in turn, are important components of theory-practice integration.

The SANC embraced OBE since it places a lot of emphasis on preparing students to learn. Outcomes-based education changed the definition of teaching from the transmission of knowledge to assisting students to understand the information and make the knowledge their own (Van der Horst & McDonald, 2008:145). The SANC provides broad guidelines to be used in the planning of learning opportunities to enhance the student nurses' critical thinking and creativity skills which enable them to transfer the theory to practice. They are empowered to consider all the problems and matters they encounter and react accordingly to ensure safe and competent patient care (Meyer & Van Niekerk, 2008:83).

In summary, Rafferty *et al.* (1996:686) confirmed that “theory and practice do not, however, exist in splendid isolation”. It does have an effect on each other. Although there is a relationship between theory and practice, the integration between the two components of nursing education will never be perfect; there will always be a gap (Jarvis, 1992:263). But, according to Cook (1991:1462), Upton (1999:554) and Ousey and Gallagher (2007:204), this gap should not be fully bridged because it will make it difficult for the nurse educator to ensure that the student nurses develop a questioning frame of mind which stimulates them to question the practice. However, it is still critically important that the students are assisted to integrate theory and practice. Gerrish (1992:227) ascertained that the nurse educator is the most suitable person to assist the student nurses to link the theory to practice. It is therefore essential that the nurse educator utilises appropriate teaching methods to enhance the student nurses’ ability to link theory and practice.

The emphasis in education is on a student-centred approach and on the nurse educator as the facilitator of the students’ learning process. Various teaching strategies and methods that focus on the student as an active participant (Mellish *et al.*, 1998:98) have been identified as suitable methods to enhance the theory-practice integration. These teaching methods are discussed in detail in Section 2.3.

2.3 TEACHING METHODS

A teaching method is the teaching activity or activities the educator uses to present the learning content to the student, whereas teaching strategies is defined by Jacobs *et al.* (2004:71) as a “series of teaching actions designed by the educator to assist the students to achieve the learning outcomes”. It seems that no general agreement on terms to be used for ‘teaching strategies’ and ‘teaching methods’ exist. The terms ‘teaching strategy’ and ‘teaching method’ were found to be used interchangeably in literature. An example is where Morgan (2006:156) refers to role-play as a teaching strategy, whereas Mellish *et al.* (1998:353) refer to it as a teaching method. Popil (2011:207) states a case study is a teaching method, whereas Simpson and Courtney (2002:96) and Jones (2010:252) refer to it as a teaching strategy. Another example is where Chang *et al.* (2011:3225) refer to the nursing process as teaching method and Yildirim and Özkahraman (2011:261) see it as a teaching strategy. Murphy, Hartigan, Walshe, Flynn and O’Brien (2011:e142) state simulation is a teaching method, whereas Quinn and Hughes (2007:254) refer to it as a teaching strategy. For the purpose of this study, the term ‘teaching methods’ refer to the activities used by the nurse educators to present learning content to students.

Landers (2000:1555) states “the nurse educator must identify the methods by which they can integrate theory to practice, to a point where students can recognize the theoretical constructs underpinning and developing nursing practice.” Group discussions and assignments which include clinical problems, problem-solving activities, reflection on learning and experience, problem-based activities, the nursing process and so forth have been identified as effective teaching methods to correlate theory and practice (Meyer & Van Niekerk, 2008:84). All of these methods are based on the identification of problems and finding solutions. The same authors opine that student nurses who do not learn to identify and solve problems engage in a ‘surface approach’ to learning. This approach implies that in the clinical environment only the psychomotor skills are mastered, meaning that the student nurses do not master the skill of rendering comprehensive patient care (Meyer & Van Niekerk, 2008:62). Schon (1980) in Ferguson and Jinks (1994:683) agrees that problem-solving activities are effective techniques, but also sees the need for students to also reflect on what they had learnt in the classroom and clinical (or practical) environment. Problem-based learning (PBL) emerged as an innovative way of teaching – it is the opposite of the traditional teaching where the educator is represented as the primary source of information (Savin-Baden & Howell Major, 2004:10).

The use of student-centred teaching methodologies have become more popular in nursing education in an effort to integrate theory and practice, enable student nurses to deal with real life challenges when they enter the clinical (or practical) environment, and to equip them with decision making skills (Ferguson & Jinks, 1994:692). The nurse educator is the facilitator of learning and not the transmitter of information. According to Landers (2000:1555), nurse educators should identify and utilise teaching methods to integrate theory into practice to the point where the student nurse understands the theory which forms the cornerstone of the nursing practice. The educator must also enhance classroom teaching (theoretical knowledge) through clinical accompaniment and supervision of the student nurse in the clinical environment (Ferguson & Jinks, 1994:692).

In the following section teaching methods highlighted by literature sources as those that enhance theory-practice integration are discussed. The methods include problem-based learning activities, problem-solving, concept mapping, projects, experiential learning, case studies, group work, clinical teaching in simulation, demonstrations, learning contract, nursing process, reflective learning and self-directed learning.

2.3.1 Problem-based learning

The PBL approach was implemented in the USA in the 1950s and in Canada in the 1960s (Barrows & Tamblyn (1980) in Frost, 1996:1048) for the training of medical students. The purpose was to address the problems the medical students faced, namely the assimilation of the rapid increase in information, the integration of knowledge from a fragmented curriculum, and the lack of problem-solving and communication skills (Hattingh & Killen, 2003:40).

Woodward and Ferrier (1983) in Biley and Smith (1998:1022) interviewed medical graduates following a PBL programme at McMaster University in Canada to determine how they perceived their preparedness for the clinical practice. The researchers compared the research findings with those of graduates from a medical school where traditional teaching methods were used. The results showed the medical students who graduated from the PBL programme “perceived themselves better equipped in competencies such as problem-solving, critical evaluation, and self-directed study” (Woodward & Ferrier (1983) in Biley & Smith, 1998:1022).

Adapted versions of the McMaster format was extended to various other disciplines such as architecture, management and leadership, engineering, biotechnology, technology education, business administration, dentistry, physiotherapy, occupational therapy and nursing (Hattingh & Killen, 2003:39; Chikotas, 2008:360; Yuan, Kunaviktikul, Klunklik & Williams, 2008:1067; Applin *et al.*, 2011:130; Ribeiro, 2011:2). The common factor among the last four occupations (dentistry, physiotherapy, occupational therapy and nursing) is that the health practitioner must be able to apply knowledge to the assessment and care of the patient in the healthcare setting and also needs to identify areas for improvement in patient care (Chikotas, 2008:360).

2.3.1.1 Definition of problem-based learning

As stated by Beers (2005:305) and observed by the researcher of this study, PBL has many definitions. No general agreement on the definition or the method to be used for ‘problem-based learning’ and ‘problem-solving activities’ exist. The concepts ‘problem-based’ and ‘problem-solving’ have been used interchangeably. After an extended literature search the definition provided by Hattingh and Killen (2003:40) was regarded as the most simplistic, descriptive and understandable version. Hattingh and Killen (2003:40) define PBL as follows:

The utilisation of a curriculum design approach where the entire curriculum content (knowledge, skills, attitude and values) is organised around authentic problems that motivate learners to identify and research concepts and resources necessary to solve problems.

Both Frost (2006:1051) and Applin *et al.* (2011:133) agree with this definition by outlining PBL learning as the knowledge the student gains while working towards understanding the problem and finding solutions to solve the problem by reflecting on pre-existing knowledge and prior experiences. This is in line with the definition of Barrows and Tamblyn (1980) in Quinn and Hughes (2007:72), considered as the fathers of PBL, who defined PBL as “learning that results from the process of working towards the understanding or resolution of the problem”. This teaching approach encourages students to discover things themselves and to engage in problem-solving (Jacobs *et al.*, 2004:199). It corresponds with Van der Horst and McDonald's (2008:138) view of problem-solving as a teaching method. Problem-based learning endorses Creedy and Hand's (1994:696) viewpoint that it is a form of enquiring learning because students seek knowledge, process information and apply the ideas to practice-related situations. It makes the students aware that they can apply pre-existing knowledge to new situations, thus equipping them with new knowledge (Van der Horst & McDonald, 2008:138).

Many authors, including Savin-Baden and Howell Major (2004:3) who actually defined PBL, state that there are no defined characteristics for PBL. Rather, it is an approach that is influenced by the structural and educational environment it is used in, the teaching methods used, the type of discipline, and the nurse educator facilitating the learning process. Lekalakjala-Mokgele (2010:638) shares this viewpoint. This author states the introduction of PBL in formal education requires an adaptation from a traditionally teacher-centred approach to a student-centred approach. This turnabout profoundly impacted on the nursing learning environment; meeting the challenge of creating a new learning environment included that the role of the nurse educator as a ‘teacher’ changed to that of a ‘facilitator’.

2.3.1.2 Theory and rationale for problem-based learning

Problem-based learning resulted in the natural development of a number of learning theories when medical educators began questioning how students acquire and transfer knowledge. It was based on the behavioural, cognitive, developmental, humanistic, and andragogic theories which form the

cornerstone of PBL (Mellish *et al.*, 1998:100; Savin-Baden & Howell Major, 2004:24; Chikotas, 2008:360). Problem-based learning is grounded in the behaviourist theory of Thorndike which states learning is improved through feedback, structured goals and practice, and Hill's theory that students learn through motivation (Mellish *et al.*, 1998:100; Savin-Baden & Howell Major, 2004:24).

Constructivism provided the theoretical theory and rationale for PBL. Savin-Baden and Howell Major (2004: 24) state the cognitive theory, with a focus on a higher order of thinking skills, played an important role in the development of PBL. The student constructs knowledge through her or his cognitive ability and constant interaction with the classroom community (Chikotas, 2008:461). This is an important component of PBL as it stimulates learning due to the fact that the students must find solution to the problems they identified (Savin-Baden & Howell Major 2004:25). Their critical thinking (CT) and problem-solving skills are enhanced when new knowledge based on pre-existing knowledge and experience are constructed (Mellish *et al.*, 1998:100; Savin-Baden & Howell Major, 2004:24; Chikotas, 2008:361). Problem-solving is central to the constructivist theory which implies that learning is most effective when the students are engaged in activities to identify problems and find solutions to problems which are relevant to their needs and interest (Chikotas, 2008:362).

The developmental theorists offered a model which took into account the cognition and developmental aspects. Students learn when they can link new knowledge to pre-existing knowledge and when they see the bigger picture (Savin-Baden & Howell Major, 2004:27). Ausubel's assimilation theory of learning, as described in Mellish *et al.* (1998:27), also determines that learning occurs when the student sees the meaning of the learning. The same authors (Mellish *et al.*, 1998:27; Savin-Baden & Howell Major, 2004:27) distinguish between rote to meaningful learning and reception to discovery learning. PBL focuses on meaningful and discovery learning and the development of new knowledge (Mellish *et al.*, 1998:27; Savin-Baden & Howell Major, 2004:27-28).

The humanist theorists believed that learning will only occur when it is defined by and controlled by students. As a group, they make decisions about real life situations in a safe, supportive learning environment once they recognise and explore the learning needs with the assistance of the nurse educator as the facilitator of the learning process (Mellish *et al.*, 1998:33; Savin-Baden & Howell Major, 2004:27-28; Chikotas, 2008:360). In contrast to traditional teaching methods, PBL is a student-centred approach that fosters a deep approach to learning. The student is encouraged to use self-directed skills to solve a problem (Chan, 2012:22).

2.3.1.3 General discussion of problem-based learning

Problem-based learning embraces adult learning, self-directed learning, and experiential learning and encourages a proactive approach to learning as the adult students' pre-existing knowledge and experience are acknowledged. The students are stimulated to question their existing knowledge and identify learning needs with or without the assistance of others. Through this their desire to learn are promoted (Quinn & Hughes, 2007:28; Chikotas, 2008:262; Chan, 2012:21). The adult learning theory has greatly been influenced by Knowles' assumption of the andragogical model (Chikotas, 2008:262).

Although there are many definitions, descriptions and models of the PBL approach, the common factor describing PBL is that the problem is given to the student before the topic is discussed. It involves the use of small group activities while the educator facilitates the learning process and gives feedback to the students (Beers, 2005:306; Quinn & Hughes 2007:72). Pastirik (2006:266) as well as Chikotas (2008:360) do not agree that PBL can only be used in small groups. The results of surveys conducted by these authors (Pastirik 2006:266; Chikotas, 2008:360) confirmed that PBL in a large group with one nurse educator is an alternative to the traditionally small groups. Pastirik (2006:265) did, however, discover that there are students who find it intimidating and stressful to discuss information in large groups.

Different types of teaching methods such as scenarios (especially real life scenarios), small group activities, projects, information researching, concept mapping, case studies, problem-solving activities and problem-based studies are used in PBL to stimulate students to seek knowledge and find solutions to the problems identified (Hsu, 2004:510). All of these methods utilise problem-solving activities to achieve a designated outcome. This statement supports Chikotas' (2008:60) view that PBL is not a definitive programme and the implementation process varies. It also reaffirms Ribeiro's (2011:2) statement that PBL has different formats, for example, a hybrid model that comprises of PBL activities and other teaching methods such as formal lectures and demonstrations. In pure PBL there are no lectures.

Despite the variety of teaching methods used, PBL starts with the student exploring the problem and finding suitable solutions to resolve or manage the situation (Quinn & Hughes, 2007:72; Ribeiro, 2011:2). Quinn and Hughes (2007:247) add that PBL can be used on simulated patients as well. No matter how it is implemented, PBL underpins the fundamental principle that learning is

based on real life problems such as patient cases, which stimulates problem-solving skills development and the theory that knowledge is constructed and not given (Chikotas, 2008:360). The nurse educator facilitates problem-solving and critical thinking (CT) and inspires the students to think creatively. This is achieved by encouraging the students to utilise their pre-existing knowledge as building blocks for new knowledge (Lekalakala-Mokgele & Du Rand, 2005:25; Van der Horst & McDonald, 2008:237). Through the exploration of the problem the students explore the gaps in their own knowledge and skills. In this way they not only identify learning needs and objectives but also seek new knowledge (Ferguson & Jinks, 1994:692; Savin-Baden & Howell Major, 2004:3). Learning through problem-solving is not a new approach. It has been used for many years and was introduced in medical training in the 1950s. This approach became more acceptable as more and more questions were asked about the suitability of the traditional lecture as a way of teaching (Savin-Baden & Howell Meyer, 2004:10).

Enhancing self-directed learning (SDL), evidence-based practice (EBP), interpersonal communication, the contextualisation of knowledge, theory-practice integration, and life-long learning, PBL has been used with success for many years in higher education. It also proved to be an excellent teaching method to foster students' CT abilities (Hattingh & Killen, 2003:40; Pastirik, 2006:261; Chikotas, 2008:359; Applin *et al.*, 2011:133; Ribeiro, 2011:2). This perspective is shared by Yuan *et al.* (2008:70) who write that PBL stimulates and enhances the student's CT abilities. Yuan *et al.* (2008:70) conducted a quasi-experimental study that revealed the student nurses who participated in PBL had better CT skills than those who were in the lecture group.

Problem-based learning also promotes teamwork, especially if it is used in conjunction with group work (Van der Horst & McDonald, 2008:13; Applin *et al.*, 2011:133). The skills mentioned in the previous paragraph are all skills which enable the graduate to function as a competent practitioner in the clinical environment. The PBL approach has been identified as an approach in nursing education to equip student nurses to apply theory or classroom knowledge to the clinical practice (Chikotas, 2008:359; Applin *et al.*, 2011:130).

2.3.1.4 Formal lectures versus problem-based / -solving activities

As one of the traditional teaching method, formal lectures is the most common and widely used teaching method in adult education in spite of all the negative write-ups (Quinn & Hughes, 2007:262). Sharing this viewpoint, Gulpinar and Yegen (2005:590) add this lecture method is here

to stay because it is the most economic and efficient teaching method for large student numbers. Therefore, it is important to know the advantages and disadvantages of the formal lecture as a teaching method in adult education. Gulpinar and Yegen (2005:590) and Mellish *et al.* (1998:102) are also in agreement that the most well-known advantages of lectures are: large number of students can be accommodated in one classroom; economical use of time for the educator; the educator has control over the learning experience of the student; students are assisted to master a large variety of information such as anatomy and pharmacology, and the presence of the educator in the classroom.

Conversely, it was found in literature that other authors, although agreeing with the advantages of formal lectures, noted that there are many disadvantages as well. Lectures may address the need of some students, while others find it boring, abstract, repetitive, and a waste of time. It also does not enhance the students' ability to link theory to practice and being teacher-centred it promotes the passive absorption of received information which limits the students' CT ability. Additionally, the pace is unsuitable for some students and their learning styles and it hinders their problem-solving skills (McCaugherty, 1991a:1057; Mellish *et al.*, 1998:103; Quinn & Hughes, 2007:224; Meyer & Van Niekerk, 2008:63; Applin *et al.*, 2011:130). Instead, it enhances the competencies of listening, note-taking and rapid reading (Frost, 1996:1048). This method is less effective for learning in the nursing profession as it (a) does not encourage students to participate and a deep understanding of the subject matter is not obtained, and (b) it does not augment critical thinking and knowledge application which are very important in the nursing profession (Applin *et al.*, 2011:130). Furthermore, textbooks are synonymous with lectures and, according to McCaugherty (1991a:1057), if overused it unwittingly provides the starting point for the theory practice gap.

A nurse educator who prepares lectures from textbooks promotes the surface approach to learning because they repeat the textbook information the student nurses can, in fact, look up themselves. This entails a narrative approach to teaching as it does not involve student participation; there is little or no feedback from the group, a low retention rate because there is little or no reinforcement, does not facilitate the application of knowledge to the practice, and also does not facilitate CT skills (Kumar, 2003:20; Meyer & Van Niekerk, 2008:63). Formal lectures tend to encourage the memorising of facts and thus have a negative effect on the student's ability to correlate theory and practice. It is particularly the application of knowledge to the practice and CT skills which are important skills for nurse practitioner as it enables them to correlate theory and practice (Mellish *et al.*, 1998:103; Kumar, 2003:20; Gulpinar & Yegen, 2005:590 Quinn & Hughes, 2007:224).

The use of teacher-centred teaching methods such as formal lectures creates followers who are unable to function in the clinical environment without direct orders from other nurse practitioners. This is because it teaches them what to observe, how to interpret data and what type of care plans to compile (Meyer & Van Niekerk, 2008:63). The problem-solving approach, on the other hand, teaches the student nurse to gather, organise and analyse data and set priorities with the assistance of the nurse educator who facilitates the learning process. Thus, the students become “independent, autonomous and assertive practitioners” (Meyer & Van Niekerk, 2008:64).

As already mentioned, textbooks are synonymous with formal lectures. Meyer and Van Niekerk (2008:83) argue that although textbooks provide a two-dimensional view of nursing care, it is still a valuable source for subject content that the student nurse can utilise. The nurse educator must, however, provide cognitive instructions to stimulate the learner to engage in the content in a thoughtful manner (Meyer & Van Niekerk, 2008:81). Discussions are an important part of the learning process as the students engage in an active participation role to draw out the meaning of facts (Pedley & Arber, 1997:408).

2.3.1.5 Advantages and disadvantages of problem-based learning

Since PBL was developed in the 1950s it has become more popular and has also been adopted in nursing training. Over the years advantages of PBL other than those already mentioned in this study have been increasingly identified by authors as a successful teaching method for students. Some of these authors who have been mentioned in the study include Creedy and Hand (1994: 696), Frost (1996:1051), Mellish *et al.*, (1998:100), Barrows and Tamblyn (1980) and Boud (1985) in Savin-Baden and Howell Major (2004:3), Hsu (2004:511), Pastirik (2006:266), Van der Horst and McDonald (2008:140), Chikotas (2009:396) and Applin *et al.*, (2011:133). Observed additional advantages of PBL that provide students with the opportunity to explore complex, real world situations and identify solutions are listed below.

- i. Their interpersonal skills are enhanced.
- ii. They develop problem-solving skills to deal with difficult patient problems.
- iii. They take responsibility for their own learning.
- iv. They engage actively in their learning.
- v. They are encouraged to engage in multidisciplinary learning.

- vi. Their clinical reasoning skills are developed.
- vii. Their autonomy is promoted.
- viii. The holistic approach to nursing care is enhanced.
- ix. Their natural curiosity is stimulated.
- x. Their focus on the content and approach to learning are fostered.
- xi. They are encouraged to integrate the knowledge they learnt from different learning areas.
- xii. They develop the ability to recall, adapt and use knowledge to manage various situations.

The findings from a student survey by Pastirik (2006:265) were congruent with previous studies in reporting that PBL activities enhance the students' ability to transfer theoretical (classroom) knowledge to the clinical (or practical) environment. It is especially due to the reality of the scenarios used and the nurse educator's involvement in the classroom sessions as well as the clinical accompaniment of the student nurse in the clinical environment. This allows the student nurse and nurse educators to engage in reflective discussions around the application of the theory and practice. It further prepares the student nurse for situations commonly found in the clinical environment (Chikotas, 2008:359; Applin *et al.*, 2011:130).

A comparative descriptive research study that utilised a postal-survey approach to compare the competencies of graduate nurses who followed a PBL and a non-PBL (NPBL) approach was conducted by Applin *et al.* (2011:133). Although the researchers found no difference between the competencies of the two groups of graduates, the PBL graduates reported "they had the competencies to meet the entry-to-practice competencies" through the "skills and abilities of critical thinking, self-directed learning, evidence-based practice, and teamwork that they learned" (Applin *et al.*, 2011:133). The NPBL graduates did not comment on this. Competency is crucial. Nurses cannot take care of patients if they are incompetent in the nursing procedures, but it is not only the psychomotor skills that are important. The nurse practitioner must also be able to correlate theory to practice and display the proper affective skills when caring for the patient (Meyer & Van Niekerk, 2008:63).

Although many researchers identified PBL as a teaching method to enhance the integration of theory and practice, many negative aspects of PBL were identified. Shortcomings such as difficulty

with student evaluations, educator time commands (planning and preparation of the material is time consuming), an increased demand for cooperation with colleagues, and educator conflicts result in the ineffectiveness of PBL in assisting students to attain factual knowledge (Vernon & Hosokawa (1996) in Beers, 2005:306; Ribeiro, 2011:4)

Frost (1996:1051) and Gwee (2009:235) agree that further disadvantages of PBL include the following: (a) PBL requires high implementation costs due to the establishment of the following resources: information technology such as computer and internet access, more classroom space, a well-equipped library, and appointing more educators (due to the increase in the teaching-related workload) and administrators and; (b) it takes more time to cover the curriculum content than when lectures are used. The lack of integration of PBL as teaching method is another disadvantage according to Vernon and Hosokawa (1996) in Beers (2005:306). The huge financial implications make it difficult for educational institutions to implement a pure PBL curriculum (Frost, 1996:1051). It seems that PBL is viewed as a highly resourced-intensive and impractical strategy. Therefore, several institutions implemented a hybrid curriculum which combined PBL and other teaching methods such as lectures, demonstrations, and large group work with one educator (Pastirik, 2006:262; Gwee, 2009:234, 236; Ribeiro, 2011:2). Moreover, Beers (2005:205) and Ribeiro (2011:13) also state that it is a difficult process for the students to master in the beginning and that the educators have a fear that they may lose control over the content coverage.

2.3.2 Concept mapping and projects

Concept mapping and project work are classified as activities which can be successfully applied as PBL teaching methods and group work activities (Mellish *et al.*, 1998:115).

2.3.2.1 Concept mapping

Concept mapping, also referred to as webbing, brain mapping, content mapping and correlation mapping (Kathol, Geiger & Hartig, 1998:31) is defined as “the graphic arrangements of key concepts and relationships in a hierarchy, linear, spider or system format, which is linked with lines to create a visual picture of the theory content and what students are thinking” (All & Havens, 1997:1211; Hsu, 2004:512). The concept map is particularly useful for the visual learner as it serves as a road map that links information (Kathol *et al.*, 1998:31).

According to Hsu (2004:510), concept mapping, which has also been applied successfully in PBL scenario discussions, promotes problem-solving and CT (Jones, 2010:252) to help the student to organise patient data, process complex relationships, and offer holistic care to the patient. Despite all the advantages of concept mapping, Hicks-Moore (2005:349) states this teaching method is not widely accepted and used in nursing education. But authors such as All and Havens (1997:1213), Kathol *et al.* (1998:31); Akinsanya and Williams (2003:44); Hsu (2004:510), Hicks-Moore (2005:348) and Meyer and Van Niekerk (2008:133) posit that concept mapping is a useful method to aid student nurses to:

- i. structure complex patient data
- ii. organise information to a subject or problem
- iii. organise, process and prioritise new information
- iv. link pre-existing knowledge with new knowledge to enhance decision making skills
- v. develop their critical and lateral thinking skills
- vi. create nursing care plans to ensure holistic care
- vii. retain knowledge long-term
- viii. accelerate their learning
- ix. make sense of a vast amount of knowledge
- x. correlate information
- xi. prepare for clinical experiences
- xii. learn how to learn
- xiii. develop their problem-solving abilities.

Concept mapping is a useful teaching method for facilitators to assist the student with linking the theory to practice, enhance theory-practice knowledge, bridge the gap between theory and practice, assist students to use problem-solving techniques, and assist traditionally passive learners to become active participants and achieve a deeper level of learning. It is, however, a challenging teaching strategy for students to master, but as soon as they understand it and it is skilled therein; it stimulates learning (Kathol *et al.*, 1998:31; Hsu, 2004:516; Hicks-Moore, 2005:352; Hunter Revell, 2012:134).

This teaching method is based on the educational psychology principle that the knowledge the students already have, is the most important factor influencing learning (All & Havens, 1997:1218). This implies that the nurse educator must determine the pre-existing knowledge of the student nurse and teach according to it – which makes concept mapping an ideal teaching method to achieve this. Secondly, it is based on the cognitive theory that students enter with cognitive structuring (Savin-Baden & Howell Meyer, 2004:24). Lastly, it is also based on the developmental theories of Piaget (1972) and Vygotsky (1978) that students learn new knowledge through socialisation within a learning community, which is the classroom and clinical environment (Hsu, 2004:512).

The role of the nurse educator is to assist the student nurse to organise knowledge, link new knowledge to existing knowledge, and guide them to the new knowledge they must master in order to solve problems. The higher cognitive and problem-solving abilities are important skills for applying theoretical knowledge to real life situations in the clinical environment. Meyer and Van Niekerk (2008:82) state that one of the reasons for the failure in theory and practice correlation is the individual's inability to solve problems.

2.3.2.2 Projects

Projects have the same advantages as other group work and problem-solving activities, for example, student-centredness, active participation, and finding solutions to the problem. But the difference between projects and other group work activities is that the student can investigate the problem independently and then compare and discuss the finding and solutions in a group (Jacobs *et al.*, 2004:196). This stimulates learning because students get the opportunity to work together, discover information and utilise their pre-existing knowledge to analyse the findings where after the solutions generated are usually displayed visually. Project work is an excellent learning method to correlate subjects and modules and expose the student nurse to reality (Mellish *et al.*, 1998:115; Meyer & Van Niekerk, 2008:137) because project work is “based on the use of related theory in specific clinical contexts to investigate and solve problems” as Meyer and Van Niekerk (2008:137) state. Mellish *et al.* (1998:116) suggest project work to teach students medical and surgical nursing, as well as the essential elements of nursing unit administration.

Furthermore, the student nurse learns from research findings as well as from each other as they not only learn to use independent thinking, but also to participate in a group which is very important

for teamwork. The nurse educator facilitates the process through clear instructions, deadlines, assisting, and criticising when and where necessary and by encouraging the students (Mellish *et al.*, 1998:115; Jacobs *et al.*, 2004:196) and to motivate the students to use multimedia such as accessing the internet, watching training DVDs and / or listening to training CDs and making use of a well-equipped library when a project work requires it (Meyer & Van Niekerk, 2008:137).

2.3.3 Experiential learning

There are close connections between experiential learning (EL) methods and OBE. Experiential learning is increasingly accepted as an approach that fosters professional development and work-based learning (Mellish *et al.*, 1998:99). Quinn and Hughes (2007:33) define EL as “learning by doing, rather than listening to other people or reading about it”. This definition implies that experience creates knowledge (Jones, 2010:254). Phillips *et al.* (1998:13) write that EL “positively implicates the student in applying theory to practice”. The learning results from the students’ experience, with reflection that forms an important part of the learning process (Quinn & Hughes, 2007:235). Experiential learning assists student nurses to gain insight through their own experiences (Severinsson, 1998:1276).

Frequently used experiential learning teaching methods are case studies, reflection on learning and experience, problem-solving activities, projects, brainstorming, role-play, group work and simulation which entails active student-participation and student-centredness (Mellish *et al.*, 1998:99; Phillips *et al.*, 1998:12, Quinn & Hughes, 2007:250). Although they agree with the aforementioned authors, Meyer and Van Niekerk (2008:126) add further that EL in nursing education must also include rotation through the clinical (or practical) environment to enhance the students’ insight and to facilitate learning through practice which, indeed, implies the application of theory to practice.

Experiential learning appears to be a valuable teaching and learning approach because of its noted advantages. According to Meyer and Van Niekerk (2008:128), it enhances “theory and practice correlation; professional growth and development, as students must solve real problems; growth in their own managerial skills, because they must manage themselves, their learning process, interpersonal relations and communication”.

Experiential learning also appears to be a useful way to integrate the classroom (theory) and clinical (practical) work as illustrated by Kolb's (1984) learning cycle in Quinn and Hughes (2007:34) that forms the basis for EL in adult education (see Figure 2.2). McCaugherty (1991b:540) pointed out that lectures relevant to the students' clinical experience are not suitable teaching methods for reflection. This is because even if the lecture is relevant to their clinical experience, it may be months apart from their nursing unit work. The discussion of a patient study is a more suitable way for reflection as it is more relevant to the clinical experience of the student.

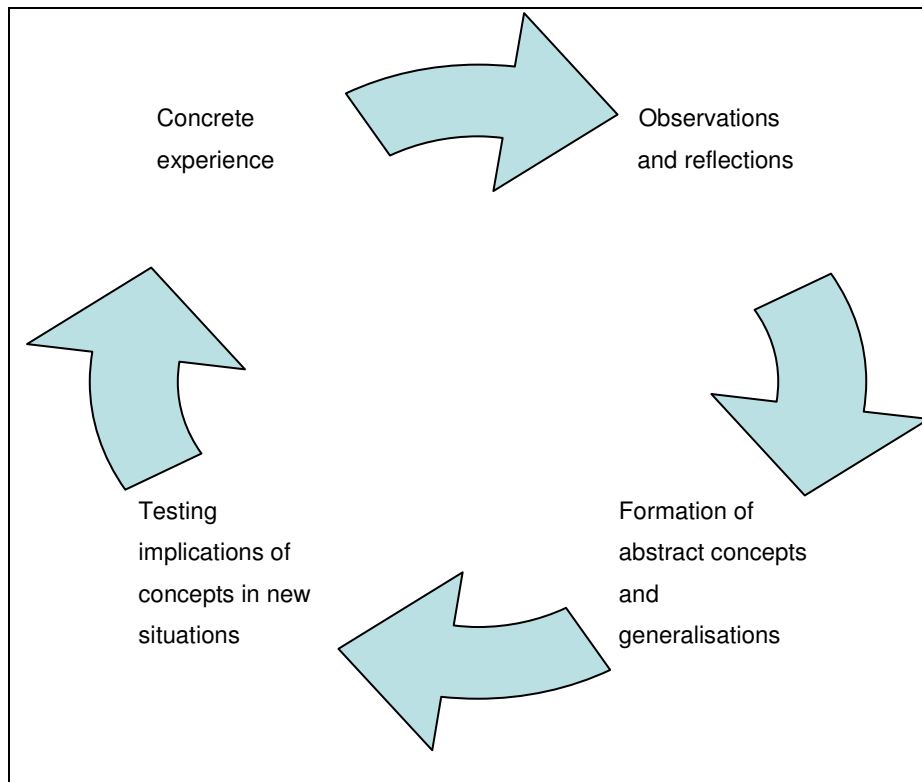


Figure 2.2: Kolb's (1984) experiential learning cycle in Quinn and Hughes (2007:34)

Kolb's (1984) learning cycle illustrates that adults as learners reflect on experience and links it to the theory, where after they test the implications of reflection in new situations. McCaugherty (1991b:534) stated reflection on experience is the link between the practice (doing) and the theory (thinking) in Kolb's (1984) learning cycle. Kolb (1984) in Quinn and Hughes (2007:235) identified the following characteristics of EL:

- i. "Learning is a process and not an outcome.
- ii. Learning is a continuous process through experience.
- iii. Learning is a holistic process which requires the solving of conflicts.

- iv. Learning occurs due to the interaction between the students and the environment.
- v. Knowledge is created through the process of learning.”

These characteristics indicated by Kolb (1984) are widely agreed on but Barnard (1990) cited in Quinn and Hughes (2007:236) identifies at least two types of EL. These are learning from an experience (referring to past experiences) and learning through experience (experience deliberately planned to facilitate learning). The educator can, for example, utilise both these types of EL to facilitate learning in the classroom through role-play, simulation, and group discussions (Mellish *et al.*, 1998:99). Ferguson and Jinks (1994:691) also point out that exposure to discrepancies between patient care planning in the classroom and the clinical environment is a vital learning source for student nurses.

It is important that student nurses learn to identify problems through scenarios and patient and case studies which are excellent theoretical teaching methods to teach student nurses to identify and find solutions to problems. Through discussions in large student groups and activities in small groups students can learn to solve problems and enhance their problem-solving skills (Meyer & Van Niekerk, 2008:136). This skill is one of the critical outcomes adopted from OBE which must be achieved by all students within the education and training system (Van der Horst & McDonald, 2008:17).

Problem-solving is defined as “the process of applying existing knowledge to a new or unfamiliar situation in order to gain new knowledge” (Van der Horst & McDonald, 2008:138). Student nurses answer questions from information given to them. The problem-solving teaching methods stimulates the students to seek information, analyse the information, and apply the knowledge to real life situations thereby correlating theory and practice and fostering a deeper approach to learning (Van der Horst & McDonald, 2008:138). When students do not learn to identify and solve problems, there is a surface approach to learning. This is usually the case when the educator lectures from textbooks because students are then passive listeners who are expected to regurgitate the theory given to them. This narrative approach to teaching encourages rote learning. This has a negative effect on students’ ability to correlate theory and practice (Van der Horst & McDonald, 2008:62).

2.3.4 Case studies

Case studies are defined as cognitive textual descriptions of situations that entail in-depth analyses and decision-making to solve problems, whereas simulations provide experiential overviews of situations or problems (Mellish *et al.*, 1998:179; Quinn & Hughes, 2007:257). Popil (2011:206) supports this view, but states that case studies are not only based on cognitive overviews because they do incorporate ideas of experiential learning and involve active student participation.

Case studies, which can be used in class discussions, are potentially excellent teaching methods for PBL as it poses the problem to which the student nurse links nursing theory (knowledge) to their experience (Meyer & Van Niekerk, 2008:179; Popil, 2011:204). Cases can be based on fictional or real life situations and teaching with case studies appears to be useful in providing students with opportunities to apply theory to practice, develop CT and problem-solving skills, practice decision making skills, debate different viewpoints, solve clinical problems, engage in active learning and data analysis and put meaning to the knowledge in the clinical (or practical) environment (Popil, 2011:205).

As a teaching method the case study can be used in various other disciplines as well, for example, in healthcare, law, business, and social science. It is based on the methodology that CT is brought out through the presentation of the problem / situation which stimulates the students to think, ask questions and use their pre-existing knowledge to answer the questions (Popil, 2011:206). It can be presented to individuals or groups, in the clinical environment or classroom, but is usually discussed in groups where the solution to the problem is brainstormed (Popil, 2011:205). Also, it can range from simple situations to complex scenarios and is usually based on real life or fictional problems, ethical issues, dilemmas, and patient care (Mellish *et al.*, 1998:179; Popil, 2011:204).

Both Quinn and Hughes (2007:2580) and Popil (2011:206) emphasise that real life situations must be used as basis for the case study as it reflects the actual nursing practice. These authors concur that case studies are excellent teaching methods to enhance the student nurses' CT skills because it provides a trigger to discuss the issue and examine the real life event. It also gives the student nurse the opportunity to obtain a holistic view of the patients' healthcare status which enables them to analyse the problem from all angles, make a judgemental decision, and justify their choices (Mellish *et al.*, 1998:180; Quinn & Hughes, 2007:257).

Additional to the advantages mentioned, case studies also teach students managerial skills and enhance their cognitive abilities due to the deductive and inductive reasoning of the health problem; it assists them to understand complex and complicated issues and increase knowledge retention (Mellish *et al.*, 1998:181; Jacobs *et al.*, 2004:98; Quinn & Hughes, 2007:258; Meyer & Van Niekerk, 2008:179; Popil, 2011:205).

Despite the various advantages case studies offer, it also has limitations. It is inappropriate for teaching concrete facts, difficult and time consuming to develop, and also threatening and difficult for nurse educator with poor questioning skills (Popil, 2011:205). Another problem is that it may be on such a high cognitive level that the students do not have the necessary experience or knowledge to analyse the problem adequately. This may frustrate and discourage the student nurses which will defeat the whole learning process (Mellish *et al.*, 1998:181).

2.3.5 Group work

Meyer and Van Niekerk (2008:128) refer to group work as the interaction between students while facing each other. There is a vast variety of group work methods such as group discussions, small group activities, and project work which is also classified as group work (Meyer & Van Niekerk, 2008:128). Group discussions are perceived as a valuable and the ideal teaching method to facilitate learning with senior students such as the first- and second-year diploma in General Nursing Science (DGNS) students. These students are in their third and fourth year of study and had successfully completed the two-year course leading to enrolment as a nurse. Group work can be used to deal with problems of an ethical, managerial, or patient care related nature; it is an excellent method to enhance the students' CT skills and theoretical knowledge by encouraging them to actively participate in the discussion (Mellish *et al.*, 1998:118; Quinn & Hughes, 2007:325).

By interacting and working together with colleagues to solve problems, team work is promoted, group cohesion is enhanced, and active participation is encouraged. In addition, public speaking and the skill to debate a viewpoint are developed and the students' skills and socialisation into the nursing profession are promoted. The opportunity for theory-practice correlation is further advanced and the students' subject knowledge bettered (Mellish *et al.*, 2008:131; Quinn & Hughes, 2007:325). This statement was confirmed by midwifery students who participated in a study conducted by Wilson (2008:2). The students stated that group work with peers and the opportunity

to share work-related concerns and confusions helped them to bridge the theory-practice gap (Wilson, 2008:2).

Yet, not all students are in favour of group work. Some find it nerve-wracking, especially if one or two students dominate an activity. Thus, an important role of the nurse educator as the facilitator of the learning process is to ensure that all the students in the group participate (Meyer & Van Niekerk, 2008:130) and to move from transmitting information (traditional lecturer-based approach) to the facilitation of learning by guiding students to find, analyse, and understand information. By doing this, the experience and knowledge that the students bring to the classroom are acknowledged, which is again in line with the principles of adult education (Mellish *et al.*, 1998:121; Meyer & Van Niekerk, 2008:53; Maginnis & Croxon, 2010:4).

To ensure that all students participate, *small group activities* can be facilitated. It places the student in the centre of the teaching-learning experience, forces them to participate as well as enhances their cognitive, affective, self-expressive, and social skills. Three of the aims of small group activities which are related to this study are: (a) the development of problem-solving skills, (b) the promotion of CT abilities and, (c) the application of theory through the discussion of content (Meyer & Van Niekerk, 2008:130).

Brainstorming, another teaching method, is classified by Jacobs *et al.* (2004:198) as an active group work activity with the purpose of assisting students to apply knowledge and skills to real life situations which, according to Quinn and Hughes (2007:251) is a problem-solving teaching method. The researcher supports both of these views. Brainstorming can be utilised as a class exercise where problem-solving is facilitated in a big group or small groups with students participating in the activity. The members of the group generate multiple ideas to solve the problems with the nurse educator capturing all the ideas on a flipchart or whiteboard. Once all the ideas are exhausted, the students help to select the best ones by examining and discussing all the ideas identified (Jacobs *et al.*, 2004:186). The advantage of brainstorming is that all the students participate in the activity. This promotes teamwork. Furthermore, the students' decision-making skills, CT skills, and self-confidence are enhanced through the nurse educator creating a safe learning environment where all inputs are accepted with no fear of punishing if wrong answers are provided (Jacobs *et al.*, 2004:186).

2.3.6 Clinical teaching in simulation

The aim of clinical teaching is to produce a nurse practitioner who is able to deliver safe competent patient care through sound cognitive, psychomotor and affective skills, who can improve and maintain a high standard of nursing care, and who is able to ensure the correlation of theory and practice (Mellish *et al.*, 1998:212). This aim can also be achieved through simulation – simulation is an old active teaching method which replicates real life situations. Mellish *et al.* (1998:129) emphasised that clinical teaching in simulation must be transferred to the clinical (or practical) environment (the real life situation) and that correlation of theory and practice must be part of the simulated teaching situation. This is done by emphasising the reasons for doing the procedure, the dangers related to the procedure, and the emotional and physical care of the patient.

Simulation is defined as the imitation of real life situations which can be done with the use of models, also known as manikins, which mimic real life situations or, alternatively, a high-tech simulator. A high-tech simulator is a device that presents a simulated patient. It interacts appropriately with the actions of the student (the simulation participant) in a non-threatening environment. This gives the student exposure to the real life situations (Quinn & Hughes, 2007:254; Meyer & Van Niekerk, 2008:175). A well-known example of a simulator is the flight simulator used to train pilots with (Gaba, 2004:i2). Airline pilots spend a lot of time in the flight simulator to learn how to fly and handle emergency situations. In nursing education it can be used to teach student nurses how to react to, for example, a cardiac arrest (Quinn & Hughes, 2007:354) or deliver a baby in simulation using a model which mimics the birth process. Simulation affords the student the opportunity to apply the theoretical knowledge to practice without the anxiety associated with the real life delivery process.

The researcher of this study fully agrees with the view of Mellish *et al.* (1998:208) and Meyer and Van Niekerk (2008:168) who assert that the best place for clinical teaching and learning is at the patient's bedside. Although she accepts that the significance of clinical teaching which takes place in the clinical environment cannot be disputed, she posits that some procedures, such as wound care or removing of sutures, can just as successfully be taught through simulation. Davies *et al.* (2012:131) and Murphy *et al.* (2011:e141) proved clinical teaching can also be done in simulation in a well-equipped simulation laboratory by basing the clinical teaching on the theory as it is applied in practice. The simulation must be as close to reality as possible. Both the authors conducted their studies in a simulation laboratory. By learning in simulation, the student gets the opportunity to practice the procedure before doing it in the real life situation.

In a reported study by Davies *et al.* (2012:134) a real life four-bed children's ward was simulated in a laboratory. The researcher wanted to find out whether simulation, as teaching methodology, is useful. Fourteen (14) third-year undergraduate student nurses participated in a simulated experience. Ninety-eight per cent of the students rated the simulation enjoyable and said that it improved their clinical skills, which included knowledge, and enhanced their confidence and ability to transfer skills as a registered nurse. Davies *et al.* (2012:137) concluded that simulation is a useful teaching method as students are assisted through simulation to integrate knowledge and skills in a safe environment which mirrors real practice. The student gets the opportunity to learn and practice knowledge and skills in a safe non-threatening environment over a period of time. By doing this, they actively participate in the learning process and are prepared for clinical practice, while the discrepancies between what is taught and what happens in die clinical environment are highlighted (Meyer & Van Niekerk, 2008:170; Murphy *et al.*, 2011:e143; Davies *et al.*, 2012:135).

Teaching clinical procedures in a simulation laboratory is possible when using a variety of teaching method and aids, but it is essential that the nurse educator recaps the theoretical knowledge when demonstrating procedures (Mellish *et al.*, 1998:215; Maginnis & Croxon, 2010:3). This can be achieved by using nursing care plans, role-playing, DVDs/videos, case study discussions, discussions of problem-oriented patient records, demonstrations with real life objects such as defibrillators, and clinical scenario equipment / models (manikins). For example, the students can be shown a DVD or video of a cardiac resuscitation and then be given the opportunity to practice the procedure on a model (manikin) (Mellish *et al.*, 1998:216; Maginnis & Croxon, 2010:3). The teaching methods mentioned above are, according to Maginnis and Croxon (2010:3), all methods that assist students to integrate theory and practice.

By using simulation, nurse educators can ensure that student nurses are exposed to clinical situations which they not always encounter in the real life situation while they rotate through the clinical environment. This provides the students with an opportunity to apply the theoretical knowledge to the clinical situation (Murphy *et al.*, 2011:e143) while at the same time developing their cognitive, affective and psychomotor skills in a safe environment – a 'safe' environment in the sense that it does not pose the consequences of medical legal risks which can be costly and life threatening to the patient (Meyer & Van Niekerk, 2008:175).

Demonstrations are one of the best known teaching methods in nursing education as it forms part of teaching the practice of nursing with the enhancement of the correlation of theory and practice (Mellish *et al.*, 1998:108). It can be used in different venues and in real life or simulated situations

to demonstrate and teach procedure which are scarce in the real life situation without encroaching on patient privacy. Demonstrations are defined as the use of real life equipment and manikins to give a visual presentation of facts, concepts, or the procedure. It is usually used to illustrate to the students why certain things occur and / or demonstrate psychomotor skills in a relaxed atmosphere that encourages questions which can be answered immediately. It also provides the opportunity to clarify points which the student is uncertain about (Mellish *et al.*, 1998:109; Quinn & Hughes, 2007:231).

Good principles to adhere to while giving a demonstration are (a) listing the sequence of the procedure on a whiteboard which serves as a guide to the students while the educator demonstrates the procedure, (b) demonstrating the procedure at normal speed, and (c) giving the students an opportunity to practice the procedure immediately afterwards. This (practice opportunity) must be done under supervision with *reflective feedback* which will ensure active student participation and that learning takes place (Quinn & Hughes, 2007:232). Without practice opportunity, reflection and discussions, this method fall under the teacher-centred approach making demonstrations simply the method of transmitting knowledge (Nilsson, Pennbrant, Pilhammar & Wenestam, 2010:7).

Another teaching methods used in simulation is *role-play*. According to Chan (2012:22), role-play has been identified as an effective teaching method that involves (a) active student participation, (b) utilisation of the four senses namely visual, auditory, reading/writing and kinaesthetic, and (c) experiential learning. This teaching method has been used with much success in the PBL classrooms. Role-play takes place when students perform different roles in simulated situations. It is an excellent method for applying knowledge and skills to real life situations, improve CT abilities and enhance communication skills. The students' CT abilities are improved through critical reflection of their perceptions of patients' needs and feelings; it is achieved through active participation and interaction with the group members as well as through observation of the other role-players under the guidance of the educator. Mellish *et al.* (1998:130), Quinn and Hughes (2007:255) and Chan (2012:21) state although many students find this teaching method enjoyable and memorable, the shy student and those not interested in doing role-play may not be stimulated by this teaching method.

Learning games are yet another teaching method which is closely related to simulation. It differs from simulation in that it is competitive and has set rules (Quinn & Hughes, 2007:257). Jones (2010:252) and Worrell and Prefetto-McGrath (2007:424) concur learning games can also be used

as a teaching method to promote CT. Learning games can very complicated or relatively simple. Learning occurs in a relaxed atmosphere and is usually perceived as a fun activity by the students. However, to ensure the effectiveness and educational validity of this teaching method, there should be a reason behind the games. The game can be built around the nursing care of a patient, thus based on learning outcomes (Mellish *et al.*, 1998:132).

2.3.7 Nursing process

The nursing process is a tool utilised by the nurse practitioner to compile nursing care plans to address the healthcare issues of a patient. It is a systematic approach which consists of five consecutive nursing interventions aimed to promote the patient's health (Meyer & Van Niekerk, 2008:180; Chang *et al.*, 2011:3225; Yildirim & Özkahraman, 2011:261). Nursing care is developed through a scientific problem-solving process that includes assessment, diagnosis formulation, planning, implementation, and evaluation (Chou (1996) in Chang *et al.*, 2011:3225). In the South African context recording is incorporated into five steps to provide evidence of care should there be legal actions against the nurse practitioner in a court of law.

The nursing process is an effective teaching method to correlate theory and practice because of the cognitive activity which is based on CT (Meyer & Van Niekerk, 2008:87). Just as the problem-solving method, the student must identify and analyse the problem and find solutions before the nursing care plans, specific to the patient's needs, are compiled. The process is concluded with evaluating the outcomes of the nursing care plans (Mellish *et al.*, 1998:167). Meyer and Van Niekerk (2008:85) state the utilisation of the nursing process as a teaching method also enhances the student nurse's logical reasoning ability. Yildirim and Özkahraman (2011:258) concur and maintain that the nursing process, as a problem-oriented model that formulates nursing diagnosis, is linked to CT because this process requires CT skills which incorporate the reflection, cognitive, and affective domains (Sedlac & Ludwick, 1996:19; Yildirim & Özkahraman, 2011:259). It is also seen as a decision-making approach that is based on a scientific method which forms the basis of CT in nursing.

Meyer and Van Niekerk (2008:180) and Quinn and Hughes (2008:72) concur that the nursing process enables the student nurse to integrate the theory effectively in practice by compiling suitable care plans for the patient. By utilising the nursing process as a method of instruction, the student will begin to correlate the theory with practice and identify problems related to nursing

practice. Hence, the student's enquiring mind and judgmental decision-making skills are promoted. The result is a competent and confident nurse practitioner who enjoys job satisfaction (Mellish *et al.*, 1998:171).

Although student nurses may find the theoretical component of the nursing process easy to master, they often struggle to compile the nursing care plans. The application of the nursing process in the clinical environment is not always easy or possible due to the complexity of the situation (Severinsson, 1998:1267; Meyer & Van Niekerk, 2008:85). To master the nursing process the student nurse must be empowered. This can be done by equipping him or her with the necessary theoretical knowledge, for example, knowing anatomy and physiology. Such knowledge will help him or her to identify the relevant pathophysiology and to compile appropriate nursing care plans (Meyer & Van Niekerk, 2008:88).

In summary, many authors associate the nursing process with PBL because it requires the student nurse to identify and analyse problems associated with the healthcare of the patient. It also involves concept formulation, judgement, and decision-making skills (Meyer & Van Niekerk, 2008:85). To apply the scientific nursing process effectively, cognitive, CT, psychomotor, leadership and management skills are needed.

2.3.8 Reflective learning

Reflective learning (RL) in nursing through discussions, writing essays and in journals augments theory-practice integration (Reed & Procter (1993), Wong *et al.*, (1995), Burrows (1995), Bellman (1996) & Hallett (1997) in Burton, 2000:1014). This viewpoint is highlighted by Frankel (2008:5) who states reflecting is “an important and powerful tool when attempting to integrate theory with practice.” It gives the student nurse an opportunity to link the future to the past and to link what the theory says should happen and what actually happens in the clinical environment (Frankel, 2008:5). Similarity between what is taught and what is experienced in the clinical environment is important to ensure safe patient care by student nurse (Maginnis & Croxon, 2010:6). This can be achieved by the student nurse reflecting on what she or he experienced in practice and what they learnt in the classroom and / or simulation laboratory.

This teaching method, which is associated with EL and PBL, became popular in nursing education in the 1990s to teach student nurses the professional practice of the nursing profession, especially where complex clinical problems are concerned (Mellish *et al.*, 1998:99; Burton, 2000:1009). The successful implementation of theory into practice was achieved by encouraging reflecting on own practice (Frankel, 2008:5). Reflection upon practice or experience can take place in the classroom, simulation laboratory or clinical environment while it is happening, or either after group discussions, simulations, role-play or one-to-one discussions has taken place (Mellish *et al.*, 1998:99).

Although the implementation of this teaching method needs sound structural and human resources and organisational commitment within the nursing education institution, it is used more and more frequently in nursing education in a number of countries. It is a time consuming process which needs the active participation of the educator and students during group discussions or one-to-one discussions (O'Connor & Hyde, 2005:291). In a study conducted by Severinsson (1998:1269) in which 28 student nurse participants were requested to complete a questionnaire, the findings revealed that reflection on clinical experience affected the students' personal knowledge and integrated theory and practice. Therefore, Severinsson (1998:1276) recommended that the nurse educator moves from a traditional teaching approach to a reflective approach. By doing this the student nurse is helped to address and manage clinical problems more effectively.

A qualitative descriptive study conducted by Wilson (2008:2) "to explore the theory-practice gap from the perspective of midwifery students" reaffirmed Severinsson's study results as it generated the same results as Severinsson's study (1998:1269). Both these authors found that reflection on what the student nurse experienced bridged the theory-practice gap. Wilson's (2008:2) study also proved that the theory-practice gap can be bridged by nurse educators encouraging the students to *network with peers* and providing "evidence-based teaching that reflects the current clinical environment" (Wilson, 2008:3).

2.3.9 Self-directed learning

Self-directed learning (SDL) is a humanistic oriented approach with professional autonomy. It is a teaching method where students take "the initiative to determine their learning needs, set goals, select and use appropriate teaching methods to achieve their goals, and to assess the achievement of the learning outcomes with or without the help and input of others" (Worrell & Prefetto-McGrath, 2007:423; Knowles (1975) in Levett-Jones, 2005:365). These authors reported

that SDL shows similarities with adult learning and EL which are both student-centred and self-directed. The students are self-directed; they take initiative with or without the assistance of others; they take some degree of responsibility for their learning; use experience as resources; learn to process information meaningful and base learning on tasks or problems (Landers, 2000:1553; Knowles (1975) in Worrell & Prefetto-McGrath, 2007:425).

Self-directed learning increases the student's confidence and independent learning in the fast changing and dynamic learning and clinical (work) environment (Levett-Jones, 2005:364). Knowles (1984) in Levett-Jones (2005:365) is of the opinion that SDL is aligned to his andragogy theory where the focus is on the student and not on the educator. The educator is the facilitator of the students' learning process. According to Knowles (1975) in Levett-Jones (2005:365), enhancing the students' independent inquiry skills and teaching them to utilise every education experience that arises is the main purpose of education. This can be achieved by SDL since this teaching method involves the active participation of the student; fosters responsibility and assertiveness; increases the students' confidence in their own abilities; develops independent learning skills; promotes commitment to life-long learning; enhances more purposeful learning; improves better retention and utilisation of knowledge learnt, and increases intrinsic motivation. It also improves theory-practice integration by enhancing the student's CT skill (Ajani & Moez, 2011:3930). All of these are important attributes throughout nurse students' nursing careers.

Although there are many advantages of SDL, it was found that students dislike experiential forms of learning (Pedley & Arber, 1997:405) and that the limitations of SDL in undergraduate nurse education are being recognised (Levett-Jones, 2005:365). Pedley and Arber (1997:405) applied Jarvis' experiential learning framework to evaluate the effectiveness of SDL. The students' positive feedback of this learning strategy demonstrated that, despite the evidence in literature that students dislike experiential forms of learning, it can be utilised successfully in higher education. It was found that SDL also shares similarities with PBL, decision-making, and research processes which are all important components for CT and theory-practice correlation (Pedley & Arber, 1997:405; Kocaman, Dicle & Ugur, 2009:286). Self-directed learning also assists with the transfer of learning and equips the nurse practitioner to develop the skills necessary to function in a fast and forever changing environment (Pedley & Arber, 1997:409; Williams, 2001:85). The data of Pedley and Arber's study (1997:405) further showed that the students valued the opportunity to participate in group discussions and reflect on their experiences with their peers. The same authors stated that experiential learning makes it possible for the student to acquire transferable skills and build close links with the clinical (or practical) environment which are significantly

important skills to bridge the link between classroom knowledge and the nursing situations in the clinical environment.

Self-directed learning is, however, not suited to all students or suitable for all learning situations. For example, when new subject matter must be taught to the students or when the student does not have much work experience. However, this is usually the case in the early stages of their training (Levett-Jones, 2005:366).

Although the adult learning principles relies on students engaging in SDL and their need to be self-directed in their learning, it does not always happen (Quinn & Hughes, 2007:51). A more structured and combined andragogical / pedagogical approach could be used to meet the students' learning needs. *Learning contracts* are a way to give students the opportunity and guidance to direct their learning according to the learning needs they identified. It can also help the student nurses to communicate and assist them with achieving their learning needs with the help of the nurse educator and nurse practitioner in the clinical environment (Quinn & Hughes, 2007:30). The learning contract empowers the student by giving them ownership in some parts of their learning (Mashaba & Brink, 1994:136). It also provides the "vehicle for integrating theory and practice" and a way to demonstrate knowledge transfer to the clinical (or practical) environment (Quinn & Hughes, 2007:33).

In summary, the literature search substantiated that teaching methods such as problem-based activities and / or problem-solving activities, concept mapping, projects, experiential learning, case studies, group work, simulation, demonstration, the nursing process, brainstorming, reflection on learning and / or experience, and self-directed learning activities which embrace an adult, active participatory, student-centred approach, enhance the correlation and integration of theory and practice. Not only do some of these teaching methods require CT skills, it also teaches and enhances the students' CT skills. Critical thinking is, for example, associated with information and / or data gathering, reasoning, higher cognitive skills, problem identification, and the generation of solutions (Daly, 1998:324). It thus logical and important to explore the concept of critical thinking (CT) in more detail as is done in section 4.2.

2.4 CRITICAL THINKING

Critical thinking is an essential component of quality nursing care and professional accountability (Distler, 2007:55). Popil (2001:204) and Chang *et al.* (2011:3225) agree. According to them, CT is critically important in the nursing profession to ensure safe comprehensive patient care. In fact, the significance of CT in this profession is highlighted in the critical cross-field outcomes in OBE which are embraced by the SANC for nursing education. Two of the seven critical cross-field outcomes in OBE are directly related to the students' CT abilities. These two outcomes are (a) the use of critical and creative thinking skills to identify and solve problems, and (b) to collect, analyse, organise and critically evaluate information (Van der Horst & McDonald, 2008:47; SANC, 1989:3).

By analysing the literature it became evident that although various definitions for CT in general as well as in nursing education existed, there was no universally accepted definition available or used (Yildirim & Özkahraman, 2011:257). The definitions do not show consistency and are quite varied. The most successful attempt to define CT refers to the Delphi report published by the American Philosophical Association (Scheffer & Rubenfeld, 2000:352; Yildirim & Özkahraman, 2011:257). The use of CT in nursing is also based on the following definition as summarised by Turner (2005:276):

Critical thinking in nursing is a purposeful, self-regulatory judgment associated in some way with clinical decision making, diagnostic reasoning, the nursing process, clinical judgment, and problem-solving. It is characterized by analysis, reasoning, inference, interpretation, knowledge and open-mindedness. It requires knowledge of the area about which one is thinking and results in safe, competent practice and improved decision making, clinical judgments, and problem-solving.

The nursing process, CT, problem-solving and decision-making terms is used interchangeably with the definition of CT (Worrell & Prefetto-McGrath, 2007:422). There is a close relationship between the CT abilities of the nurse practitioner and their ability to utilise the nursing process with CT the trigger of the nursing process (Sedlack & Ludwick, 1996:19; Popil, 2011:204). Chan (2012:25) state CT is depended on decision-making and problem solving processes, as well as handling controversial issues. The former two are also both processes used when utilising the nursing process.

The close relationship between the CT abilities of the nurse practitioner and their ability to utilise the nursing process concurs with Daly's (1998:324) summary of the elements of CT. The author illustrated this closeness in a cycle showing that CT is associated with information and / or data gathering, reasoning, higher cognitive skills, problem identification, challenging ideas, attitudes and values, and the generation of solutions (see Figure 2.3). According to Yildirim and Özkahraman (2011:262), the CT concepts mentioned above are parallel with the steps of the scientific nursing process, which then makes it an ideal teaching method to teach CT skills to student nurses. It equips them with the skill to choose and interpret data when caring for a patient and base their decisions on the assessment data of the patient.

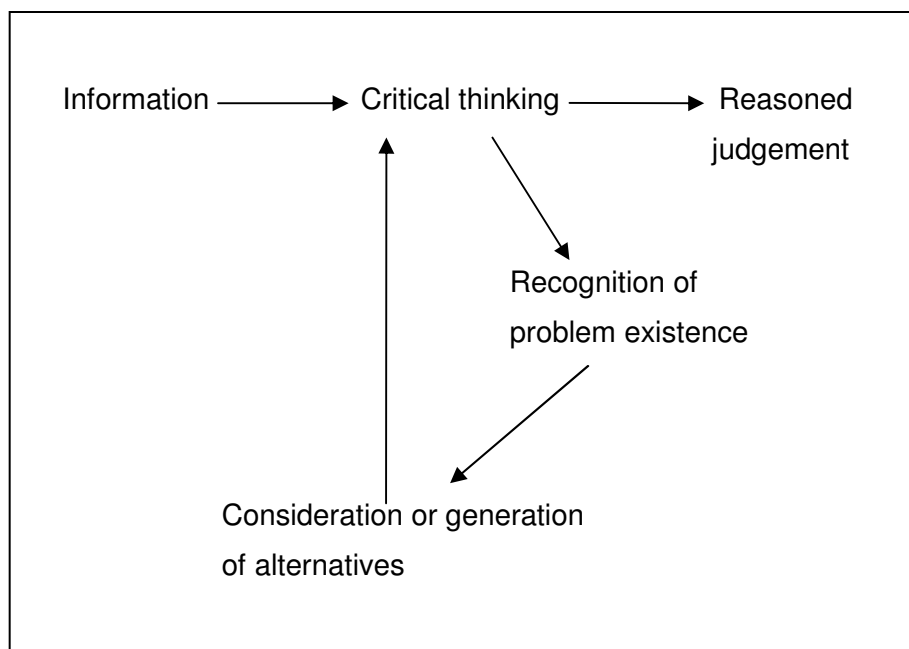


Figure 2.3: Cycle of critical thinking and creativity (Daly, 1998:324)

Student nurses' predisposition to consider all problems they encounter, illustrates their ability to correlate theory and practice (Meyer & Van Niekerk, 2008:82). Jones (2010:248) agrees and states CT skills are an essential component of theory-practice integration as it is required in various domains of the nursing practice.

Regardless of their CT skills, nurse practitioners must also be able to adapt to a fast changing education and clinical environment. They do, however, function better in the clinical environment when their CT skills are better and more flexible (Meyer & Van Niekerk, 2008:81; Jones, 2010:248). In support, Chang *et al.* (2011:3224) concluded in their cross-sectional and correlation study in which 570 clinical nurses older than 20 years participated that CT ability had a positive

correlation with the competence of the nurse practitioner which is directly related to theory-practice integration and safe patient care (Chang *et al.*, 2011:3224).

The CT skills of nurse practitioners who had more than five years' work experience and a master's degree were much better than those with a bachelor's degree or diploma and less than five years' work experience (Chang *et al.*, 2011:3224). The student nurses' CT ability was rated at mid-level and their inference ability at the lowest level. This was due to a teacher-centred approach where the students were the passive receivers of information with no mutual communication and scenario teaching. Therefore, the authors recommended a student-centred approach where PBL, group discussions, and reflection of clinical experience or real life cases are used to enhance the student nurses' learning, motivation, problem-solving abilities, and CT skills (Chang *et al.*, 2011:3230).

The CT learning process starts in the classroom and continues in the clinical environment with the nurse educator laying the foundation for CT. This is done by creating a supportive, safe learning environment that encourages the student to utilise CT skills (Jones, 2010:251). It is not an easy process and is also not the mere memorising of facts. Knowing everything through memorising will not assist a student to become a critical thinker (Popil, 2011:204). Encouraging nurse students to use CT is done by the educator utilising appropriate teaching methods that encourage them to ask questions, reflect, rationalise, independently evaluate scientific content, and discuss problems (Meyer & Van Niekerk, 2008:81; Jones, 2010:251).

Listed below are some active teaching methods identified by Jones (2010:252) and Worrell and Prefetto-McGrath (2007:425) which can be used to promote critical thinking.

- Case studies / problems/ scenarios
- Demonstrations
- Games
- Learning contracts
- Concept mapping
- Problem-based / solving activities
- Reflection
- Questioning
- Simulation
- Computer-assisted instructions
- Written assignments
- Portfolios
- Computer simulations
- Journaling
- Role-playing
- Large or small group discussions

Many of the methods listed above have been designed to develop the habits of mind of critical thinking. The habits of mind include “perseverance, open-mindedness, flexibility, confidence, creativity, inquisitiveness, reflection, intellectual integrity, intuition, and contextual perceptiveness” (Scheffer & Rubenfeld, 2000:356). On the contrary, to ensure a successful combination of methods that are flexible, active methods that encourage interactive participation must be used. Scenarios are used in many of the above listed teaching methods. The scenario encourages the student nurse to reflect upon and analyse decisions made or interventions chosen during patient care (Jones, 2010:252).

As illustrated in the list above there is a vast number of teaching methods that develops and enhances CT skills, but the development of these methods is time consuming. However, once implemented, it provides a valuable method to develop the students’ CT reasoning abilities which empower them to generate options for problem-solving (Jones, 2010:255). Without this skill the students tend to become followers rather than leaders, because they lose their self-confidence (Meyer & Van Niekerk, 2008:82).

Many of the teaching methods listed above have already been discussed in this study. It is apparent that these methods can be used interchangeably and within various teaching approaches such as in PBL, SDL and EL. Teaching the student nurse to use inductive and deductive reasoning, based on scientific proof, has also been proven as a successful teaching method to enhance the students’ CT skills. This is where *evidence-based* and *class research activities* play an important role. The student nurse gets the opportunity to do research and base the solutions to problems on evidence (Meyer & Van Niekerk, 2008:87).

Another teaching strategy listed above that enhances CT skills is the use of *portfolios* where the educator and student engage in a reflective self-evaluation process (Jones, 2010:254; Van der Horst & McDonald, 2008:195). The portfolio teaching strategy was also introduced to foster SDL, address the theory-practice divide, and correlate the theory and practice (Van der Horst & McDonald, 2008:195). McMullan (2008:873), however, is not fully convinced that the use of portfolios *do in fact address* the theory-practice gap. In a study conducted by McMullen to determine the value of the portfolio in bridging the theory-practice gap, it was determined that the use thereof did not address the integration of theory and practice sufficiently. This was the result of questionnaires completed by 69% of 253 student nurses. The results of McMullan’s (2008:873) study concur with the opinion of Jacobs *et al.* (2004:304) who consider the portfolio as a useful tool for recording and assessing the students’ work, and an excellent tool to assist the educator to

bridge the gap between the assessment of the students' theoretical and practice knowledge. It is furthermore a concrete way for students to evaluate their own work (Van der Horst & McDonald, 2008:195).

Teaching student nurses' CT is a joint responsibility of the nurse educators and the preceptor in the clinical environment since CT skills are not acquired in the classroom alone. The nurse educator, however, as the facilitator of the learning process lays the foundation which will be built and expanded on in the clinical environment (Jones, 2010:254).

Although critical thinking plays an important role in many teaching methods, it is also developed and enhanced by other teaching methods such as case studies, games, learning contract, reflection, and so forth. All these teaching methods do, however, have a singular common link, namely student-centredness and the active participation of the student and educator. It is therefore important that educators must move away from the teacher-centred approach where students are passive receivers of information and deliberately and positively engage in an approach where they facilitate the students' learning process.

In summary, the researcher realised that teaching methods and strategies appear to be used interchangeably in the various teaching and learning approaches. The teaching methods used in these approaches can also be utilised to enhance the student's critical thinking skills. Table 2.2 shows how the researcher sees the interchangeable use of teaching methods.

Table 2.2: Summary to illustrate the interchangeable use of teaching methods

Problem-based learning (PBL)	Experiential learning (EL)	Critical thinking (CT)	Reflective learning (RL)	Self-directed learning (SDL)
<ul style="list-style-type: none"> • Group work • Scenarios* • Case studies • Projects • Concept mapping • Problem-solving activities • Problem-based activities • Research activities • Role-play* • Simulation • Brainstorming • SDL activities • Games* • Nursing process 	<ul style="list-style-type: none"> • Group work • Case studies • Projects • Problem-solving activities • Problem-based activities • Brainstorming • Research activities • Role-play* • Simulation • Brainstorming • Nursing process • Reflection on learning/experience • Journal/dairy keeping 	<ul style="list-style-type: none"> • Case studies • Scenarios* • Games* • Learning contract • Concept mapping • PBL activities • Reflection on learning/experiences • Role-play* • Group discussions • Demonstrations * • Simulation • Written assignments • Portfolio • Journal keeping • Nursing process 	<ul style="list-style-type: none"> • Problem-solving activities • Projects • Simulation • Role-play* • Journal/diary keeping • Reflective essays • Single and group discussions 	<ul style="list-style-type: none"> • Learning contract • Portfolio

The teaching methods marked with an asterisk (*) can also be used in simulation.

2.5 FACILITATION OF LEARNING

As highlighted in literature, to integrate theory-practice successfully, a student-centred approach which requires the active participation of the student nurse and the nurse educators is needed. The nurse educator must act as the facilitator and not the dispenser of facts and information (Cheek, Gillham & Mills, 1998:156; Hsu, 2004:510; Beers, 2005:306; Pastirik, 2006:262; Quinn & Hughes, 2007:73; Chikotas, 2008:360; Moore, 2009:151).

The main purpose of facilitated learning is to enable student nurses to move to the next level of their training, grow professionally and personally, and develop into a competent nurse practitioner who is able to provide safe comprehensive patient care. Therefore, facilitation occurs at the learning centre and in the clinical environment (Mellish *et al.*, 1998:75; Lekalakala-Mokgele and Du Rand (2005:26). Lekalakala-Mokgele and Du Rand (2005:25) add that facilitation also promotes CT, enhances reflective learning, and develops the student nurses' problem-solving ability and clinical reasoning skills which are all important elements for theory and practice correlation. According to the same authors, effective learning should lead to cognitive, affective, and psychomotor development.

The nurse educator, as the facilitator of the student's learning process, needs to assist the student nurse to integrate theory and practice. It is therefore crucial that the nurse educator is familiar with the theoretical and clinical (practical) knowledge and current developments and practices in the clinical environment to successfully assist the student nurse to gain experiential knowledge, adapt a creative approach to learning, and utilise the learning experiences in the clinical environment (Gerrish, 1992:229; Dale, 1994:522). Teaching methods that were sufficient in the past to train student nurses may no longer be effective as there has been a shift from a teacher-centred to a student-centred approach where the student is seen as an adult who takes control of his/her own learning with the assistance of the facilitator. For these reasons it is pivotal that nurse educators utilise the adult learning methodology as the basis for facilitating the students' learning process. It is of utmost importance that the nurse educator critically evaluates the teaching methods to determine which is applicable to incorporate the principles of adult learning and enhance theory-practice integration (Gerrish, 1992:230; Lekalakala-Mokgele & Du Rand, 2005:25).

Adult learning is based on the cognitive and humanist philosophies (Burton, 2000:1010), but Quinn and Hughes (2007:51) opine that it is primarily based on the humanistic psychology which

implicates the role of the nurse educator as that of a facilitator. Lekalakala-Mokgele and Du Rand (2005:25) see the facilitator as the person responsible for helping the student nurses to construct knowledge by allowing them to take control and direct their own learning. These authors base their facilitation model, as a teaching method, on the philosophy of constructivism and state students build their knowledge on pre-existing knowledge constructed by them. This is done through their interaction with the learning environment and their active participation in the learning process (Lekalakala-Mokgele & Du Rand, 2005:25; Chikotas, 2010:360).

Student nurses are seen as adults who mostly take care of adults. They are required to make decisions very early in their career (Lekalakala-Mokgele & Du Rand, 2005:25). Van der Horst and McDonald (2008:236) agree that the nurse educator is the agent who is in the prime position to promote a culture of teaching and facilitate a student's learning process. For this reason, the nurse educator must have good communication skills, be able to demonstrate and use probing and questioning skills, possess excellent guiding skills, be able to manage conflicts and negotiate skilfully, show leadership skills and, finally, be a subject expert (Lekalakala-Mokgele & Du Rand, 2005:25).

Because the nurse educator plays an important role in facilitating student nurses' learning process towards theory and practice correlation (Meyer & Van Niekerk, 2008:84), it is essential that she or he does not value academic knowledge more important than clinical nursing knowledge. Nurse educators must not leave the clinical training to others; they must not remove themselves from the clinical environment. This can cause the student to feel isolated and unable to use the theoretical knowledge in the clinical environment (Meyer & Van Niekerk, 2008:83). Moreover, the OBE education principles advocate that the educator, who is responsible for the facilitated learning of students, must also participate in the clinical supervision of students. Ferguson and Jinks (1994:693) expound on this view by observing that nursing material and research will become more relevant to the student nurse if the nurse educator is more involved in the clinical supervision and accompaniment of the student. This will address the theory-practice integration through the common link of the educator being involved in both the theoretical and the clinical environment.

Nurse educators, as facilitators of learning, have to accept their teaching role and provide the following input proposed by authors such as Ferguson and Jinks (1994:693), Mellish *et al.* (1998:75), Meyer and Van Niekerk (2008:84) and Lekalakala-Mokgele and Du Rand (2005:25) when facilitating the students' learning process:

- i. utilise various teaching methods which suit the students' learning needs and styles to assist them with achieving the learning outcomes
- ii. utilise evidence-based research data when facilitating learning
- iii. provide structure for learning and guide the students to see, for example, the relationship between various signs and symptoms of the patient's condition
- iv. assist students to compile nursing care plans using the nursing process
- v. give the students assignments to do which include clinical problems
- vi. provide practice opportunities to enable the students to apply skills
- vii. encourage group work
- viii. support students in the classroom, simulation laboratory as well in the clinical environment through active accompaniment and motivation
- ix. create a learning environment of trust that is conducive to learning
- x. act as a role model
- xi. demonstrate respect for the student and her or his learning process
- xii. encourage students to reflect on what they learnt and / or experienced from their own and others' behaviour.

It also seems important that student nurses be taught patient care skills according to evidence-based practice and actions based on reflection. This has to happen in safe learning environments (Ferguson & Jinks, 1994:693; Wilson, 2008:3). This viewpoint was proved by a qualitative descriptive study conducted by Wilson in which the student nurse participants stated that the *evidence-based* teaching that reflected the current clinical environment as well as *networking with peers* assisted them to correlate theory-practice and bridge the theory-practice gap (Wilson, 2008:2).

The teaching methods identified as effective methods to promote theory-practice integration are based on an adult student-centred approach which does not only focus on the content, but also on the process of learning (Mellish *et al.*, 1998:101). The focus is on the educator as a facilitator of learning and not as the conveyer of knowledge; it is therefore important that they should act as facilitators who assist the student to become active learners. According to Yee Yee, Radhakrishnan and Ponnudurai (2006:558), facilitators can 'make' or 'break' a session. Trained educators can ruin a facilitation session when they change to lecture methods while facilitating a

contact session. This usually occurs in the classroom where the educator is not a skilled facilitator, holds onto control, uses overt power and non-valuing behaviour, and ignores the principles of SDL (Yee Yee *et al.*, 2006:559; Moore, 2009:155). Another reason seems to be that nurse educators who are more familiar with conventional instruction methods, may experience student-centred teaching as a threat and a loss of power (Frost, 1996:1050). Such educators usually base their selection of teaching methods on previous assumptions and philosophical foundations (Creedy & Hand, 1994:697).

The success of the facilitation of learning depends on the educator's ability to adopt a student-centred teaching approach. Unfortunately, many educators find it difficult to keep the student focussed, interested and engaged when they have to use a variety of teaching aids. The educator who finds it difficult to adopt a student-centred approach wants to control the learning process by lecturing and not facilitation (Hsu, 2004:516; Lekalakala-Mokgele & Du Rand, 2005:23; Lekalakala-Mokgele, 2010:639). According to Davis and Harden (1999) in Yee Yee *et al.* (2006:560), the best facilitator is "the subject-matter expert who understands the course and the curriculum and who has the appropriate group facilitations skills".

The ability to facilitate group work is an important skill which enables the nurse educator to successfully manage group dynamics. Students have different learning styles, learning needs, preferred physical learning senses, pre-existing knowledge / experience, beliefs and values because they come from different backgrounds, cultures and age groups. The age of student nurses entering the nursing profession ranges from a young 18 to a more mature 30-40 years. The younger students may feel insecure, seek a self-image, and worry about things that may go wrong while the older students are more set in their ways, and have much more life experience and intrinsic motivation to learning (Mellish *et al.*, 1998:62; Quinn & Hughes, 2007:28).

Although student nurses from different cultures have different beliefs and values, they all have the same psychological needs of safety, acceptance, affection, and achievement (Mellish *et al.*, 1998:62). Students entering the profession as student nurses have various levels of previous experiences and readiness to learn. It is therefore important that the nurse educator, as the facilitator of the student nurses' learning process, takes into account individual differences, learning styles, learning needs, and preferred physical senses involved in learning when choosing an appropriate teaching method (Mellish *et al.*, 1998:63; Lekalakala-Mokgele & Du Rand, 2005:23).

Chan (2012:22) mentions four categories of physical senses which are preferred by students when they learn: visual, writing/reading, auditory and kinaesthetic. Visual students, for example, prefer sight to take in information and organise it. They also utilise symbols and colours to learn whereas the auditory students will, for example, rely on verbal presentations and prefer the traditional lecture as the teaching method. The nurse educator should also be able to spot these differences and modify instructions accordingly (Mellish *et al.*, 1998:63).

The use of different teaching methods is one way of correlating theory and practice as it assists the students with achieving their learning outcomes (Meyer & Van Niekerk, 2008:84). Using a variety of teaching methods and aids enhances the learning experience and helps to keep everyone engaged in the process. To achieve this, Mellish *et al.* (1998:63) advocate for nurse educators to know the learning styles of their students, as different teaching methods suit different learning styles. Student nurses tend to learn better from teaching methods which suit their individual learning styles. On the contrary, the students' individual learning styles play a crucial role in the way they learn and engage with learning material. Some identified learning styles are described next.

The field dependent student requires structured material and also needs clear instructions on how to solve problems, whereas the field-independent student prefers to solve problems with specific guidance (Witkin (1977) in Mellish *et al.*, 1998:64; Quinn & Hughes, 2007:44). Curriculum bound students are examination-oriented and want precise instructions for doing assignments. They tend to reproduce information, where curriculum free students want to explore the learning content beyond the boundaries of a curriculum (Parlet (1970) in Mellish *et al.*, 1998:64; Quinn & Hughes, 2007:44).

Marton and Saljo (1976) in Mellish *et al.* (1998:65) distinguished between the surface-level and deep-level learners. The former are passive students who reproduce the knowledge they memorised and rely on the type of questions to be asked. The latter seeks deeper understanding, relates the knowledge to pre-existing knowledge, evaluates evidence and tries to integrate the new knowledge into pre-existing knowledge (Quinn & Hughes, 2007:42).

The *serialist*, who reflects an operation learning style, focuses on one goal and topic at a time and learns the topic thoroughly before moving on to the next topic. Such a student tends to go through learning material in a step-by-step manner. The *holists*, who reflect a comprehensive learning

style, have a more holistic viewpoint in which they examine a topic from many viewpoints (Pash (1976) in Mellish *et al.*, 1998:65; Quinn & Hughes, 2007:43).

Kolb (1976) in Quinn & Hughes (2007:35) also identified four learning styles. The *divergers* tend to explore widely and seek solutions in innovative areas. They excel in situations requiring the generation of ideas. The *assimilators* are reflective observers who are best at creating theoretical models and inductive reasoning. The *convergers* like to engage in situations requiring one answer or solution. They apply their ideas to practical situations and therefore prefer active experimentation. Finally, there are the *accommodators* who take risks and like to solve problems in a trial-and-error manner; they excel in situations where they need to adapt and accommodate to circumstances utilising concepts of their experiential learning theory (Mellish *et al.*, 1998:66; Quinn & Hughes, 2007:42).

Lastly, there are the *activists*, *reflectors*, *theorists*, and *pragmatists* learning styles identified by Honey (1982 in Quinn & Hughes, 2007:44). Gosby (1987) in Mellish *et al.* (1998:65) found that most of the student nurses in their study had the activist and reflector learning styles. The activists are open to new experiences whereas the reflectors prefer to observe and reflect on experience before giving an answer. The pragmatists prefer the clinical (or practical) environment and want to apply things in practice. They excel in experimenting with new ideas (Quinn & Hughes, 2007:44).

The types of learning styles and physical senses identified proved that a variety of teaching methods are needed to facilitate the student nurses' learning process and to support the different learning styles (Jones, 2010:254). Therefore, the fact that it is essential for the nurse educator to select teaching methods that accommodate the subject matter and also as much of the learning styles and preferred senses of the students as possible cannot be over-emphasised. Role-play, an active student involvement teaching method, is an example of such a teaching method because it utilises all four senses (Chan, 2012:22).

The role the nurse educator performs during the facilitation session is determined by the type of teaching method utilised. For example, when the teaching method is PBL, the educator must choose the appropriate teaching method, create a learning environment which fosters problem-solving and choose not just any problem but suitable problems – especially real life problems that mirror the complex situations in the clinical environment (Creedy & Hand, 1994:697). The student must get the opportunity to work with the problem in a manner that encourages reasoning ability

through a logical problem-solving approach. After solutions are generated the new knowledge and skills are reflected back to the original problem to determine the effectiveness of learning (Creedy & Hand, 1994:696).

The use of research articles is fundamental to PBL, evidence-based practice (EBP), and the practice of nursing. *Evidence-based practice* is an excellent method to address clinical problems, as the best available evidence is researched and the findings applied in the clinical situation (Quinn & Hughes, 2007:499). Students should be encouraged to use information in journal articles to analyse problems and find evidence-based solutions, with the textbook information as basis and starting point. Hence, it is very important that students are guided and assisted to find the relevant information in electronic journals via the intranet. To achieve this and to perform their daily functions, the educator, as the facilitator of the students' learning process, must be computer literate. It is required from them to use information technology such as computers and the intranet, on a daily basis when (a) preparing and utilising teaching methods, for example, group discussions, small group activities, case studies and PBL activities, (b) performing their administrative functions such as capturing student data into a computer programme, and (c) communicating with colleagues and students via Microsoft Outlook (Meyer & Van Niekerk, 2008:144). It stands to reason that all educators must have a computer at hand to do research and prepare for theoretical learning sessions. There should also be a computer in the classroom with internet access for educational purposes and the student must also have access to a computer and internet for individual use (Meyer & Van Niekerk, 2008:144).

With all the teaching methods discussed some form of teaching aid such as a whiteboard, flip-charts, printed text (textbooks, journals), overhead projector with transparencies, data projector and PowerPoint slides, DVDs/videos, CDs, posters, real objects (defibrillator), manikins / models, pamphlets, research articles, internet and YouTube (video clips) are undoubtedly available to the educator. Even the most formal lecture is supplemented by visual aids such as PowerPoint slides (Mellish *et al.*, 1998:181). A variety of teaching aids, especially multimedia and the many teaching methods can be used to avoid student boredom and lack of concentration. Successful facilitators are sensitive to students' lack of concentration and monitor them for signs of confusion, participation, and boredom (Jacobs *et al.*, 2004:230; Van der Horst & McDonald, 2008:96).

Multimedia is also referred to as 'educational media' and is classified as visual and audio media. Examples of visual media are the models and posters used in anatomy classes, the models and manikins used to demonstrate a procedure, computer programmes, slides, and graphics printed

out on paper. DVDs or videos are useful as they give real life displays of procedures such as the advanced cardiac life support procedure or real life graphic designs of equipment. Video cassettes are an example of audio media (Meyer & Van Niekerk, 2008:142). Multimedia are most effective when students are allowed to use them independently and during group work. This is especially the case with computer programmes and DVDs that present real life graphic display of equipment, the physiology of the body, or a procedure such as removing sutures. Not only does it provide a variety of media, it also enhances the students' learning experience and, according to Meyer and Van Niekerk (2008:142), narrows the theory-practice gap.

To maximise the students' engagement in learning and to ensure they achieve the teaching-learning outcomes, the educator must make decisions and communicate directions all the time. It is furthermore important that the appropriate educator-student and student-student interactions are allowed (Van der Horst & McDonald, 2008:140). For example, during the facilitation of project work, the nurse educator facilitates the process through providing instructions and deadlines to the student nurses by assisting, criticising and encouraging when and where necessary (Mellish *et al.*, 1998:115; Jacobs *et al.*, 2004:196). When facilitating concept mapping sessions, the nurse educator's role is to assist the student in organising knowledge, linking new knowledge to existing knowledge and creating new knowledge in order to solve problems (Meyer & Van Niekerk, 2008:82).

From the literature review it was evident that the use of various teaching approaches and methods, in combinations or alone, depends on the content to be taught and the students' learning styles and needs. Mellish *et al.* (1998:95) indicated that it also depends on the abilities of the educator.

2.6 CONCLUSION

Nursing consists of two distinct aspects, namely the clinical (practical) and theoretical. It seems that nursing education is more successful when these two aspects are integrated. However, from the literature review conducted for this study it became apparent that the problem of the theory-practice gap in nursing education is far from solved. It remains a complex and multifactorial problem not fully understood; it is deeply rooted in the history of nursing education and still rife in nursing education. Such integration thus remains a source of concern for nurse educators, student nurses, and nurse practitioners.

Literature indicates throughout that competence in nursing practice is important. Nurse practitioners cannot take care of patients if they are incompetent in the nursing procedures, which implies competence in the cognitive (theory), affective (attitude and values), and psychomotor skills. To achieve this competence, the nurse practitioner has to be able to apply critical thinking skills, problem-solving skills and decision making skills. The successful application of these skills may better enable nurse practitioners to integrate the knowledge they have of the clinical reality of the patient and to properly display affective skills when caring for patients.

The literature supports the notion that the theory-practice gap should not be completely closed as this will prevent the students from questioning the practice, which is very important for fostering an enquiring frame of mind. An additional challenge for nurse educators is to stimulate such enquiring frame of mind, which plays a crucial role in the integration of theory and practice, through the use of appropriate and effective teaching methods.

In conclusion, what this limited literature review has shown is that it is extremely important that nurse educators utilise appropriate teaching methods that enhance active student and educator participation, critical thinking, problem-solving, reflection, and decision making to promote theory and practice integration. It is quite clear that teaching methods such as brainstorming, case studies, scenarios, demonstrations, evidence-based teaching, simulation, concept mapping, problem-based and problem-solving activities, project work, group discussions, small group activities, reflection on learning and experience, role-play, nursing process, and self-directed learning are all seen as valuable options. These methods can be used interchangeably in the problem-based, experiential learning, reflective learning and self-directed learning approaches, with self-directed learning a vital part of problem-based learning as it augments critical thinking. Learning contracts, a strategy usually used in the clinical environment by the educator and student, can also be used in the classroom to plan and discuss the students' clinical outcomes and is another method which seems to integrate theory and practice.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

In this chapter the research design and methodology are presented. The research method, including a description of the research instrument and a discussion of its reliability and validity, as well as the research setting, population, sampling, data collection and the data analysis are discussed in detail. Lastly, the ethical considerations adhered to in this study are also addressed.

3.2 RESEARCH DESIGN

A research design is an overall plan used by the researcher to conduct a research study (Polit and Beck, 2012:13). It is used to guide the study process systematically as it progresses through a series of steps; from the collection and analysis of the data to the interpretation of the results to answering the research question. The research design thus forms the 'blueprint' of a study, enabling the researcher to conduct the study according to a justifiable methodology (Brink, 2006:92; Polit & Beck, 2012:13).

In this study a deductive approach through a mainly post-positivist lens of knowledge production was used (Polit & Beck, 2012:12; Bitzer, 2013:2). The area of interest identified was the teaching methods used to enhance the integration of theory and practice in a nursing programme. An exploratory and descriptive research design was used to investigate the extent to which the teaching methods used at the HEI complied or did not comply with such teaching methods as identified through literature. It was also aimed at determining whether using current methods enhanced the integration of theory to practice or not. In accordance with Polit and Beck's (2012:226) statement that the purpose of explorative and "descriptive studies is to observe, describe, and document aspects of a situation as it naturally occurs", a typical explorative and descriptive design was deemed appropriate for this study. The data were collected from a current teaching situation in the field of nursing education and was described and documented as it pertained to the real teaching and learning situation to determine the type of teaching methods utilised by the nurse educators.

The aim of this study, as indicated in Chapter 1 (section 1.5), was to investigate in which respects current teaching methods utilised by nurse educators at the HEI complied or did not comply with the teaching methods deemed essential to integrate theory and practice within an outcomes-based nursing education programme. It was thus possible to assess and observe the teaching phenomenon as it occurred in its natural setting without any manipulation or intervention of the independent variables and to describe the phenomenon (Brink, 2006:102; Polit & Beck, 2012:226).

3.3 RESEARCH METHOD

Research methods, as defined by Polit and Beck (2012:741), are “the techniques used to structure a study and to gather and analyse information in a systematic fashion”. In this section the research instrument, population and sampling, pilot study, data collection process and data analysis will be highlighted.

3.3.1 Research instrument

A self-administered questionnaire as well as structured observations was employed to collect data from nurse educators and student nurses at four learning sites of the HEI. The questionnaire, which was an adapted version of the questionnaire used by Van Wyngaarden (2008:112), consisted of closed- and open-ended questions to clarify issues relevant to the phenomenon (De Vos, 1998:89). The researcher chose this type of data collection method due to time, financial and distance constraints related to multiple learning sites and because the data could be collected simultaneously at all the learning centres within a two-and-a-half month period.

Participant anonymity was additionally assured by the use of questionnaires. It also prevented the participants being influenced by the researcher. Lastly, it allowed for the immediate availability of the managers of the learning centres, who acted as administrators on behalf of the researcher, to clarify issues that were not clear to the student nurse participants (Maree, 2007:157; Polit & Beck, 2012:305). The disadvantages of using a questionnaire for data collection are firstly that the researcher is unable to control the conditions in which it is administered and, secondly, when different administrators oversee the completion of the group questionnaire, it can lead to different responses (Maree, 2007:157). Therefore, the researcher had a training session with the managers

of the learning centres who acted as administrators before the study was conducted to explain the study, research instrument and content to them.

The questionnaire and consent form was emailed to each manager of each learning centre to make copies for the participants. The respondents (nurse educators and student nurses) completed the questionnaires within two-and-a-half months where after it was returned to the researcher. The student nurse participants received a questionnaire similar to that of the nurse educators which they had to complete to validate the data generated from the nurse educators. Some of the questions in the student nurse respondents' questionnaire were slightly adapted to make it applicable to them and to assist them with answering it. For example, a question to the student nurses was: 'If you answered "Yes" in question 12, please indicate with an 'X'. The students then had to indicate the multimedia used with an 'X'. The same question to the nurse educators read: 'If you answered "Yes" in question 19 and 20, please indicate when and how'. Thus, to validate the data generated from the nurse educators, the capturing and analysis of all the data collected by the two questionnaires were done by the researcher.

Additional questions, which were not related to this study, were added to both questionnaires as the current study was done in combination with an in-depth study conducted at the HEI. This was done to prevent respondent fatigue and for time constraints as the same population categories were used in both studies.

For the purpose of this study the questionnaires used by Van Wyngaarden (2008:112) during her study were adapted after a literature review on the theory-practice gap and ways to bridge this gap had been undertaken by the researcher. A senior employee at the HEI and a statistician from Stellenbosch University assisted with the development of the questionnaires.

With the compilation of the questionnaires the researcher kept to the following guidelines as advised by Brink (2006:149) and Maree (2007:160) regarding the questions in mind:

- i they had to be short, simple and clear
- ii sequenced in such a way that it prevented confusion
- iii had to start with demographic data and general questions to put the respondents at ease

- iv had to include closed-ended questions to allow the respondents to select a response and open-ended questions to offer them the opportunity to give detailed answers.

The non-research observer, a person not connected with the research, also provided data through structured observations, which is seen as an important data collection method. During the structured observation the observer, who sat in the classroom, used a self-designed checklist to record the observed phenomenon, namely teaching methods used by the nurse educators while facilitating theoretical learning at the learning centres. The checklist was a record-keeping instrument which specified the events to be observed and was designed to produce numeric information. (Polit & Beck, 2012:316). The disadvantage of using structured observation for data collection are firstly bias from those being observed, as participants may have changed the teaching methods utilised to “look good” and, secondly, bias from the observer (Polit & Beck, 2012:318). To avoid this researcher carefully constructed the checklist and had a training and preparation session with the observer to explain the research instrument and content to her. This was done to ensure accuracy of the data recorded. Only one observer was used to do the structured observation at all four learning centres. This was to ensure the validity and reliability of the data. The observation was done over a three-and-a-half-month period where after the completed checklists were returned to the researcher.

With the compilation of the checklist the researcher kept to the following principles as advised by Polit and Beck (2012:315) regarding a checklist:

- i. list of teaching methods to be observed
- ii. list of teaching aids to be observed
- iii. open space to the right of the methods and –aids listed for recording the frequency of the occurrence.

As mentioned before, the current study was done in combination with an in-depth study conducted at the HEI. The same questionnaires were used in both studies to collect similar data. For the purpose of this study the sections and questions on the questionnaires as outlined next were used.

The nurse educators' questionnaire (see Annexure A) consisted of three sections and the mentioned questions were included for this study.

- i Section 1: Demographic data: questions 1, 3-9 and 11 were included
- ii Section 2: Theoretical environment: questions 1-32 were included
- iii Section 3: Clinical environment: questions 5 and 6 were included.

The student nurses' questionnaire (see Annexure B) also consisted of three sections and the following questions:

- i Section 1: Demographic data: questions 1, 3, 5-7 were included
- ii Section 2: Theoretical teaching methods: questions 1-19 and 26 were included
- iii Section 3: Clinical environment: questions 11-13 were included.

3.3.1.1 Validity and reliability

Validity and reliability are two concepts which can be used by the researcher to assess and ensure the quality of a quantitative research study (Brink, 2006:158).

(a) Validity

Brink (2006:159) states that "instrument validity seeks to ascertain whether an instrument accurately measures what it is supposed to measure". Two questionnaires and an observation checklist were used to collect the data in this research study. Thus, face and content validity were applied. According to Maree (2007:217), content validation is the "extent to which the instrument covers the complete content of the particular construct that it is set out to measure". In the current study content validation referred to the representation of the items on the questionnaires and observation checklist used to collect appropriate and sufficient data on the phenomenon that was investigated (Brink, 2006:160). Face validation is the extent to which the items on the instrument look as if it is measuring what it claims to measure (Maree, 2007:217; Polit & Beck, 2012:728). In this study the questions on the questionnaires and the information on the observation checklist

seemed as if it would render the required data pertaining to the teaching methods utilised to determine whether the appropriate teaching methods to enhance theory-practice integration were used (Brink, 2006:160). The researcher ensured that the questions on the questionnaires and the teaching methods and aids listed on the checklist were related to teaching methods and theory-practice integration.

As recommended by Brink (2006:160), a group consisting of a senior nurse educator and a senior training and development specialist (who each hold a master's degree in the higher education and nursing field respectively) at the HEI, a research specialist, and a statistician at Stellenbosch University assisted with and reviewed the questionnaires and checklist for face and content validity before it was finalised. This was done before a pilot study was conducted: one among nurse educators facilitating theoretical learning for a DGNS programme, and the second among student nurses registered for the DGNS programme.

To validate the data generated from the nurse educator respondents, the researcher made use of person triangulation and method triangulation. Person triangulation consisted of a structured questionnaire administered to the nurse educators who facilitated theoretical learning for the DGNS students, and a similar structured questionnaire administered to the first- and second-year DGNS students. Method triangulation comprised of obtaining data through structured observations by one trained non-research observer (who was not the researcher or a manager at one of the learning centres) for clarity and consistency at the four HEI delivery sites (Polit & Beck, 2012:590). Thus, various data sources and data collection methods were used to collect the data. This was done to validate the nurse educators data through multiple perspectives of the phenomenon, in this case the perspective having been on the teaching methods and aids utilised by the nurse educators (Polit & Beck, 2012:590).

As mentioned before, the student nurses completed an adapted version of the nurse educators' questionnaire. An information leaflet, with the same information as stated in the information leaflet of the nurse educators, was provided to the student nurses. Furthermore, structured observations were conducted for a week per learning centre during a period when most of the nurse educators who facilitated contact sessions for the DGNS students were scheduled to facilitate theoretical learning. Since the researcher was not involved in the collection of the data, a trained non-research observer observed and recorded the type and frequency of teaching methods and teaching aids utilised by the nurse educators while they facilitated theoretical learning for the DGNS students. The data were recorded on a self-designed observation checklist. The observation checklist (see

Annexure C) included all the expected teaching methods related to the variable being measured (Brink, 2006:144).

(b) Reliability

An instrument's reliability is "the consistency with which it measures the target attribute" and "also concerns accuracy" (Polit & Beck, 2012:331). Quinn and Hughes (2007:270) refer to reliability as the accuracy and consistency of data gathered by an instrument. In this research study internal consistency and stability were adhered to.

Two senior HEI employees who each hold a master's degree in the higher education and nursing field respectively, were asked to assess the internal consistency of the questionnaires and observation checklist. The questions included in the questionnaires and the information on the observation checklist pertained to the variable measured, namely the teaching methods used (Polit & Beck, 2012:333). As stated by Van Wyngaarden (2008:32), 'the reliability of the original questionnaires was further determined through a pilot study'. The reliability of the original instrument (questionnaire) that had been used by Van Wyngaarden (2008:32) in her study was tested by her for stability by means of a test re-test method.

3.3.2 Population and sampling

To obtain a sample that would render in-depth and appropriate information relevant to the purpose of this study, the researcher made use of a sample plan. According to Polit and Beck (2012:742), a sampling plan describes in detail how the method for sampling is applied in a study. For this study, the sampling plan included the population, sample size, and the inclusion criteria.

3.3.2.1 Population

A research or study population "is the entire group of persons or objects that is of interest to the researcher, in other words, that meets the criteria which the researcher is interested in studying" Brink (2006:123). Polit and Beck (2012:274) differentiate between the "accessible population" and the "target population". The former refers to the total of cases complying with the designated

criteria and which is reasonably available for a study, whereas the latter is the aggregate of cases about which the researcher intends to generalise the results. The researcher sampled from an accessible population, namely the nurse educators (N=26) who facilitated the theoretical contact sessions for the DGNS students and the first- and second-year student nurses (N=214) who were registered and studying for their two-year DGNS. The target population to which the researcher wanted to generalise the research results was the nurse educators and students nurses at the HEI (Polit & Beck, 2012:290).

As mentioned before, the population in this study consisted of two categories. The one category was the nurse educators (N=26) facilitating theoretical learning for the two-year DGNS students at the four learning centres of the HEI where an identical curriculum that included the same textbooks, study guides and workbooks, was followed. The other category was the student nurses (N=214) who, at the time the study was conducted, had been registered for the two-year DGNS programme. This is a programme registered at the Department of Higher Education and Training (DHET) (Qonde, 2011:2), it has been accredited by the South African Nursing Council (SANC) (Skosana, 2012:1), and is known as the Bridging Course for Enrolled Nurses leading to Registration as a General Nurse (R683 of 14 April 1989) (SANC, 1989:1) commonly referred to as the Bridging Course. Both first- and second-year student groups were included to establish whether theoretical teaching methods to integrate theory and practice were utilised.

3.3.2.2 Sampling

Brink (2006:124) defines a sample as a “fraction of a whole, or a subset of a larger set, selected by the researcher to participate in a research study” while sampling refers to the process the researcher uses to select the sample from the population. This is done to obtain the necessary information needed to describe the phenomenon (Brink, 2006:124). For this study a non-probability, convenience sampling method was used: the distribution of the questionnaire in the HEI delivery sites and classrooms implied that the participants were readily and conveniently available to be selected as participants in the study. It was a useful sampling method for this exploratory study as the researcher was interested in obtaining a quick estimate of the truth and only a few respondents were needed for the pilot run (Brink, 2006:132; Maree, 2007:177; Polit & Beck, 2012:275).

Twenty-six nurse educators and 214 first- and second-year student nurses, who complied with the inclusion criteria listed in section 3.3.2.2.2, were invited to participate in the study. A total of seventeen (17) nurse educators, who utilised 99 teaching periods, participated in the structured observation sessions conducted by the non-research observer at the four learning centres over a three-and-a-half month period.

3.3.2.2.1 Sample size

Maree (2007:178) holds that the following three factors have to be considered when determining the sample size: “type of statistical analyses planned; accuracy of results required; the characteristic of the population.” Maree (2007:179) notes that it is evident from research studies found in literature that the bigger the sample size, the better the representativeness, statistical analyses, and accuracy.

The researcher did not use a specific module or formula to determine the actual sample size of each group for the current study. The sample sizes were determined by the number of completed useable questionnaires the researcher received back. Two nurse educators and four student nurses did not complete the questionnaire, leaving 24 nurse educators and 210 student nurses who completed it. One student nurse questionnaire was discarded because it was not properly completed. Thus, the sample size comprised of 24 nurse educators and 209 student nurses.

The sample size for the current study was similar to that of Van Wyngaarden’s (2008:34) non-experimental, descriptive survey in which a quantitative data collection method was used. The sample size in Van Wyngaarden’s (2008:34) study comprised of 17 nurse educators and 176 student nurses and was conducted to determine whether the teaching strategies used at a nursing college complied with OBE and PBL.

Brink (2006:126) states that “sampling bias is caused by the researcher. It occurs when samples are not carefully selected.” The steps taken to prevent the potential for sampling bias and increase the representativeness of the sample in this study are noted next.

- i The sampling frame was complete and correct because all the nurse educators and student nurses involved in the DGNS programme at the HEI were considered.

- ii The time frame made provision for all the students enrolled for the DGNS students in 2013 to participate in the study. The entire student group had attended at least one theoretical learning session in the time frame selected.
- iii The invitation to participate was sent to all the nurse educators who facilitated theoretical learning sessions and student nurses who attended these sessions at the HEI learning sites where this study was conducted.
- iv The structured observations were done during a week when most of the nurse educators facilitated theoretical learning sessions at the HEI learning sites where this study was conducted.

3.3.2.2.2 Inclusion criteria

The inclusion criteria (or eligibility criteria as it is also referred to) are the criteria which define and describe the population and also stipulate the criteria for inclusion (Brink, 2006:124; Polit & Beck, 2012:286). It is the criteria used by the researcher to determine whether an individual will be classified as a member of the population or not. Since two categories of respondents were invited to participate in this study, the inclusion criteria for each category are mentioned separately.

(i) Nurse educator respondents

- They were full-time employed nurse educators at one of the four HEI learning centres which were not included in the pilot study.
- They facilitated theoretical learning (contact) sessions for the DGNS at the HEI.

(ii) Student nurse respondents

- They were students busy with the DGNS at one of the four HEI learning centres which were not included in the pilot study.

3.3.3 Pilot study

A pilot study, in which six nurse educators and 36 student nurses participated, was done at two venues different to the ones where the actual study was conducted to prevent sample bias. The nurse educators and student nurses who were included in the pilot run did not participate in the actual study and the data generated during the pilot study were not captured and analysed in the main study. The purpose of the pilot run was to determine the feasibility of the study and to test the questionnaires. The questionnaire pilot run was aimed at determining whether the respondents understood the instructions and questions, to ascertain whether the included questions were appropriate, and to confirm the time it would take for the respondents to complete the questionnaires (Brink 2006:166; Polit & Beck 2012:195).

Subsequently, changes were made according to the feedback obtained from the pilot study. The 5-point Likert-type scale was changed to a 4-point Likert scale because a number of student nurses had marked the middle column on the 5-point Likert scale to indicate the teaching methods used by the nurse educators. Changes on the questionnaire were also made on the advice of the statistician. Questions that duplicated feedback, such as the question: 'Which of the following teaching strategies are used by the nurse educator in the classrooms?' were removed from the questionnaire because the question, 'How often do the nurse educators use the following teaching methods in the classroom?' generated the data needed for this study. Changes were also made to questions that were not clearly structured.

3.3.4 Data collection process

As discussed in section 3.3.2.1 the data were collected from two categories of populations, namely nurse educators and student nurses by means of pre-structured pilot-tested questionnaires and pre-structured observation checklist. The nurse educator and student nurse respondents completed the questionnaires at the four delivery sites (learning centres) of the HEI where this study was conducted.

The study procedure and data collection method were explained to the managers of the learning centres who acted as administrators during a training session beforehand. The questionnaire was subsequently emailed to them. They invited the respondents, on behalf of the researcher, by word

of mouth to participate in this study. The managers of the learning centres handed a printed version of the questionnaire together with the combined information leaflet and consent form, in which the reason for their inclusion in the study and the aim of the study were outlined, to the nurse educator respondents. The reason for the study, its aim and objectives as well as the study process and information pertaining to the completion of the questionnaire were explained to the nurse educators. The data collection process time-frame was from 23 April 2013 to 31 May 2013. The nurse educators had to complete the questionnaire in their own time and return it to the manager of the learning centre before 31 May 2013. A total of 26 nurse educators participated in the study of which 24 returned the completed questionnaire.

The nursing student respondent questionnaire, combined information leaflet and consent form was emailed to the managers of the learning centres as well. They gave a copy to the student nurse respondents to complete after the study and questionnaire had been similarly explained to them and they had signed the consent form. Groups of student nurses who attended the theoretical learning (contact) session at the four HEI learning centres completed the questionnaire at the same time, in their classrooms, between 22 April 2013 and 30 June 2013. The completed questionnaires were handed back to the manager of the learning centre who returned it in one envelope to the researcher. A total of 214 student nurses participated in the study of which 210 returned completed questionnaires.

As regards the observation checklist, one trained non-research observer conducted structured observations for a week at each of the four HEI learning centres while the nurse educators facilitated theoretical learning for the DGNS students. This was done after the participants had signed the consent form. The observer recorded the type and frequency of teaching methods and teaching aids used by the nurse educators during each 40-minute teaching period. The data were captured on the structured observation checklist (see Annexure C), as recommended by Brink (2006:144). These completed checklists were sent to the researcher in a sealed envelope via the HEI internal mail service.

3.4 DATA ANALYSIS

Once the data had been gathered and had been examined for completeness as suggested by Brink (2006:55), it was captured on spreadsheets developed by the consultant statistician. One questionnaire was discarded and not used due to its incompleteness. The questionnaire and

observation checklist data were coded, computerised, computed and analysed with the assistance of the statistical consultation service at Stellenbosch University. The STATISTICA 11 software programme was used to generate simple descriptive statistical data.

STATISTICA is a statistics and analytics user-friendly software package developed by StatSoft. It was designed for use on a single workstation. This software programme provides spreadsheets and configurations which does “not only include general purpose statistical, graphical, and analytic data management procedures, but also comprehensive implementation of specialized methods for data analysis (e.g., data from mining, business, social sciences, biomedical research or engineering applications” (StatSoft, s.a.). Thus, using the STATISTICA software programme simple, descriptive statistical data were generated. It enabled the researcher to make sense of the data because as Brink (2006:171) states that “without the aid of statistics, the quantitative data would be simply a chaotic mass of numbers.” Descriptive statistics and content analysis were used to describe and synthesise the quantitative data, communicate it to the readers, and provide an explanation through comparison with literature.

The results presented in Chapter 4 are data collected from the closed- ended questionnaires and observation checklists which were captured on spreadsheets and computerised to enable the analysis of the descriptive statistics. Response to the open-ended questions were categorised to determine similarities, where after it was coded, computed into single frequencies and percentage. The aim was twofold: to explore the profile of the teaching methods used by the nurse educators at the time the study was conducted (which is currently still used). Secondly, to explore the correlations among educators’ reported teaching methods; those observed by the student nurses and those observed by the observer.

The data of the questionnaires and checklists were independently analysed in a data triangulation process. In an attempt to establish agreement between the nurse educators and student nurses and enhance the validity of the data, the results of the nurse educator respondents, student nurse respondents, and the observation checklist were compared for similarities and discrepancies.

Frequency distribution (appropriate for ratio data) and frequency counts (appropriate for nominal and ordinal data) were used to summarise the data as it provided a clearer picture of the results than the raw data (De Vos, 1998:202; Brink, 2006:171). To make comparisons and correlate the data, the data were calculated to percentages and the central tendency measured. The “measures

of central tendency are statistics or numbers expressing the most typical or average scores in a distribution. The mean, median and mode are measures of central tendency.” (Brink, 2006:177).

Graphic displays such as frequency tables, pie diagrams and bar charts which are simple, accurate, clear, and readily understood were used to communicate the data to the readers, as the use of graphic displays is recommended for almost every type of data (De Vos, 1998:202; Brink, 2006:171). The use of graphics also has a visual appeal which may motivate the reader to analyse the data more closely than would be the case with if the description of the data is presented in text format (Brink, 2006:184). A detailed description of the data analysis and results are given in Chapter 4 of this study.

3.5 ETHICS

Ethics is defined by Polit and Beck (2012:727) as “a system of moral values that is concerned with the degree to which research procedures adhere to professional, legal, and social obligations to the study participants.” It is the responsibility of all researchers to adhere to the principles of ethics to ensure that the study participants are protected at all times (Brink, 2006:30).

3.5.1 Ethical issues related to sampling

The right to fair treatment was adhered to as there was no unfair selection of the study participants. All the nurse educators and student nurse respondents considered for and invited to participate in this study were directly related to the study problem (Brink, 2006:32).

3.5.2 Ethical considerations related to data collection

The manager of the HEI and the ethical committee of Stellenbosch University gave permission for this study to be conducted. Written permission was also obtained from all of the respondents: from the nurse educator- and student respondents who participated in the pilot study as well as from those who participated in the main study. Only after the written permission had been obtained, did they receive the questionnaire and were the observation validation checks conducted at the

delivery sites where the data were generated. The letter of consent from the HEI (see Annexure D) and ethical approval letter (see Annexure E) are attached.

The three fundamental ethical principles guiding research are justice, respect for human dignity (the person) and beneficence. These three principles are based on human rights and were adhered to throughout this study, as prescribed by Polit and Beck (2012:152) and Brink (2006:31). Adherence to these three ethical principles was maintained in the current study in the ways described next.

- i The right to fair treatment and privacy (justice) of the nurse educator and student nurse respondents were upheld. The participants were selected based on the requirements of the study and those who decided not to participate were treated in a non-prejudicial manner. All the participants had access to the researcher if they needed to clarify aspects of the study or wanted more information as the researcher's contact details were included in the information leaflet (Polit & Beck, 2012:155).

The right to privacy encompasses anonymity. This right was continuously maintained and ensured. The participants did not write their names on the questionnaire. Every questionnaire was given a code when the information was captured, analysed and discussed. Thereby making sure that confidentiality was guaranteed. Participant confidentiality was emphasised regarding the use of this study results in presentations and / or publications in journals (Brink 2006:34; Polit & Beck, 2012:156).

- ii Respect for the human rights was adhered to as no participants were forced to participate. They had the choice to decline participation after the purpose, study process, benefits, risks and so forth of the study had been explained to them. They had the opportunity to ask questions, refuse to participate, and the option to withdraw from the study at any stage without being penalised (Brink 2006:32; Polit & Beck, 2012:154). There was no financial incentive for the participants. This information as well as a full disclosure was indicated in the combined information leaflet / consent form given to the nurse educators and student nurses to read and sign before they voluntarily participated in the study.
- iii The researcher adhered to the principle of beneficence because the physical (for example, injury and fatigue), emotional (for example, stress and / or fear), and financial (for example,

loss of income) wellbeing of the respondents were maintained. This explorative descriptive research study posed no risks of harm to any of them (Brink, 2006:32; Polit & Beck, 2012:152). It took an average of 15 to 20 minutes for the groups of nurse educators and students nurses to complete the questionnaire. It was done when the nurse educators were at the learning centres and the student nurses completed the questionnaires when they attended a block session (theoretical learning) at their learning centre. Hence, there were no risks of fatigue and loss of wages to the participants. No sensitive personal data was required or recorded.

As mentioned before, the respondents were given a combined information leaflet and consent form (it contained the information pertaining to the study, process, risks and benefits) to read through before consenting to participate in this study. They had to sign the consent form to indicate that they participated willingly and without coercion (see Annexure F).

3.6 CONCLUSION

The research design and methodology of the study which included the research method, research instrument, population and sampling, data collection, analysis and the ethical considerations were described and discussed.

CHAPTER 4

RESEARCH FINDINGS

4.1 INTRODUCTION

Through the limited research review undertaken it became evident that the theory-practice gap is still a problem in nursing education and a recurrent theme in the nursing literature. Numerous suggestions and attempts have been made to integrate theory and practice and close, or at least narrow, the gap. Rafferty *et al.* (1996:685) concluded that the gap can be narrowed, but not sealed entirely. These authors posited that the tension between the theory and practice is necessary to stimulate students' enquiring frame of mind and to ensure change occurs in the practice. Thus, the gap is "not just inevitable and healthy, but necessary for change to occur in the nursing education as well" (Rafferty *et al.*, 1996:685)

The theory-practice gap is a multifactorial problem. Despite the pervasive nature of the theory-practice gap and the notion that it will remain a debatable issue in nursing education efforts, must be made to narrow this gap. This is because competent safe nurse practitioners who are able to integrate theory and practice are needed in the clinical environment (practice). Many causes for the gap have been identified. In the classroom the source of the problem may be the nurse educators, textbooks and the teaching methods utilised to facilitate theoretical learning. McCaugherty (1991b:534) emphasised that nurse educators and the teaching methods they use play an important role in integrating theory and practice. This implies that the nurse educator should use teaching methods that enhance theory/practice integration. The methods identified by literature to enhance theory-practice integration are: problem-based and problem-solving activities, group work which includes group discussions and small group activities, scenarios, project work, case studies, concept mapping, demonstrations, nursing process, reflective learning, role-play, brainstorming, simulation, evidence-based teaching and self-directed learning. Most of these methods are student-centred and entail active student participation to enhance their CT, problem-solving and decision-making skills. The methods also promote teamwork which is important for theory-practice integration.

In this chapter the data generated from the questionnaires and observation checklist are analysed and discussed. Data and method triangulation which consisted of (a) a structured questionnaire

administered to the student nurses, and (b) structured observations by a non-research observer at the four HEI learning centres were used to validate the data generated from the nurse educator respondents (Polit & Beck, 2012:725).

As discussed in Chapter 3, section 3.3.3, a pilot study was done at two venues different to the ones where the actual study was conducted to prevent sample bias. The pilot study was done to determine the feasibility of the study and to test the questionnaires. The questionnaire pilot run was aimed at determining whether the respondents understood the instructions and questions, and to ascertain whether the included questions were appropriate (Brink 2006:166; Polit & Beck 2012:195). Feedback obtained from the pilot study in which six (6) nurse educators and 36 student nurses participated, revealed changes were necessary, as discussed in Chapter 3, section 3.3.3. Changes were made to questions before the final version of the questionnaires was distributed to the nurse educators and student nurses at the four HEI learning centres. The data generated during the pilot study were not captured and analysed in the main study.

As mentioned in Chapter 3, section 3.3.2.1, the data were obtained from two populations where two questionnaires and structured observations were used to generate data. In this study a high nurse educator response rate of 92% was achieved. Only two respondents did not respond as illustrated in Table 4.1. A total of 214 student nurses participated in the study of which 210 returned the questionnaire, giving an overall response of 98% as illustrated in Table 4.1. Students who were absent and who refused to participate accounted for the uncompleted questionnaires while one questionnaire was discarded due to incomplete data. Seventeen (17) nurse educators participated in the structured observation sessions observed by one (1) non-research observer and 99 teaching periods were utilised.

Table 4.1: Summary of the number of questionnaires distributed and returned

Respondents	Questionnaires distributed	Questionnaires returned	Questionnaires used	Response rate
Nurse educators	26	24	24	92%
Student nurses	214	210	209	98%
Total	240	234	233	97%

The data for this study were obtained from two populations via questionnaires and from structured observations. Therefore, the data analysis will be done in four different stages, as recommended by Van Wyngaarden (2008:39). Firstly, the data from the nurse educator respondents will be analysed and secondly the data from the student nurse respondents. Thirdly, the observation checklist data will be analysed and finally, the data from the three stages will be compared for similarities and discrepancies. Frequency tables, pie charts, bar diagrams and percentage tables will be used to interpret, discuss, compare, illustrate and communicate the data.

4.2 DATA ANALYSIS: NURSE EDUCATORS' QUESTIONNAIRE

As explained in Chapter 3, section 3.3.1, one set of questionnaires was used to generate data for this study and for an in-depth study by the HEI. Therefore, for the purpose of this study, the data gathered from the following sections and the questions applicable to each section will be analysed and discussed:

- Section 1: Demographic data: questions 1, 3–9 and 11 were included
- Section 2: Theoretical environment: questions 1–32 were included
- Section 3: Clinical environment: questions 5 and 6 were included

4.2.1 Demographic data

In this section the demographic data received from the nurse educator respondents are analysed and discussed.

4.2.1.1 Participant distribution at the learning centres

The nurse educators were asked to name their learning centre to determine the number of educators per learning centre who participated in this study. Secondly, to determine the number of nurse educators at each learning centre who facilitated contact sessions for the DGNS students. Twenty-four nurse educators (n=24) participated in this study. Figure 4.1 shows that the majority,

namely 38% (n=9), were employed at learning centre B, 29% (n=7) respondents at learning centre A and 17% (n=4) at each of the C and D learning centres.

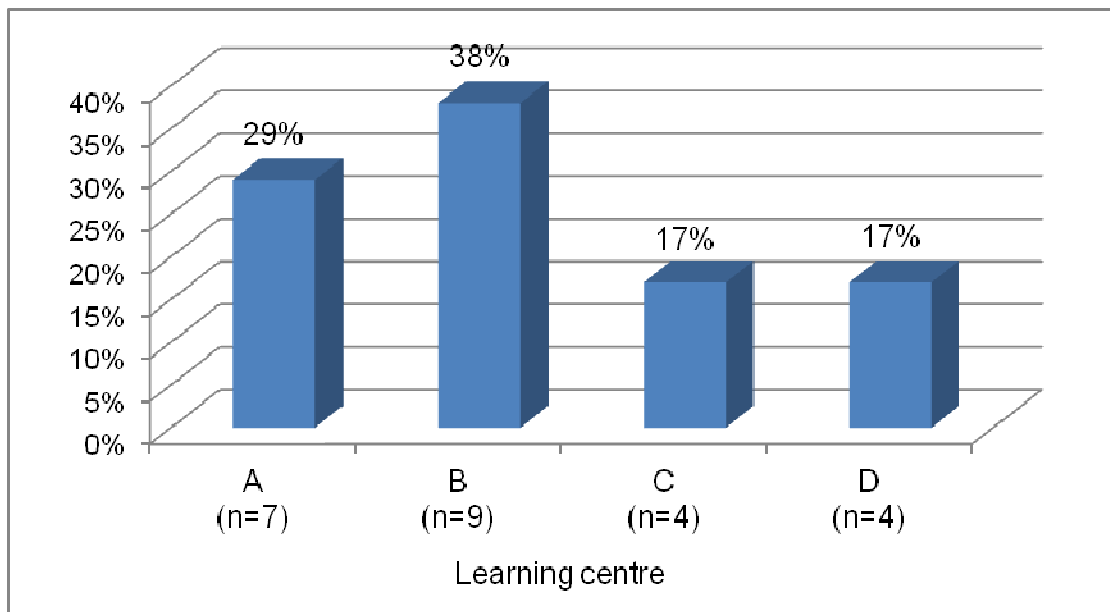


Figure 4.1: HEI learning centres where nurse educators were employed (n=24)

4.2.1.2 Years of clinical nursing experience and highest qualification

The questions relating to the years of clinical nursing experience and highest qualification were asked because Chang *et al.* (2011:3224) state the CT skills of nurse practitioners with a master's degree are significantly better than those who hold a bachelor's degree or a diploma. It was found that, as posited by these authors, the CT skills of the participants who had had more than five years' clinical experience were significantly better than those with less than five years' clinical experience. One key skill which enables nurse practitioners and student nurses to integrate theory and practice is critical thinking. Teaching students critical thinking starts in the classroom. As indicated in literature, it is the responsibility of the nurse educator to assist the student to master this skill. By using CT, the nurse educator can demonstrate to the students the ability to reason deductively and inductively based on scientific knowledge. Therefore, it is important that nurse educators themselves have the critical thinking skill to teach students this skill. More importantly, as recommended in the literature, nurse educators should have a master's degree in nursing and role model this skill during their every day teaching. Although only three (13%) nurse educators held a master's degree (see Figure 4.2 and Figure 4.3), the majority of the nurse educators, 87% (n=20), indicated that they did role model CT skills in their everyday teaching (see Table 4.10).

The respondents' years of experience in clinical nursing ranged from five (5) years to forty (40) years. According to the data, the majority of respondents, 96% (n=23), had more than five years of clinical experience. The mean experience was 21.25 years with a standard deviation of 20.0 (median).

According to Figure 4.2, only 8% (n=2) of the respondents held a master's degree in nursing and 4% (n=1) had a master's degree in nursing education as illustrated in Figure 4.3. The data below (see Figure 4.2) illustrates that the majority, 50% (n=12), of the respondents held a clinical post-basic or graduate diploma in nursing.

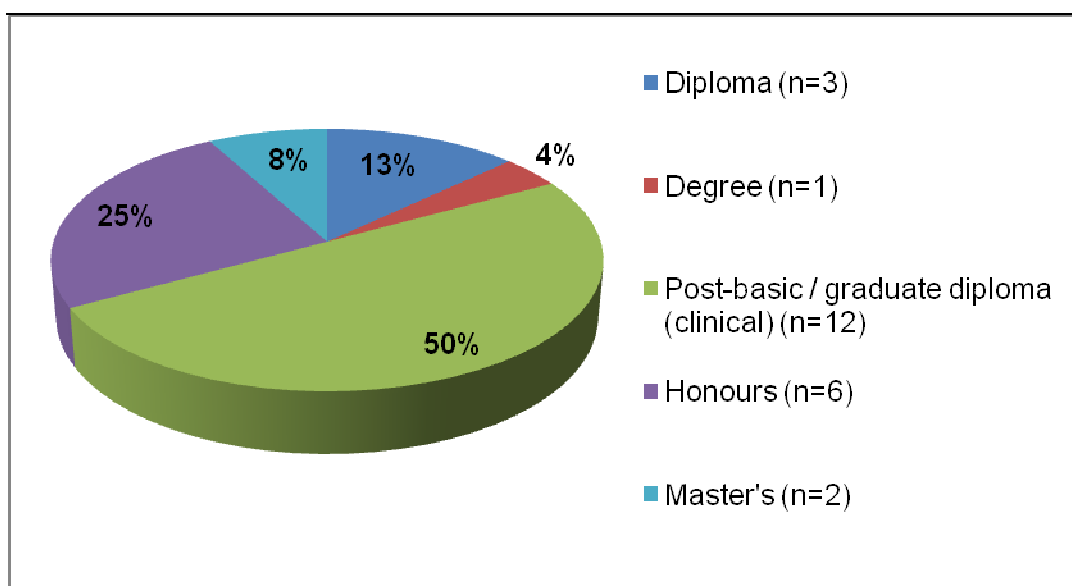


Figure 4.2: Nursing qualification of the nurse educators (n=24)

Ajani and Moez (2011:3930) state that “anyone and everyone cannot become teachers” and that the theory-practice gap can only be narrowed if students are taught by qualified educators. To determine whether the nurse educators had a post-basic or post-graduate nursing education qualification the next question (Section1, question 8) was included in the nurse educators' questionnaire. Three respondents, 13% (n=3), did not answer the question related to the nursing education qualification. The researcher assumed that these three educators did not have a nursing education qualification and coded it as such. As illustrated in the pie diagram (see Figure 4.3) 88% (n=21) of the respondents held a nursing education qualification with the majority, 46% (n=11), indicating that they had a nursing education diploma.

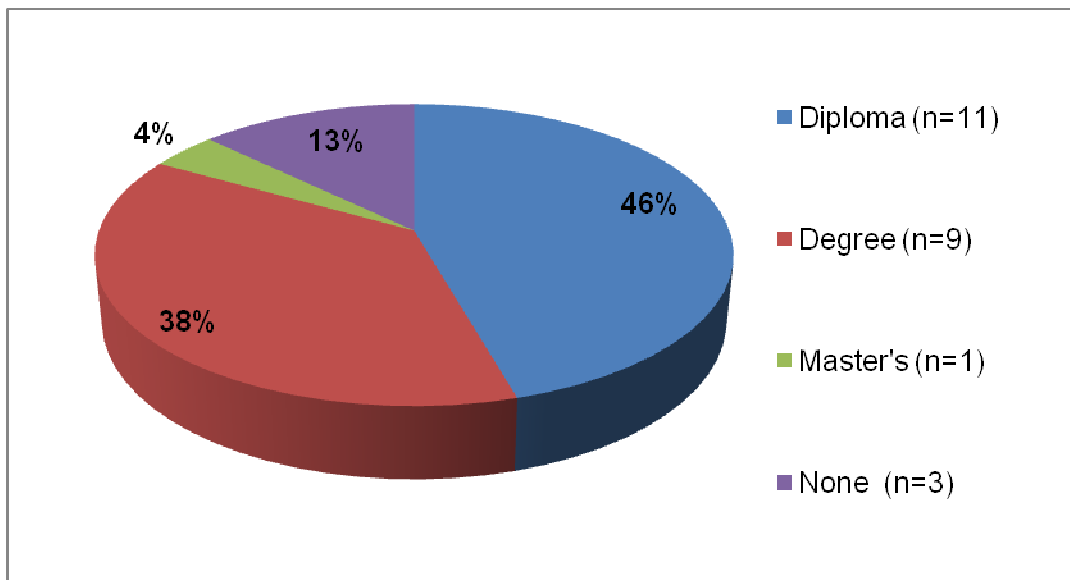


Figure 4.3: Nursing education qualification of the nurse educators (n=24)

4.2.1.3 Years of nursing education experience

By answering question 4, the nurse educators indicated the years of nursing education experience they had. The individual nursing education experience of the 24 respondents ranged from nil (0) to fifteen (15) years. According to the data, only 38% (n=9) of the respondents had more than five years' experience. This implies that the majority of the nurse educators had less than five years' experience. The mean experience was 6.52 years with a standard deviation of 5.0 (median).

4.2.1.4 Assessor and moderator qualification

Nurse educators were asked to indicate whether they had an assessor's qualification as the SANC requires nurse educators to have an assessor's qualification (Ramadi, 2003:1). As the institution's policies require internal and external moderation of summative assessments, the researcher wanted to determine whether the HEI complied with the SANC requirements (Mabuda, 2010:1). External moderation is done by external moderators whereas the internal moderation is done by the HEI nurse educators. It is reassuring that 96% (n=23) had an assessor's and 71% (n=17) a moderator's qualification (see Figure 4.4).

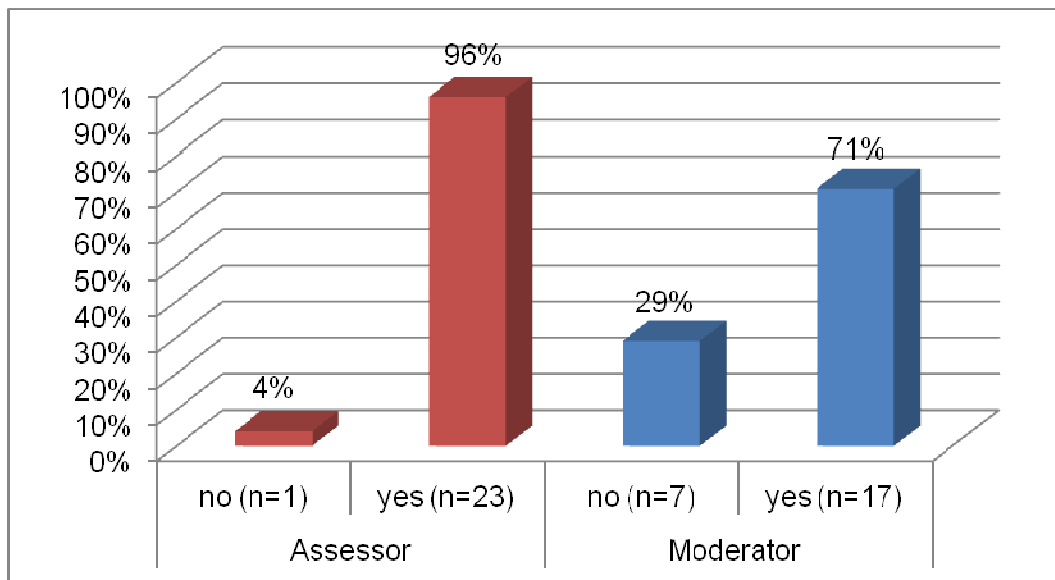


Figure 4.4: Nurse educators with assessor's and/or moderator's qualification (n=24)

4.2.1.5 Group of students for which nurse educators facilitated contact sessions

The respondents were asked to indicate for which group of students they facilitated learning. Because the same questionnaires were used in a combined study done at the HEI, the researcher wanted to ensure that only nurse educators who facilitated contact sessions for the DGNS students took part in the current study. Secondly, she needed to determine whether the group facilitation included the 'bridging students' because the teaching methods used by the nurse educators could differ from one year group to another according to the students developmental level (Van Wyngaarden, 2008:40). The first and second year DGNS students were actually in their third and fourth year of study as they had successfully completed the two-year course leading to enrolment as a nurse (SANC, 1993:2) as discussed in Chapter 1, section 1.10.1. The latter would be viewed as senior students, especially the second-year group. Teaching methods, such as group work, projects and problem-based/-solving activities, for example, can be used with senior students (Mellish *et al.*, 1998:118; Quinn & Hughes, 2007:325). Figure 4.5 shows 100% (n=24) of the nurse educators facilitated theoretical learning for the first-year group while 79% (n=19) of the nurse educators indicated they also facilitated contact sessions with the second-year group.

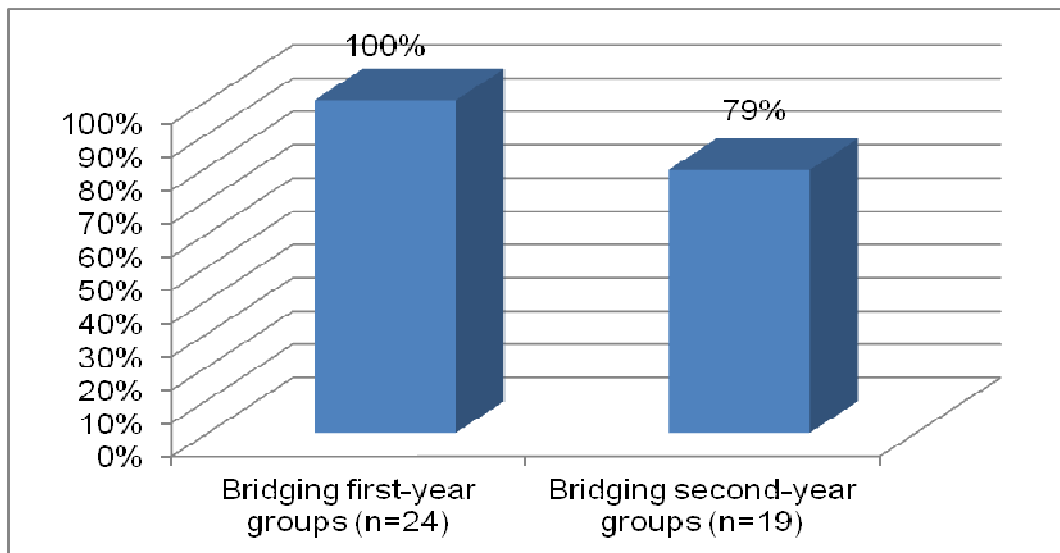


Figure 4.5: DGNS year groups for who nurse educators' facilitated contact sessions (n=24)

The percentages illustrated in Figure 4.5 do not calculate to hundred per cent because most of the nurse educators facilitated contact sessions for both year groups. The percentage of each year group is reflected separately in this figure.

4.2.1.6 Subjects the nurse educators facilitated

This question (Section 1, question 11) was asked to determine the subjects the nurse educators facilitated. Secondly, the nurse educators' response to this question was used to cross reference their response to question 9. The researcher wanted to ensure that only nurse educators who facilitated contact sessions for the DGNS students and those who actually identified the subjects they facilitated took part in the current study. Figure 4.6 illustrates that most of the nurse educators facilitated more than one subject for more than one year group. This is the reason for the percentages not calculating to hundred per cent. The majority of nurse educators, 83% (n=20), facilitated first-year Integrated Nursing Science and 71% (n=17) facilitated Integrated Nursing Science for the second-year group. Only 17% (n=4) indicated that they facilitated ethos and professional practice for the first- and second-year students and 13% (n=3) indicated that they facilitated psychology and sociology for the same students.

A variety of teaching methods can be used to teach and learn the practice of nursing (Mellish *et al.*, 1998:97). Group work, projects and role-play, for example, are viewed as the ideal teaching methods to facilitate ethos and professional practice. On the other hand, formal lectures which are

seen as a traditional teaching method can be used to assist students to master large varieties of information and accentuate existing knowledge such as in the subjects' anatomy, physiology and pharmacology (Mellish *et al.*, 1998:102; Gulpinar & Yegen, 2005:590; Meyer & Van Niekerk, 2008:112). Anatomy, physiology and pharmacology are, for example, some of the subjects included in the Integrated Nursing Science module.

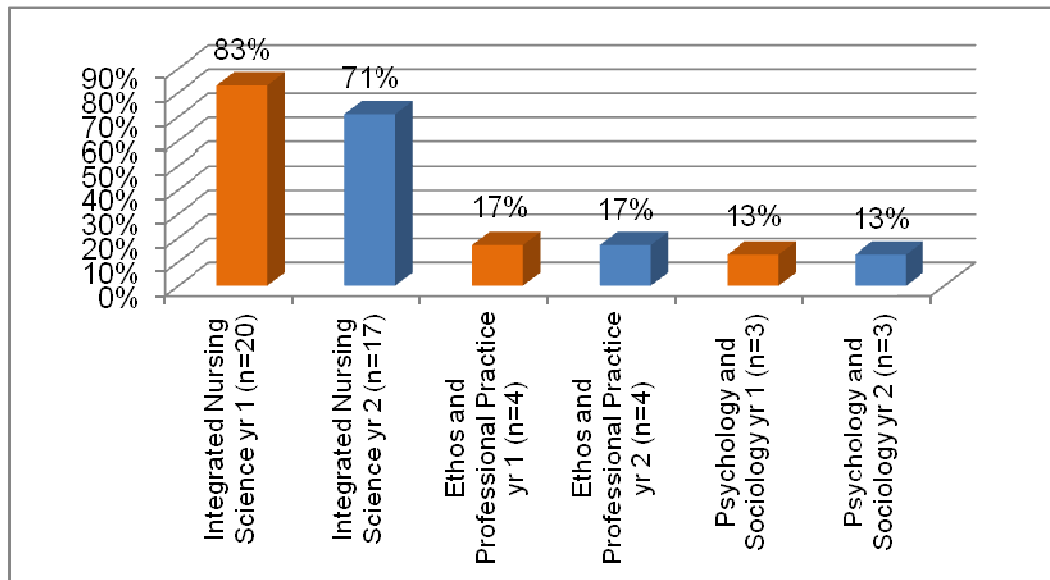


Figure 4.6: Subjects facilitated by the nurse educators (n=24)

As mentioned before, the percentages in Figure 4.6 do not calculate to hundred per cent because the percentage of each option is illustrated separately in this figure.

4.2.2 Theoretical environment

In this section an analysis and a discussion of the data obtained from the nurse educator respondents regarding their training and the teaching methods, strategies and teaching aids they employed at the learning centres are presented.

4.2.2.1 Training received

The following six questions (Section 2, question 1 to 6) were asked to determine the training the nurse educators had. Ajani and Moez (2011:3930) debate that to close the theory-practice gap students have to be taught by qualified and specialised educators. The nurse educator must be able to identify, choose and facilitate the methods through which they can integrate theory and practice. Distler (2007:56) states that “nurse educators who are not formally trained in education seem to continue to apply the same traditional methods” they were exposed to when they had studied; typically teacher-centred approaches. Should this occur, the problem could arise that the trained educator could ruin the facilitation session when they change to lecture methods while facilitating a contact session. This usually occurs in the classroom where the educator is not a trained or skilled facilitator but has to assume the role of a learning resource person (Yee Yee *et al.*, 2006:558; Moore, 2008:155).

Most of the teaching methods discussed in Chapter 2 are synonymous with OBE which requires facilitation of learning. It is also evident from the literature that the teaching and learning methods used in PBL and RL play the biggest role in the integration of theory and practice. It is reassuring that the majority of respondents had received OBE, PBL, RL, multimedia use, theory-practice integration methods, and facilitation of learning training (see Tables 4.2 and 4.3). Six respondents (25%) indicated that they had not received training in multimedia use, 21% (n=5) had not received PBL and another 21% (n=5) had not received reflective learning training. Three (13%) had not received training regarding teaching strategies / methods to correlate theory-practice, 8% (n=2) had not received OBE training and another 8% (n=2) had not received training pertaining to the facilitation of learning. It is evident from the data in Table 4.2 and Table 4.3 that the majority had received their training through a formal post-basic (graduate) nursing education programme.

Table 4.2: Outcomes-based education and PBL training nurse educators received (n=24)

Training related questions	Formal post-basic nursing education	In-service training	Facilitation course	Assessor's course	No training received	Other
What training did you have regarding OBE?	63% (n=15)	17% (n=4)	21% (n=5)	63% (n=15)	8% (n=2)	4% (n=1)
What training did you have regarding PBL?	58% (n=14)	21% (n=5)	17% (n=4)	54% (n=13)	21% (n=5)	4% (n=1)

Table 4.3: Theory-practice integration, RL, multimedia and facilitation of learning training nurse educators received (n=24)

Training related questions	Formal post-basic nursing education	In-service training	Facilitation course	No training received	Other
What training did you have regarding teaching strategies/methods to correlate theory and practice?	63% (n=15)	38% (n=9)	33% (n=8)	13% (n=3)	8% (n=2)
What training did you have regarding reflective learning (RL)?	54% (n=13)	25% (n=6)	21% (n=5)	21% (n=5)	8% (n=2)
What training did you have regarding the use of multimedia?	58% (n=14)	42% (n=10)	8% (n=2)	25% (n=6)	8% (n=2)
What training did you have regarding the facilitation of learning?	67% (n=16)	29% (n=7)	25% (n=6)	8% (n=2)	8% (n=2)

4.2.2.2 Computer skills training and utilisation of computer programmes

The nurse educators were asked to indicate whether they had received Microsoft software training to determine how many were knowledgeable with regard to using this programme. Computer literacy is essential (Van Wyngaarden, 2008:47) when nurse educators are facilitating theoretical learning, performing administrative tasks, and keeping students' electronic training records up to date. When implementing student-centred teaching methods essential to the enhancement of theory-practice integration, some form of teaching aid such as a data projector for PowerPoint slides, YouTube (video clips) and electronic journal articles are usually used. Nurse educators are also required to encourage and assist the students to use multimedia. Using multimedia is most effective when students are allowed to use it independently and during group work in the classroom. Not only does it enhance the students' learning experience but, according to Meyer and van Niekerk (2008:142), it narrows the theory-practice gap. Some of the nurse educators did not respond to all the options, but left some blank. The researcher assumed that they did not have the relevant training. Figure 4.7 illustrates that 67% (n=16) of the respondents received Microsoft Word as well as Microsoft Excel training, and 54% (n=13) received Microsoft PowerPoint training.

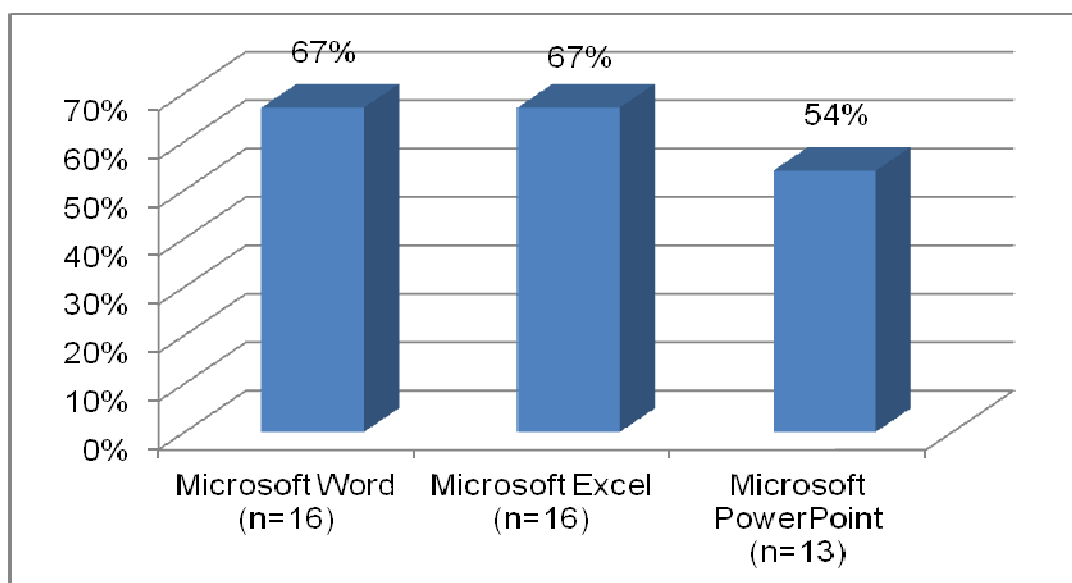


Figure 4.7: Computer skills training of nurse educators (n=24)

The percentages illustrated in Figure 4.7 do not calculate to hundred per cent because the nurse educators could select more than one Microsoft software programme. The percentage of each option is reflected separately in this figure.

Next, the respondents were asked to indicate on a 4-point Likert scale the Microsoft software programme they used. On the scale the '1' indicated a "Never" and the '4' meant "Always". Table 4.4 below shows that more than 75% of the nurse educators utilised all three the computer programmes "Mostly" or "Always". It is reassuring that although only 54% to 67% (see Figure 4.7) of the nurse educators indicated they had received computer skills training, 79% to 100% utilised the Microsoft software programmes "Mostly" or "Always" (see Table 4.4). All the respondents (n=24) used Microsoft Word "Mostly" or "Always"; 96% (n=23) used Microsoft PowerPoint "Mostly" or "Always" and 79% (n=19) "Mostly" or "Always" used Microsoft Excel. The utilisation of Microsoft PowerPoint correlates with the utilisation of the data projector with PowerPoint slides as illustrated in Table 4.7. Twenty-two (92%) nurse educators used the data projector with PowerPoint slides 'Mostly' or "Always".

Table 4.4: Utilisation of Microsoft software programmes by nurse educators (n=24)

Microsoft computer programmes	Never / Seldom	Mostly / Always
Microsoft Word	0% (n=0)	100% (n=24)
Microsoft Excel	21% (n=5)	79% (n=19)
Microsoft PowerPoint	4% (n=1)	96% (n=23)

4.2.2.3 Teaching facilities and instructional aids accessible to nurse educators and student nurses at the HEI learning centres

The literature review presented in Chapter 2 verified that nurse educators as the facilitators of the students' learning process must use a variety of teaching methods. Therefore, it is important that they have access to various teaching facilities and instructional aids to complement and enhance their teaching methods. It is vital that the student nurses themselves also have access to these facilities, as the use of multimedia is more effective when students use it independently and during group work in the classrooms (Meyer & Van Niekerk, 2008:142). Multimedia are closely associated with problem-based/ -solving activities as well as with project work because it necessitates the use of different forms of study materials and learning aids such as books and journals in a library, DVDs and access to internet sites (Meyer & Van Niekerk, 2008:137).

The educators were asked to indicate with an 'X' the availability of the teaching facilities and instructional aids to themselves at the learning centre. Figure 4.8 illustrates that all the

respondents, 100% (n=24), had access to the library, simulation room and the computer room with 96% (n=23) indicating that they also had access to the internet and intranet. (The intranet is the HEI internal network system where all the training related documents, forms, policies, procedures and templates are published). Twenty-two (92%) respondents indicated that they had access to group work facilities; 71% (n=17) to 88% (n=21) had access to training CDs and educational (training) DVDs or videos. The majority had access to multimedia and 96% (n=23) had access to the internet, thus correlating the results reflected in Table 4.4 showing that the Microsoft software programmes were used frequently.

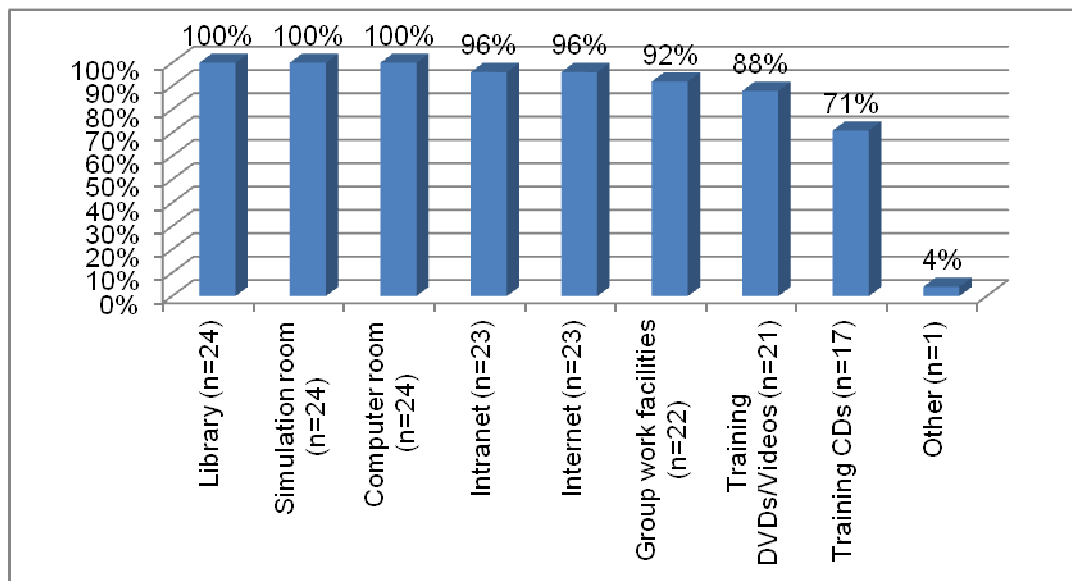


Figure 4.8: Nurse educator access to teaching facilities and instructional aids (n=24)

The percentages illustrated in Figure 4.8 do not calculate to hundred per cent because the nurse educators could select more than one option to indicate the availability of the teaching facilities and instructional aids to themselves. The percentage of each option is reflected separately in this figure.

Next, the nurse educators were requested to indicate the access student nurses had to teaching facilities and instructional aids. Some did not respond to every option given, but left the block blank. The researcher did not code this data. As shown in Table 4.5, between 83% (n=20) and 96% (n=23) responses showed that the nurse educators felt the student nurses did have access to the library (92% [n=22]), simulation room (96% [n=23]), computer room (88% [n=21]), facilities for group work (88% [n=21]) and the intranet (83% [n=20]) at the learning centre. Seventy-five per cent (n=18) indicated that student nurses had access to training DVDs / videos and, according to

58% (n=14), they had access to training CDs. Only 38% (n=9) indicated that the student nurses had access to internet facilities at the learning centre. This is an indication that there seemed to be a problem in the computer room as all nurse educators did have access to the internet at their workstations. Furthermore, some respondents indicated that the students also had access to a library, simulation room, computer room and intranet facilities at another institution. This implies that the students had more access to the aforementioned four teaching facilities / instructional aids than just those accessible at the learning centre.

Table 4.5: Student nurses' access to the teaching facilities and instructional aids

Options pertaining to the teaching facilities and instructional aids the students nurses had access to:	At the learning centre	At another institution	Not at all
Library	92% (n=22)	25% (n=6)	0% (n=0)
Simulation room	96% (n=23)	25% (n=6)	0% (n=0)
Computer room	88% (n=21)	21% (n=5)	0% (n=0)
Internet	38% (n=9)	25% (n=6)	29% (n=7)
Intranet	83% (n=20)	25% (n=6)	4% (n=1)
Facilities for group work / discussions	88% (n=21)	8% (n=2)	0% (n=0)
Training DVDs / videos	75% (n=18)	4% (n=1)	8% (n=2)
Training CDs	58% (n=14)	4% (n=1)	21% (n=5)

4.2.2.4 Teaching methods used by the nurse educators in the classroom

The literature review implied that a wide spectrum of teaching methods should be used to establish a link between theory and practice. Problem-based / -solving activities, group work (which includes group discussions and small group activities), project work, scenarios, case studies, concept mapping, demonstrations, the nursing process, reflective learning, role-play, brainstorming, simulation, self-directed learning and evidence-based teaching are the major teaching methods used in the classroom or simulation laboratory to enhance theory-practice integration.

The nurse educator respondents were asked to indicate with an 'X' how often they used a specific teaching method in the classroom. This question was asked to determine the type of teaching methods used as well as the frequency with which it was used. Secondly, to ascertain whether the teaching methods that seems to enhance theory-practice integration, were used or not. The respondents were again asked to indicate on a 4-point Likert scale the teaching methods they used in the classroom. On the scale the '1' indicated a "Never" and the '4' meant "Always". Although some respondents left an open space, the majority did indicate how often they used a specific teaching method.

All the respondents, 100% (n=24), indicated that they utilised group discussions (see Table 4.6). This was viewed as positive because group discussions play a vital role in the learning process as it promotes nurse students' CT skill, which is an essential skill for the integration of theory and practice (Pedley & Arber, 1997:408). Group discussions were rated as "Mostly" or "Always". However, the high response rate of 84% (n=20) for formal lectures (see Table 4.6) signifies that formal lectures were mainly used at the HEI. Although lecturing is effective for imparting information, there is little evidence that it teaches students to think, which limits their ability to develop critical thinking. Many authors share the opinion that formal lectures foster the starting point of the theory-practice gap (Mellish *et al.*, 1998:103; Kumar, 2003:20; Quinn & Hughes, 2007:224; Gulpinar & Yegen, 2005:590). It is, on the other hand, reassuring that 63% (n=15) to 79% (n=19) of the respondents indicated they used demonstrations, small group activities, reflections on learning and experience, problem-based/ -solving activities, scenarios, the nursing process, brainstorming, evidence-based teaching and self-directed learning "Mostly" or "Always". These are all teaching methods essential for the integration of theory and practice.

Of further concern is the fact that, although literature identified the use of case studies, simulation, role-play, projects and concept mapping as suitable teaching methods to integrate theory and practice, only 52% (n=12) of the respondents used case studies and simulation "Mostly" and "Always". Role-play, projects and concept / brain / mind mapping were used less than all the other theory-practice integration teaching methods. Only 37% (n=9) indicated that role-play, 32% (n=7) projects and 23% (n=5) concept / brain / mind mapping were used "Mostly" or "Always".

The responses, as shown in Table 4.6, reflect that games, class research activities and computer-based activities were not used frequently. Only 43% (n=10) of the nurse educators used games, 23% (n=5) class research activities and 30% (n=7) computer-based activities "Mostly" or "Always".

Table 4.6: Teaching methods used by the nurse educators

Options pertaining to the teaching methods used in the classrooms	Never / Seldom	Mostly / Always
Formal lectures	17% (n=4)	84% (n=20)
Demonstrations	21% (n=5)	79% (n=19)
Group discussions	0% (n=0)	100% (n=24)
Small group activities	22% (n=5)	78% (n=18)
Projects	68% (n=15)	32% (n=7)
Reflection on learning / experience	29% (n=7)	71% (n=17)
Role-play	63% (n=15)	37% (n=9)
Games	57% (n=13)	43% (n=10)
Problem-based/ -solving activities	25% (n=6)	75% (n=18)
Concept / brain / mind mapping	77% (n=17)	23% (n=5)
Scenarios	25% (n=6)	75% (n=18)
Case studies	48% (n=11)	52% (n=12)
Class research activities	77% (n=17)	23% (n=5)
Computer-based activities	70% (n=16)	30% (n=7)
Simulation	48% (n=11)	52% (n=12)
Nursing process	27% (n=6)	73% (n=16)
Brainstorming	33% (n=8)	67% (n=16)
Evidence-based teaching	38% (n=9)	63% (n=15)
Self-directed learning	35% (n=8)	65% (n=15)
Other	0% (n=0)	0% (n=0)

4.2.2.5 Utilisation of teaching aids in the classroom by the nurse educators

Next, the nurse educators were asked to indicate the teaching aids they used to determine whether the nurse educators at the HEI utilised multimedia when facilitating theoretical learning. The use of multimedia is more effective when students use it during group work in the classroom. It enhances the learning experience, helps to keep everyone engaged in the process and, according to Meyer and van Niekerk (2008:142), it narrows the theory-practice gap. The respondents were asked to indicate with an 'X' on a 4-point Likert scale the teaching aids they used in the classroom. The majority of respondents marked this question, but some left open spaces. The researcher did not code this data. The responses, as shown in Table 4.7, reflect textbooks were used "Mostly" or "Always" by all the respondents (100% [n=24]). Making use of the data projector with PowerPoint slides showed the second highest response with a rate of 92% (n=22), whereas making use of training CDs rendered a low response rate of 13% (n=3). This data illustrates that, although nurse educators have access to training CDs and educational (training) DVDs or videos (see Figure 4.8), these aids are not used frequently. The use of the textbooks and data projector with PowerPoint slides correlates with the number of times formal lectures were used (see Table 4.6).

Table 4.7: Teaching aids used by the nurse educators

Options pertaining to the teaching aids used in the classrooms	Never / Seldom	Mostly / Always
Training DVDs / videos	65% (n=15)	35% (n=8)
Training CDs	87% (n=20)	13% (n=3)
Research articles	71% (n=17)	29%(n=7)
Posters	50% (n=12)	50% (n=12)
Whiteboard	25% (n=6)	75% (n=18)
Overhead projector with transparencies	92% (n=22)	8% (n=2)
Data projector with PowerPoint slides	8% (n=2)	92% (n=22)
Models	21% (n=5)	79% (n=19)
Flipcharts	42% (n=10)	58% (n=14)
Textbooks	0% (n=0)	100% (n=24)
Other	0% (n=0)	0% (n=0)

4.2.2.6 Utilisation of learning contracts and portfolios

Nurse educators were asked to indicate whether they made use of learning contracts. Jones (2010:252) states that the use of a learning contract promotes critical thinking; Quinn and Hughes add (2007:33) that a learning contract provides the vehicle for integrating theory and practice. All the nurse educators answered this question: 58% (n=14) indicated that they utilised the learning contract “Mostly” or “Always” and 42% (n=10) used it “Seldom” or “Never”. Seventeen (71%) used it in the clinical environment and classroom, which shows that the nurse educators did support the student nurses in this environment.

Although it was found in literature that the use of a portfolio, also referred to as a ‘portfolio of evidence’ does not enhance the integration of theory and practice (McMullan, 2007:873), this question was asked to determine how frequently this teaching strategy was used. The responses showed 63% (n=15) nurse educators used this method “Mostly” or “Always” while 38% (n=9) indicated “Never” or “Seldom”.

4.2.2.7 Reflection on learning

With regard to learning in nursing, many sources in literature agreed that discussions, essays and journals enhance theory-practice integration (Reed & Procter, (1993), Wong *et al.*, (1995), Burrows (1995), Bellman (1996) & Hallett (1997) in Burton, 2000:1014; Severinsson, 1998:1269). Reflection on practice or experience can take place in the classroom or clinical environment. Nursing students can overcome the problem they appear to have with integrating theory with practice in a clinical environment by reflecting on what they experience in practice and what they have learnt in the classroom. The researcher perceived that successful theory-practice is critically important; this topic has been studied by various researchers who found that reflection on learning is a powerful tool when attempting to integrate theory with practice. Therefore, the researcher wanted to determine whether the nurse educators encouraged the students to reflect on their learning experience, as well as where it was done. All the respondents (100% [n=24]) indicated that they did encourage reflection on learning and 100% (n=24) indicated they did it by means of discussions. Two (8%) respondents revealed that they also used reflective journals.

As mentioned in the previous paragraph, the nurse educators were asked to indicate the environment where the reflections on learning / experience took place. Nineteen (19) nurse educators responded to this question. Eighty-four per cent (n=16) of the respondents indicated that they encouraged the student nurses to reflect on what they had learnt in the classroom. Fifty-eight per cent (n=11) indicated the clinical environment and 42% (n=8) did it in both environments, as illustrated in Figure 4.9.

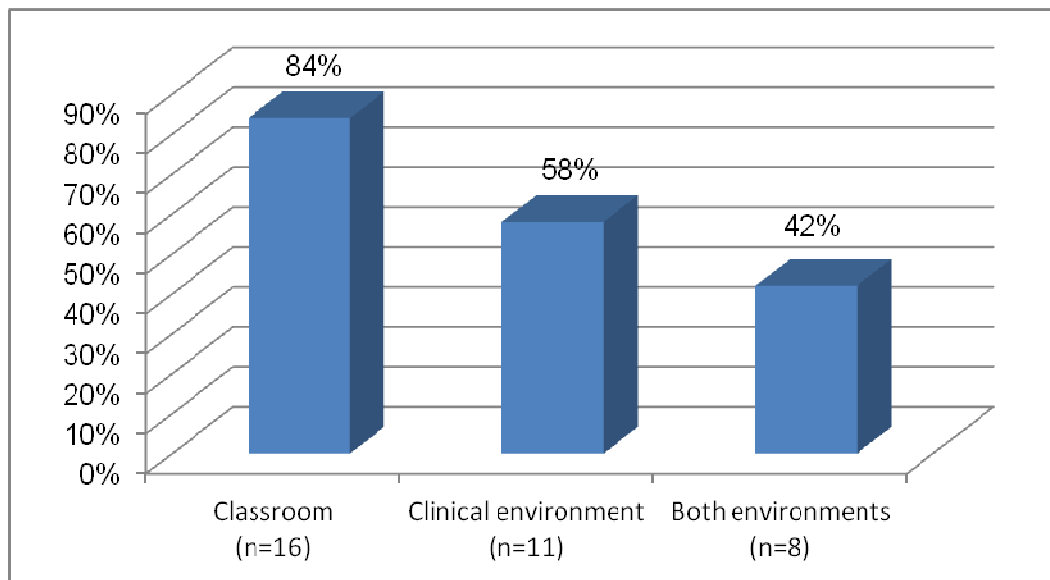


Figure 4.9: Environments in which reflection was encouraged (n=19)

The percentages in Figure 4.9 do not calculate to hundred per cent because the percentage of each option is reflected separately in this figure.

4.2.2.8 Encourage students to use multimedia when given assignments

It was evidenced in the literature review conducted that the use of multimedia is most effective when students are allowed to use the various available and accessible sources independently. This is achieved by encouraging students to make use of multimedia when doing assignments. Multimedia provides a variety of informative sources and activities, thus enhancing the students' learning experience. Also, according to Meyer and Van Niekerk (2008:142), using multimedia narrows the theory-practice gap. As the question stated, the nurse educators were asked to indicate whether they encouraged students to use multimedia when given an assignment. The next question was asked to determine whether they actually provided students with multimedia. One

respondent stayed neutral and did not answer the question. Although only 43% (n=10) of the nurse educators actually provided the students with multimedia, a high 91% (n=21) indicated that they encouraged students to use multimedia. The nurse educators were then asked to indicate when and how they did it. Only 15 nurse educators responded to this question. Similar themes were determined (see Figure 4.10). The majority, 47% (n=7), referred the students to a computer in the computer room.

When was it given?

- i. Students were encouraged to use multimedia when the educators gave them their assignment.

How was it done?

- ii. Students were referred to the internet.
- iii. Students were referred to a computer, in the computer room, at the learning centre.
- iv. Students were encouraged to use pamphlets relating to medicine and medical equipment.
- v. Students were encouraged to use articles published in scientific journals.
- vi. Students were encouraged to use their cellular telephones.

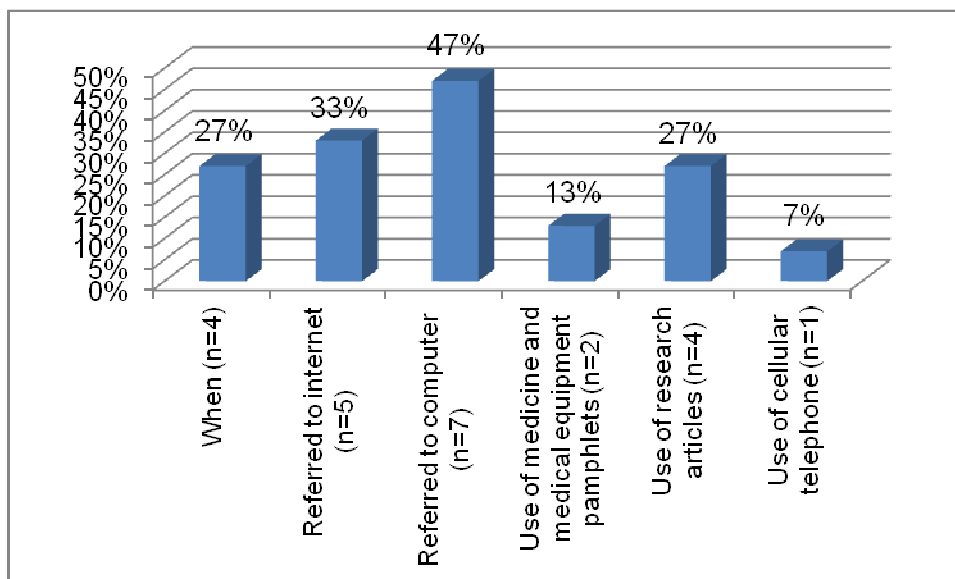


Figure 4.10: Provision of multimedia to student nurses by the nurse educators (n=15)

The percentages in Figure 4.10 do not calculate to hundred per cent because the “when” and types of multimedia provided to the students were reflected separately in this figure.

4.2.2.9 Utilisation of scenarios

The utilisation of scenarios enhances the students’ ability to apply theoretical knowledge to the clinical environment (practice) because it represents reality. It also forms the basis of most of the teaching methods used to enhance the integration of theory and practice. Scenarios can represent fictional or real life situations, but it is especially real life problems which mirror the complex situations in the clinical environment that must be used as it reflects the actual nursing practice (Creedy & Hand, 1994:697; Quinn & Hughes, 2007:258; Popil, 2011:206). Various teaching methods, such as concept mapping and problem-solving activities feature in clinical scenarios. This underpins the fundamental principle of PBL, namely that learning should be based on real life problems (Chikotas, 2008:36).

Table 4.6 illustrates that 18 (75%) nurse educators indicated that scenarios were utilised “Mostly” or “Always”. Next, the respondents were asked to indicate on a 4-point Likert scale which scenario they used in the classroom and how frequently it was used. On the scale the ‘1’ indicated a “Never” and the ‘4’ meant “Always”. The majority of respondents answered this question. One did not indicate whether a fictional scenario was used or not. The researcher did not code this data. Table 4.8 illustrates that real life scenarios were used by the majority of nurse educators, 75% (n=18), and fictional scenarios were rarely used. Only 48% (n=11) of the respondents indicated that they used this type of scenario.

Table 4.8: Utilisation of scenarios by nurse educators

Scenarios used	Never / Seldom	Mostly / Always
Problem-based scenarios	37% (n=9)	63% (n=15)
Real life scenarios	25% (n=6)	75% (n=18)
Fictional scenarios	52% (n=12)	48% (n= 11)

Assignments are seen as “the chief means of directing learning activities outside the classroom” (Mellish *et al.*, 1998:113). Although not used in the classroom, the researcher wanted to determine whether the nurse educators included scenarios of clinical problems in assignments. The reason for this was that this kind of assignment is viewed as a useful tool to stimulate students to seek and analyse information and apply the knowledge to real life situations, thus enhancing the student’s ability to correlate theory and practice (Van der Horst & McDonald, 2008:138; Meyer & Van Niekerk, 2008:84; Distler, 2007:56). The majority of nurse educators, namely 86% (n=18), included scenarios related to clinical problems in assignments and only 14% (n=3) did not. Three (3) educators did not respond to this question.

4.2.2.10 Utilisation of case studies

This question pertaining to the type of case studies the nurse educators used was asked as both types (patient studies and problem-based case studies) seem to be excellent methods to help students with problem-solving, analysing and problem identification, promoting their CT skills and hence giving them the opportunity to link theory to practice (Popil, 2011:207). Patient studies mirror actual nursing practice which gives the student nurse the opportunity to obtain a holistic view of the patient’s healthcare status. This enables them to analyse the problem from all angles, to make a judgemental decision and to justify their choices (Mellish *et al.*, 1998:180; Quinn & Hughes, 2007:257; Popil, 2011:206). Problem-based case studies also form the basis of PBL which stimulates students to seek knowledge and find solutions to the problems identified (Hsu, 2004:510).

A 4-point Likert scale was used, with ‘1’ representing “Never” and ‘4’ representing “Always”, to determine the type of case studies the nurse educators used in the classrooms. The majority of respondents answered this question. One did, however, stay neutral and did not indicate whether patient studies were used or not. Although only 12 (52%) nurse educators indicated that they did use case studies “Mostly” or “Always” in the classroom (see Table 4.6), 70% (n=16) used patient studies “Mostly” or “Always” and 67% (n=16) indicated they used problem-based case studies (see Table 4.9).

Table 4.9: Case studies used by nurse educators

Case studies used	Never / Seldom	Mostly / Always
Patient studies	30% (n=7)	70% (n=16)
Problem-based case studies	33% (n=8)	67% (n=16)

4.2.2.11 Opportunity to practice the procedure in the learning centre after it was demonstrated to the student nurses and feedback given

The literature review discussed in Chapter 2 signifies that demonstration as a teaching method is one of the best known teaching methods used in nursing education. It is a method which forms part of teaching the practice of nursing, with the enhancement of congruence between theory and practice. (Mellish *et al.*, 1998:108). To be effective, demonstrations have to be utilised correctly. This means that the student must be given the opportunity to practice the procedure after it has been demonstrated and then receive constructive feedback, otherwise it can be perceived as a telling or transmission of knowledge exercise (Nilsson, *et al.*, 2010:7). Of the respondents, 92% (n=22) indicated that they gave the students the opportunity to practice the procedure after the demonstration; very few, 8% (n=2), indicated that they did not. Nineteen (86%) did give reflective feedback after the demonstration and 14% (n=3) signified that they did not. A blank space was left by two respondents.

4.2.2.12 Strategies used when facilitating problem-based learning

As illustrated in Table 4.6, 75% (n=18) of the respondents “Mostly” or “Always” used problem-based and problem-solving activities in the classroom. Although both teaching activities enhance the integration of theory and practice and foster a deep approach to learning (Vernon & Hosokawa (1996) in Beers, 2005:306; Ribeiro, 2011:4; Van der Horst & McDonald, 2008:138), the researcher wanted to determine which of the two teaching methods was actually used by nurse educators. Figure 4.11 illustrates that there was no substantial difference in the use of either of the two teaching methods. Exactly 50% (n=12) of respondents indicated that they used problem-based learning activities, by presenting the problem to students before any form of input (Quinn & Hughes, 2007:72). Fifty-eight per cent (n=14) indicated that they used problem-solving activities as

they gave the information prior to solving the problem. Two of the respondents, 8% (n=2), indicated that they used both these teaching methods.

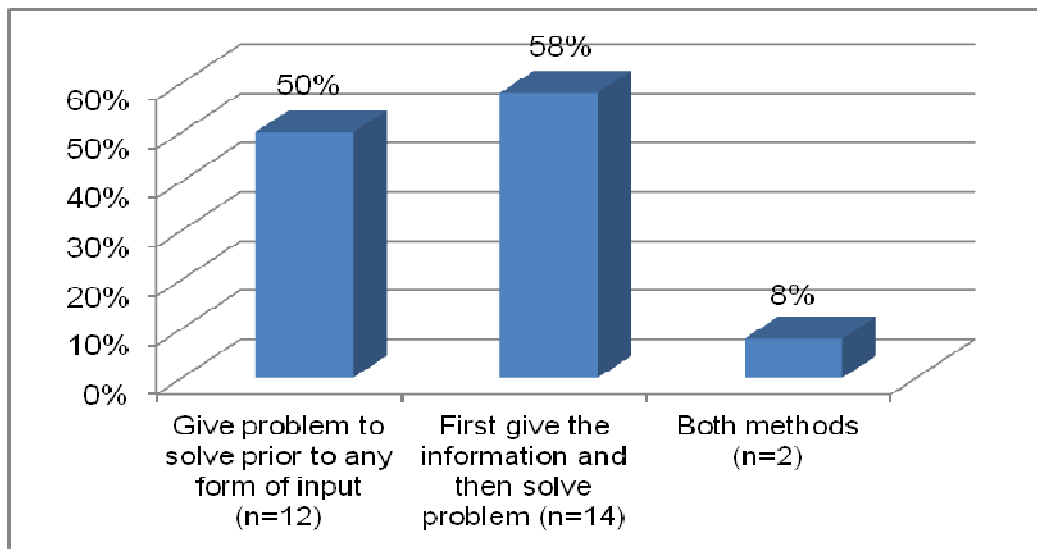


Figure 4.11: Problem-based versus problem-solving activities used by nurse educators (n=24)

The percentages illustrated in Figure 4.11 do not calculate to hundred per cent because the nurse educators could select more than one option. The percentage of each option is reflected separately in this figure.

4.2.2.13 Cognitive abilities that enhance theory and practice integration

As illustrated in Figure 4.12, the majority of nurse educator respondents similarly signified CT and problem-solving skill (88% in each case) as important cognitive abilities to integrate theory and practice. The integration of knowledge around clinical and theoretical issues was rated by 79% respondents as an important cognitive ability for theory-practice integration. Fifty per cent and less of the nurse educators considered group skills (25% [n=7]), self-directed learning skills (46% [n=11]) and abstract reasoning skills (50% [n=12]) as important cognitive skills to integrate theory and practice. The percentages illustrated in Figure 4.12 do not calculate to hundred per cent because the nurse educators could select more than one option to indicate the cognitive skills they considered important for successful theory-practice integration. The percentage of each option is reflected separately in this figure.

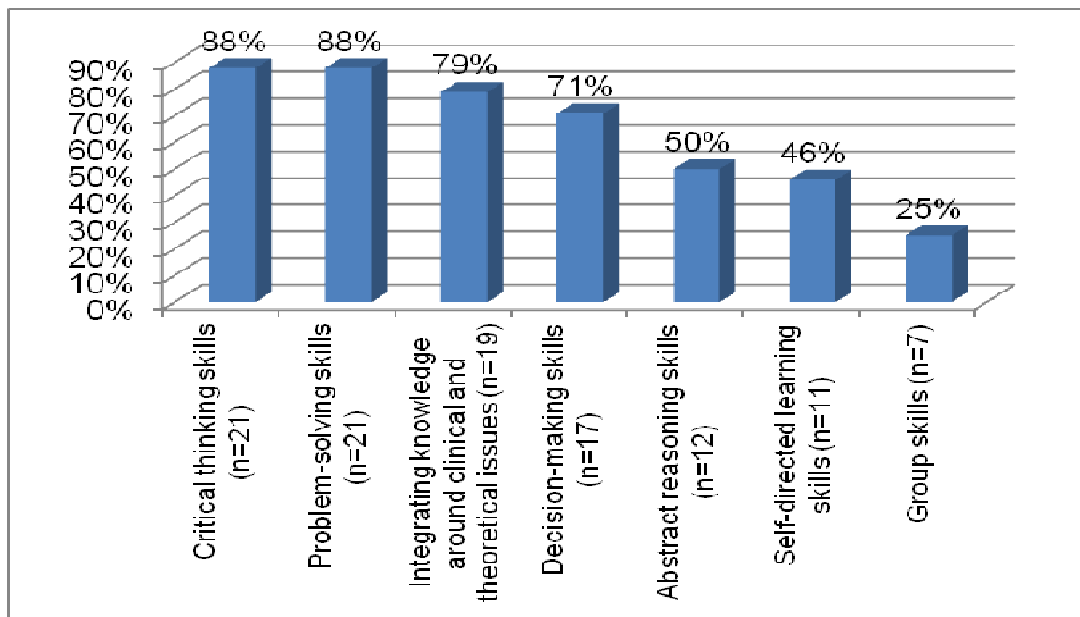


Figure 4.12: Cognitive skills that enhance the integration of theory and practice (n=24)

4.2.2.14 Competency in OBE, PBL and reflective learning

According to the literature reviewed, student-centred active teaching methods are pivotal in OBE; especially PBL, RL and EL are the most effective approaches for enhancing theory-practice integration. All the teaching methods identified as suitable methods to assist students to integrate theory and practice can mainly be utilised in the PBL and RL approaches.

All the respondents (n=24) answered the question relating to PBL. One nurse educator, however, did not respond to the questions relating to OBE and RL. The majority of respondents felt competent with OBE (96%) and PBL teaching strategies (92%), whereas 83% (n=19) indicated “Yes” as regards RL strategies. The data in Figure 4.13 concur with the data in Table 4.2 and Table 4.3 where only two (8%) nurse educator respondents indicated that they did not received OBE training. Also, 21% (n=5) had received no PBL or RL training. The percentages illustrated in Figure 4.13 do not calculate to hundred per cent. The nurse educators could select more than one option to indicate the teaching approach they felt competent with. The percentage of each option is reflected separately in this figure.

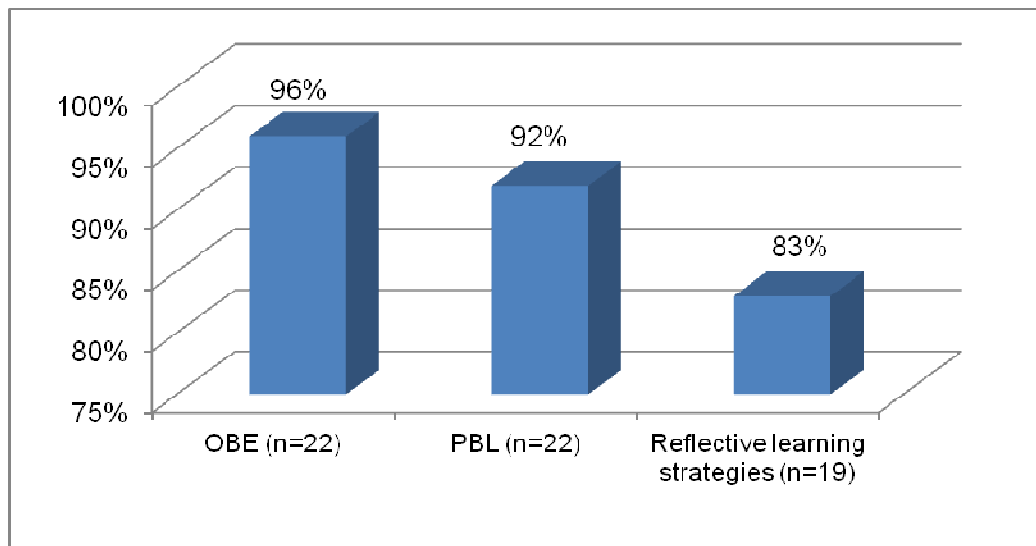


Figure 4.13: Competency in OBE, PBL and reflective learning

4.2.2.15 Teaching critical thinking skills

One of the core functions of the nurse educator, when facilitating theoretical learning with the purpose of integrating theory and practice, is to teach student nurses CT skills. Simpson and Courtney (2002:96) perceive CT as an important skill for applying theoretical knowledge to the clinical environment. Brookfield (Quinn & Hughes, 2007:69) developed a checklist for the nurse educator to determine whether they do promote CT during their everyday teaching. As evidenced in Table 4.10, the majority of respondents, 87% and more, did use strategies to enhance the students' CT skills. The data confirms that all of the respondents, 100% (n=24), did promote questioning, which is considered as an important strategy to enhance students' CT ability, during teaching.

Although networking with peers was identified by Brookfield (1987 in Quinn & Hughes, 2007:69) as a strategy to promote CT, it is also an important strategy for theory-practice integration, as identified in Chapter 2. In their response, 96% (n=22) of the respondents indicated that they do encourage students to network with peers (see Table 4.10)

Table 4.10: Checklist for teaching critical thinking skills

Questions related to teaching critical thinking skills	Yes	No
Do you question assumptions?	96% (n=23)	4% (n=1)
Do you promote questions during teaching?	100% (n=24)	0% (n=0)
Do you experiment with new ideas during teaching?	91% (n=21)	9% (n=2)
Do you model critical thinking skills during your everyday teaching?	87% (n=20)	13% (n=3)
Do you encourage students to use a variety of sources when facilitating problem-based learning?	95% (n=21)	5% (n=1)
Do you encourage students to engage in tasks that call for reasoned judgement and assessment?	95% (n=21)	5% (n=1)
Do you engage students in critical discussion groups?	87% (n=20)	13% (n=3)
Do you encourage the students to network with peers?	96% (n=22)	4% (n=1)

4.2.3 Clinical environment

The data relating to the clinical accompaniment of the student nurses by the nurse educators are analysed and discussed in this section.

4.2.3.1 Clinical accompaniment of student nurses by the nurse educators

Although this study focused on the teaching methods used in the classroom to enhance the integration of theory and practice, it became obvious from the literature review that the clinical accompaniment and supervision of the student nurse in the clinical environment (practice) by the nurse educator is crucial. Integration of theory and practice can be achieved through the common link of the nurse educator being present in the classroom as well as in the clinical environment, as advised by Hewison and Wildman (1996:755). Gerrish's (1992:227) viewpoint is that the nurse educator is the most suitable person to assist the student nurse to link theory to the practice due to her or his dual role. Thus, the nurse educator can enhance the classroom teaching (theoretical knowledge) through clinical accompaniment and supervision of the student nurse in the clinical environment (Ferguson & Jinks, 1994:692; Pastirik, 2006:265). This implies that nurse educators have to take care not to leave the clinical training of student nurses entirely to the nurse

practitioners, training and development consultants and mentors. They need to visit the clinical environment to work with students and assist them.

The nurse educator respondents were asked to indicate how frequently they did accompaniment of the student nurses in the clinical environment. Figure 4.14 shows that of the 23 nurse educators who responded to this question, 65% (n=15) revealed that they visited the students monthly. Three (13%) indicated that they accompanied the students every second week and 9% (n=2) denoted a frequency of twice a week. Only one respondent (4% [n=1]) indicated a frequency of once a week. Two of the nurse educators (9% [n=2]) accompanied the students for more than 4 to 5 hours per visit. This data illustrate that the clinical training of the student nurses was not entirely left to the nurse practitioners, training and development consultants and mentors as the nurse educators did follow-up on students in the clinical environment (practice). This verifies that the nurse educators did fulfil their dual role as clinical facilitator and educator. McCaugherty (1991a:1058) views this dual role as “the best of two worlds”, namely time spent on classroom teaching and the accompaniment of student nurses in clinical environments (practice).

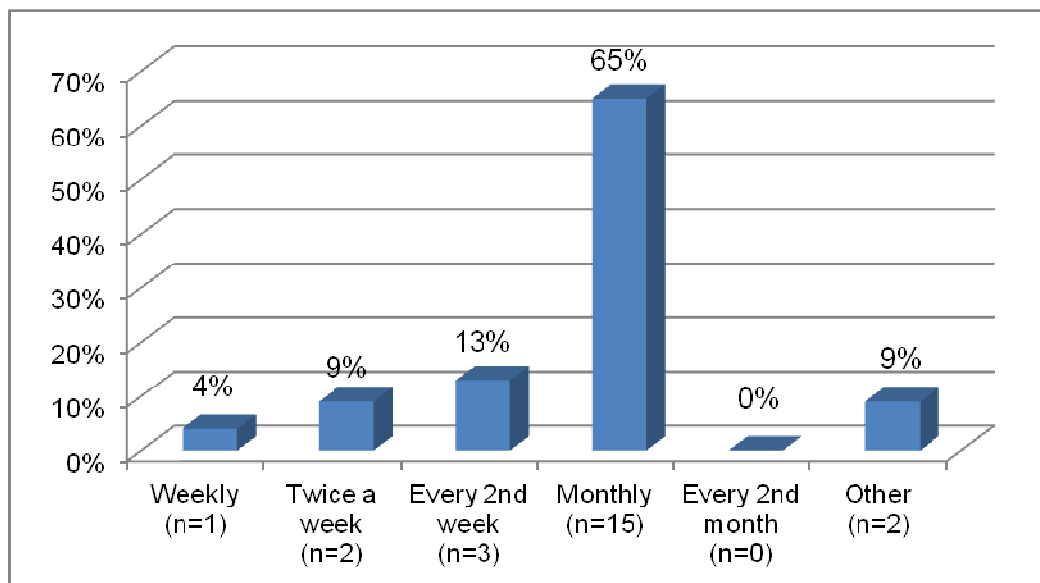


Figure 4.14: Clinical accompaniment of student nurses (n=23)

The majority of nurse educators, namely 70% (n=16), indicated that they spent more than 60 minutes per visit with a student. This meets with the minimal SANC requirement of spending 60 minutes per student per month in the clinical environment (SANC, 2005:8). However, the number of times the nurse educator spent with a student nurse per month in the clinical environment was minimal. Fifteen (65%) respondents, the majority, indicated they did clinical accompaniment only

once a month. What is also concerning, is the amount of time spent with the student nurse in die clinical environment as it indicates that a lot of the student nurse's clinical training was left to the nurse practitioner, training and development consultant and mentor in the clinical environment. Seventeen per cent (n=4) of the educators spent between 30-60 minutes with the students and 4% (n=1) indicated that the time was less than 30 minutes per visit. The reason why this occurred in the current study setting might be ascribed to the lack of time as posited by McCaugherty (1991a:1058). This author argues that, because the average nurse educator is predominantly based at the nursing education institution (classroom) busy with lecture preparations (textbooks), facilitating learning, marking assessments and performing associated administration tasks, little time is available to spend with the student nurse in the practical environment.

4.3 DATA ANALYSIS: STUDENT NURSES' QUESTIONNAIRE

In this section the student nurse questionnaires are analysed and discussed. For the purpose of this study the data for the following sections and questions will be analysed and discussed:

- Section 1: Demographic data: questions 1, 3, 5–7 were included
- Section 2: Theoretical teaching methods: questions 1–19 and 26 were included
- Section 3: Clinical environment: questions 11–13 were included

4.3.1 Demographic data

In this section the data pertaining to the demographic data received from the student nurse respondents are analysed and discussed.

4.3.1.1 Learning centre and programme registered for

The first question was asked to determine the HEI learning centre where the DGNS students were registered. Figure 4.15 illustrates that the largest group of student respondents, 35% (n=74), were registered at learning centre D, 28% (n=58) at learning centre A, 25% (n=53) at learning centre B and 11% (n=24) at learning centre C.

The second question was related to the nursing programme the student nurse respondents were registered for. As this was a combined research study, the researchers wanted to ensure that only the data generated by the questionnaire completed by the DGNS students were used in this specific study. Two-hundred-and-ten (210) students indicated that they were registered for this specific programme. One questionnaire was discarded because it was not correctly completed.

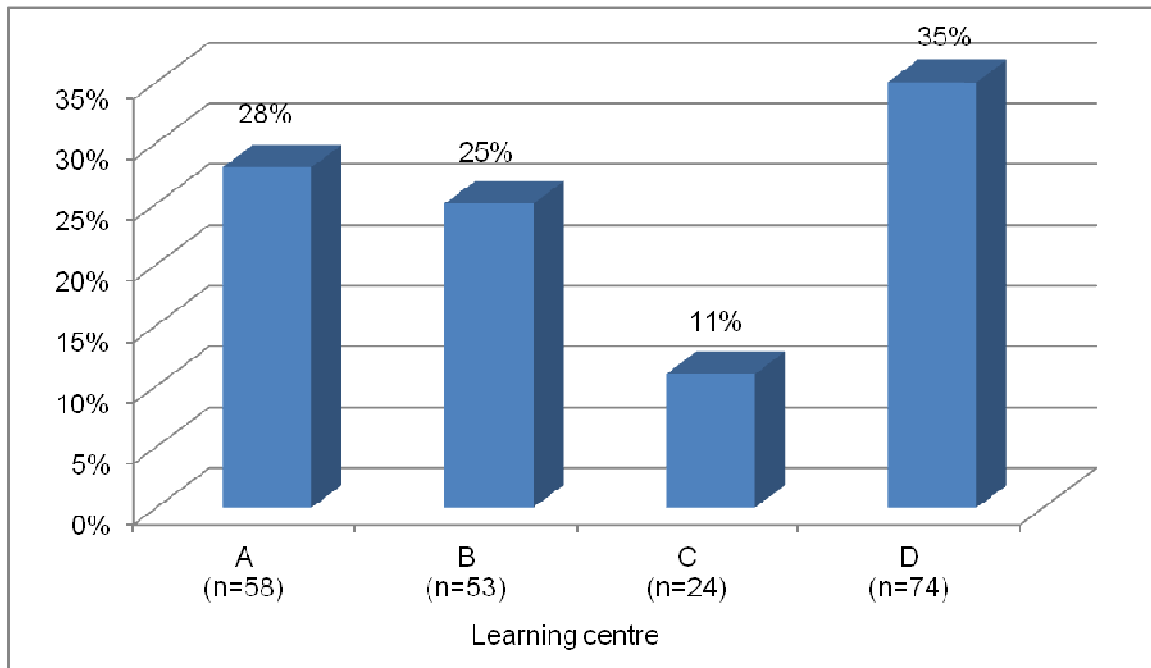


Figure 4.15: Learning centre where student respondents were registered (n=209)

4.3.1.2 Student year group

The majority of the student nurse respondents, 72% (n=150), was in their first year of study. The second-year students represented 28% (n=59) of the sample of 209 (n=209) student nurse respondents. The significant difference in the study year distribution was influenced by two factors. Firstly, there was not an intake of students for the DGNS at two of the learning centres in the previous year (2011) and, secondly, some of the students' first year of training was extended.

4.3.1.3 Age of students

To determine the student nurses' age was important as the age of student nurses entering the nursing profession usually ranges from a young 18 to a more mature 30–40 years. Younger students may feel insecure and worry about things that may go wrong, whereas older students know what they want, have much more life experience, and are oriented towards learning which involves problem-solving and intrinsic motivation to learning (Mellish *et al.*, 1998:62; Quinn & Hughes, 2007:28). Thus, to accommodate all ages, the nurse educators needs to utilise a variety of teaching methods.

The ages of the student nurse respondents ranged from 21 to 53 years. The responses showed that the majority of the respondents were between 21 and 25 years old. The mean age was 29.42 years, with a standard deviation of 28.0 (median). The reason why there were no students younger than 21 was because they had already completed the two-year nursing course leading to enrolment as a nurse (R2175), which is a pre-requisite for the DGNS programme (SANC, 1989:2).

4.3.1.4 Years of nursing experience

Students with nursing experience bring knowledge to the classroom, which can be utilised by the nurse educator. According to Chang *et al.* (2011:3224), the critical thinking of nurse practitioners who have had more than five years' clinical experience is significantly better than those with less than five years' clinical experience. Knowing how many years the nursing students had been working would give the researcher an indication of how many students had had a break in their studies before they entered the first year of the DGNS programme. Students who directly entered the first year of the DGNS programme from the course leading to enrolment as a nurse (SANC, 1993) should have had at least 1 to 5 years' of nursing experience.

Two of the respondents stayed neutral and did not answer the question. The majority, 65% (n=134), had between one and five years' of nursing experience. Thus, they may experience a lack of CT skills which seem to be essential for theory-practice integration. The minority, namely 4% (n=8), had between 11 and 15 years of nursing experience. In Figure 4.16 it is shown that, according to the data, only 35% (n=73) of the students had more than five (5) years of nursing

experience. It is evident that the minority of student nurses had between 11 and 15 years of nursing experience.

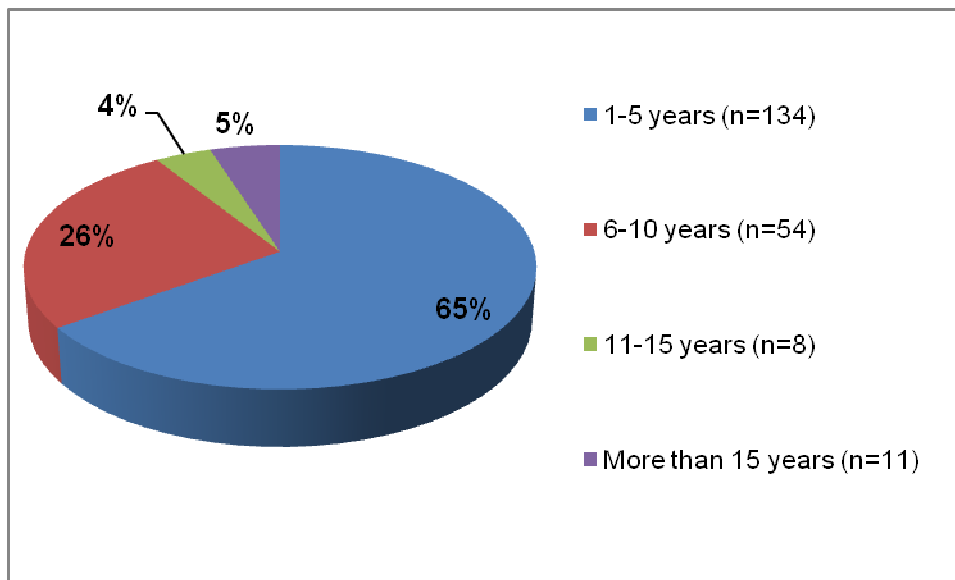


Figure 4.16: Student nurses' years of nursing experience (n=207)

4.3.2 Theoretical environment

In this section an analysis and a discussion of the data concerning the teaching methods and teaching aids received from the student nurse respondents are presented.

4.3.2.1 Teaching facilities and aids accessible to student nurses at the HEI learning centres

The literature review revealed that it is vital for student nurses to have access to teaching facilities and teaching aids to enhance their learning process. Access to internet sources is especially necessary for problem-based and problem-solving activities and project work. Also, the use of multimedia is more effective when the student nurse can use it independently as well as during group work in the classrooms (Meyer & Van Niekerk, 2008:142).

The student nurses indicated with an 'X' whether they had access to teaching facilities and teaching aids at the HEI learning centres and external institutions. Some respondents left options

unanswered. The researcher did not code this data. A number of students indicated that they also had external access to some of the teaching facilities and aids. Table 4.11 illustrates that the majority of student nurses had access to the library (90% [n=188]), simulation rooms (88% [n=183]), facilities for group work/discussions (91% [n=191]) and training DVDs / videos (84% [n=176]) at the learning centre. Seventy-eight per cent (n=163) had access to the computer room but only 56% (n=117) had access to the intranet (the HEI internal network system where all the training related documents and e-learning activities are published) and 31% (n=64) to the internet at the learning centre. Fifty-five (n=26%) respondents indicated they had external access to the internet. It is evident that the majority of the student nurses had access to multimedia; however, access to the internet is a source of concern.

Table 4.11: Student access to teaching facilities and aids

Student nurse accessibility to teaching facilities and aids	At learning centre	At another institution	Not available
Library	90% (n=188)	12% (n=25)	5% (n=10)
Simulation room	88% (n=183)	10% (n=21)	3% (n=6)
Computer room	78% (n=163)	8% (n=16)	11% (n=23)
Internet	31% (n=64)	26% (n=55)	33% (n=70)
Intranet	56% (n=117)	19% (n=39)	17% (n=36)
Facilities for group work / discussions	91% (n=191)	8% (n=16)	1% (n=3)
Training DVDs / videos	84% (n=176)	5% (n=10)	6% (n=13)
Training CDs	53% (n=110)	5% (n=11)	29% (n=60)

4.3.2.2 Utilisation of teaching aids in the classroom by nurse educators

It was apparent from the literature reviewed that the successful integration of theory and practice is dependent on the utilisation of multimedia in the classroom by the nurse educators and the independent use thereof by the students. This synergy is essential for the enhancement of the students' learning experience; they have to become engaged to narrow the theory-practice gap (Meyer & Van Niekerk, 2008:142).

The respondents were asked to indicate with an 'X' on a 4-point Likert scale the teaching aids used by the educators as well as the frequency with which it was used. Some did not respond to every option given but left the block blank. The researcher did not code this data. As shown in Table 4.12 the student nurse respondents signified that the data projector with PowerPoint slides (97% [n=195]), textbooks (95% [n=195]) and whiteboards (77% [n=154]) were used "Mostly" and "Always". The use of training CDs rendered a response rate of 17% (n=35) and training DVDs / videos a response rate of 33% (n=68). Only 41% (n=81) indicated that models were used. This may be due to the fact that the student nurses perceived 'models' to be models of, for example, the eye or the ear and not to the manikins also used at the learning centres. The use of textbooks and a data projector with PowerPoint slides correlates with the number of times formal lectures were used. Textbooks and PowerPoint slides are synonymous with formal lectures and, according to McCaugherty (1991a:1057), if overused it unwittingly provides the starting point for the theory-practice gap.

Table 4.12: Student nurses' response to the frequency of teaching aids used by nurse educators

Options pertaining to the teaching aids used in the classrooms	Never / Seldom	Mostly / Always
Training DVDs / videos	67% (n=136)	33% (n=68)
Training CDs	83% (n=166)	17% (n=35)
Research articles	60% (n=119)	41%(n=81)
Posters	51% (n=99)	49% (n=97)
Whiteboard	23% (n=46)	77% (n=154)
Overhead projector with transparencies	52% (n=102)	48% (n=95)
Data projector with PowerPoint slides	3% (n=7)	97% (n=195)
Models	59% (n=115)	41% (n=81)
Flipcharts	77% (n=154)	23% (n=46)
Textbooks	5% (n=10)	95% (n=195)
Other	0% (n=0)	0% (n=0)

4.3.2.3 Teaching methods used by nurse educators in the classroom

Next, the student nurses were asked to indicate with an 'X' how often the nurse educators used a specific teaching method in the classroom. A 4-point Likert scale was used with '1' representing "Never" and '4' representing "Always". Some of the student nurses did not respond to all options. They left some blank. These options were also not coded by the researcher.

According to Table 4.13, the student nurse respondents indicated that group discussions and formal lectures were utilised most of the time. A 96% response rate was received for both these methods. Small group activities, scenarios, nursing process, evidence-based teaching and SDL had a response rate between 81% and 88%. The student nurses indicated that projects, 54% (n=108), simulation, 70% (n=139), games, 82% (n=167) and computer-based activities, 82% (n=164) were used "Seldom" or "Never". Although the data shown in Table 4.13 reveal that a variety of teaching methods were used, it is worrying that formal lectures were used a lot. Applin *et al.* (2011:134) state that formal lectures (used "Mostly" or "Always" with a response rate of 96% [n=193]) are less effective for learning in the nursing profession because it does not encourage students to participate. Hence, formal lectures do not foster knowledge application and CT which are both regarded as important skills to have for theory-practice integration in the nursing profession.

Table 4.13: Student nurses' response to the frequency of teaching methods used by nurse educators

Options pertaining to the teaching methods used in the classrooms	Never / Seldom	Mostly / Always
Formal lectures	4% (n=8)	96% (n=193)
Demonstrations	22 (n=44)	78% (n=160)
Group discussions	4% (n=8)	96% (n=200)
Small group activities	12% (n=24)	88% (n=181)
Projects	54% (n=108)	46% (n=93)
Reflection on learning experience	23% (n=46)	77% (n=152)
Role-play	61% (n=125)	39% (n=80)
Games	82% (n=167)	18% (n=36)
Problem-based/ -solving activities	32% (n=64)	68% (n=135)
Concept / brain / mind mapping	47% (n=92)	53% (n=105)
Scenarios	18% (n=37)	82% (n=170)
Case studies	46% (n=93)	54% (n=111)
Class research activities	42% (n=84)	58% (n=117)
Computer-based activities	82% (n=164)	18% (n=37)
Simulation	70%(n=139)	31% (n=61)
Nursing process	19% (n=38)	81% (n=165)
Brainstorming	32% (n=64)	68% (n=134)
Evidence-based teaching	19% (n=38)	81% (n=161)
Self-directed learning (SDL)	15% (n=29)	85% (n=169)
Other	0% (n=0)	0% (n=0)

4.3.2.4 Utilisation of learning contracts and portfolios

In literature, Quinn and Hughes (2007:51) mention that, despite the fact that student nurses are adult learners who are expected to be self-directed in their learning, it does not always happen. Therefore, they need a more structured and combined andragogical / pedagogical approach to meet their learning needs. Making use of a learning contract is an ideal teaching strategy to address this problem.

The student nurses were asked to indicate how frequently the nurse educators utilised the learning contract, and where it was used. The majority, namely 69% (n=140) of the 204 student respondents who answered this question, indicated that it was used most of the times or “Always” whereas 31% (n=64) indicated that it was “Never” or “Seldom” used. On their responses, 79% (n=166) indicated that it was used in the classroom and 44% (n=91) indicated the clinical environment (hospital). Some of the respondents signified both environments. Forty-eight per cent (n=95) of the 197 student nurses indicated that a portfolio as teaching strategy was used “Mostly” or “Always” and 52% (n=102) indicated that it was “Never” or “Seldom” used.

4.3.2.5 Reflection on learning

Students were asked to indicate whether they were encouraged to reflect on what they had learnt and experienced in the classroom and clinical environment. The majority of students, 97% (n=202) indicated with a “Yes” that they were encouraged to reflect on what they had learnt and 3% (n=6) responded with a “No” answer. As illustrated in Figure 4.17, according to 77% (n=160) of the respondents reflection on learning was mostly done in the clinical environment (practice), whereas 58% (n=122) indicated that it was done in the classroom. Some said they were encouraged to reflect in both environments. They chose more than one option. Discussion, as a method to reflect on learning, was indicated by 83% (n=173) of the student nurse respondents (see Figure 4.18). In Figure 4.19 it is shown that the nurse educator as well as the nurse practitioners in the clinical environment encouraged students to reflect on learning, but most of the student nurses, 73% (n=152), revealed that they were encouraged by the nurse educator.

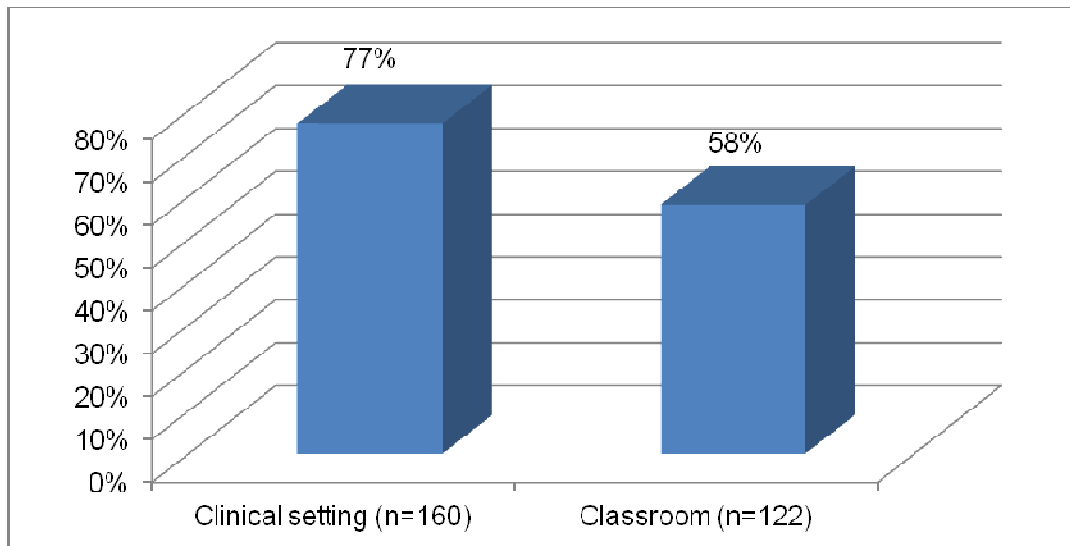


Figure 4.17: Reflection on learning environment

The percentages illustrated in Figure 4.17 do not calculate to hundred per cent because the student nurses could select both options. The percentage of each option is reflected separately in this figure.

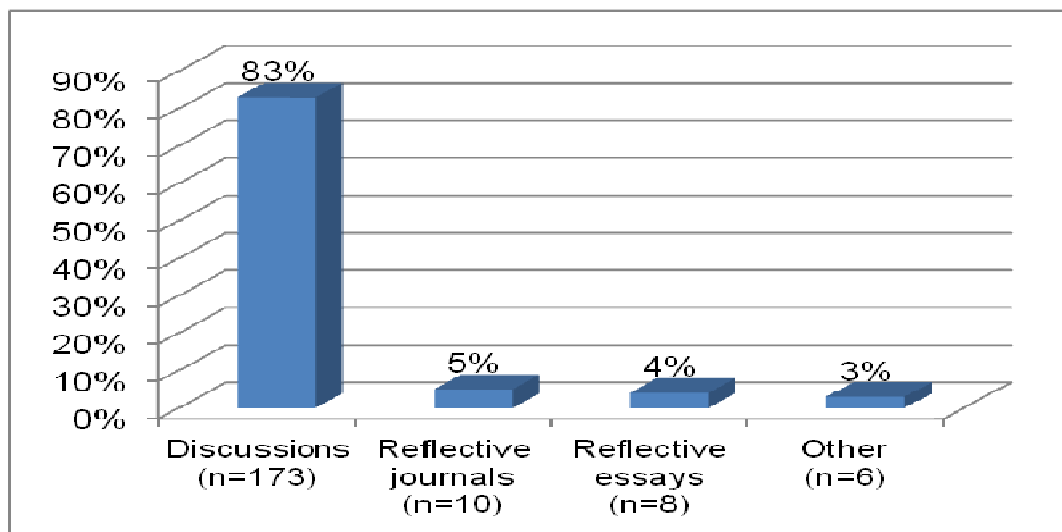


Figure 4.18: Reflection method

The percentages illustrated in Figure 4.18 and Figure 4.19 do not calculate to hundred per cent because the options the student nurses selected are reflected separately in these figures.

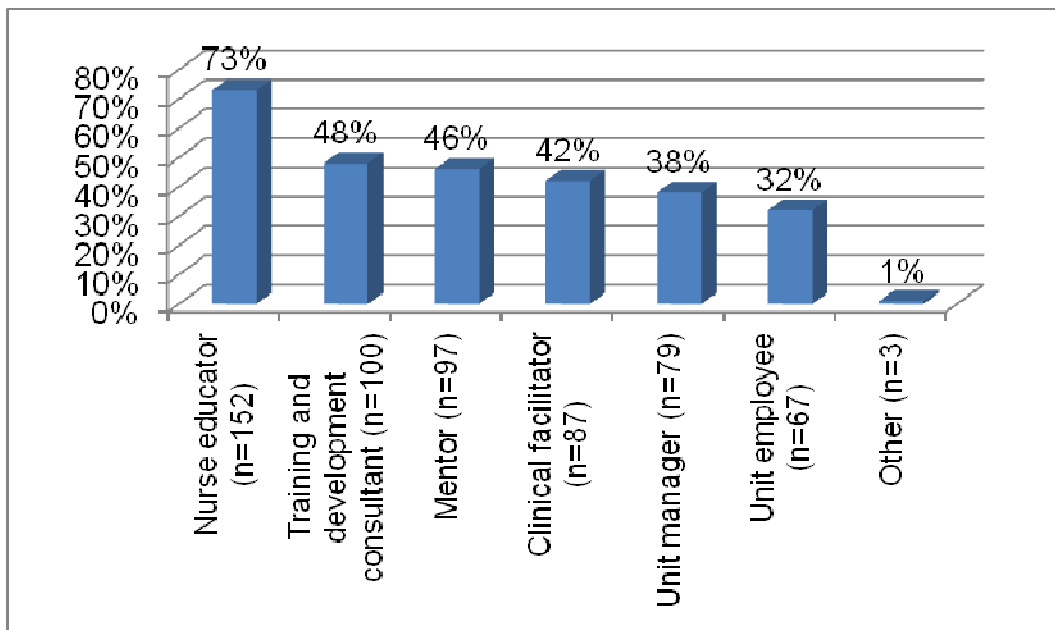


Figure 4.19: Reflection on learning facilitators

4.3.2.6 Encourage students to use multimedia when given assignments

As question 11 and 12 stated, the student nurse respondents were asked to indicate whether the nurse educators encouraged them to use multimedia and whether they actually received multimedia from the nurse educators. They were requested to answer “Yes” or “No”. In their response, 93% (n=191) of the 206 respondents who answered this question indicated that the nurse educators encouraged them to use multimedia. Sixty-three per cent (n=132) of the 208 students, who answered the next question, reflected that multimedia was provided to them. Figure 4.20 illustrates that the majority of the student nurses, 51% (n=106), indicated they were referred to the library whereas only 36% (n=76) were referred to the internet and 26% (n=54) to research articles. The percentages illustrated in Figure 4.20 do not calculate to hundred per cent because the students could choose more than one multimedia option. Most of the student nurse respondents indicated more than one option. The percentage of each option is reflected separately in this figure.

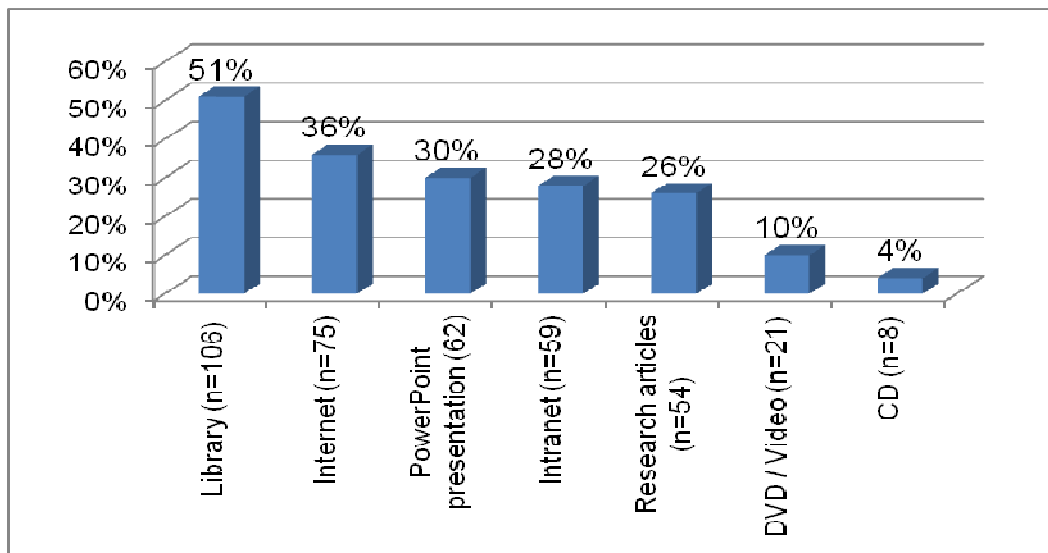


Figure 4.20: Types of multimedia provided to student nurses (n=208)

4.3.2.7 Utilisation of scenarios and case studies

The student nurse respondents were asked to indicate on a 4-point Likert scale the type of scenarios and case studies used in the classrooms. On the scale the '1' indicated a "Never" and the '4' meant "Always". They were also requested to indicate whether scenarios of clinical problems were included in their assignments. In their responses, 93% (n=191) of the 206 student nurses who answered this question indicated that scenarios of clinical problems were included in assignments. Fifteen (7%) said "No". The majority indicated the type of scenario used but some did not respond to every option. These options were left blank and were not coded by the researcher. Table 4.14 illustrates that 91% (n=175) of the respondents perceived that problem-based scenarios were used "Mostly" or "Always"; the use of real life scenarios were indicated by 83% (n=160). Fictional scenarios were used the least (52% [n=90]).

Question 16 was asked to determine the perception of the student nurses regarding the utilisation of case studies in the classroom. The majority of student nurses indicated with an 'X' the type of case study used, but a few left the space blank. As illustrated in Table 4.14, 83% (n=163) of the respondents felt that patient studies were used "Mostly" or "Always" and 78% (n=145) indicated that problem-based case studies were used "Mostly" or "Always".

Table 4.14: Scenarios and case studies used

Scenarios and case studies	Never / Seldom	Mostly / Always
Problem-based scenario	9% (n=18)	91% (n=175)
Real life scenario	17% (n=32)	83% (n=160)
Fictional scenario	48% (n=83)	52% (n=90)
Patient studies	17% (n=34)	83% (n=163)
Problem-based case studies	22% (n=40)	78% (n=145)

4.3.2.8 Demonstrations

Another important method to integrate theory and practice is the use of demonstrations. The following four questions were related to the utilisation of demonstrations at the learning centres. The student nurses were asked to indicate whether they were given the opportunity to practice the procedure at the learning centre after it had been demonstrated. They were requested to answer “Yes” or “No”. If the answer was “Yes”, they then had to indicate whether the nurse educators gave them reflective feedback. They also had to indicate whether the procedures demonstrated to them correlated with how it was done in the clinical environment (practice). The concept of parity and consistency between what is demonstrated and what is experienced in the clinical setting is crucial to ensure theory-practice integration and safe practice (Mellish *et al.*, 1998:110; Quinn & Hughes, 2007: 232).

As illustrated in Table 4.15, in their response 76% (n=156) of the student nurses indicated that they had the opportunity to practice the procedures with 24% (n=50) indicating a “No”. Nine per cent (n=15) felt they did not get feedback; 91% (n=146) indicated that the nurse educators did give reflective feedback, and 153 (75%) student nurse respondents felt that the procedures demonstrated to them correlated with how it was carried out in the clinical environment.

Table 4.15: Demonstrations at the learning centres

Questions related to demonstrations at the learning centres	Yes	No
Did you receive the opportunity to practice the procedures in the learning centre after the demonstration?	76% (n=156)	24% (n=50)
Did you receive reflective feedback?	91% (n=146)	9% (n=15)
Do the demonstrations of procedures at the learning centre correlate with how it is carried out in the nursing units?	75% (n=153)	25% (n=51)

4.3.2.9 Networking with peers

Networking with peers is also an important strategy for theory-practice integration. The students were asked to indicate whether the nurse educators encouraged them to network with their peers and, if they answered “Yes” they were asked to describe how. In their response, 85% (n=175) of the 205 respondents who answered the question indicated that they were encouraged and 15% (n=30) answered with a “No”. The methods of networking, as indicated by 155 of the 175 student nurse respondents who marked that they were encouraged to network with peers, were coded to determine similar themes. These themes are firstly listed and then reflected as a graph in Figure 4:21.

- i Group discussions and activities (classified as group work)
- ii Sharing of feelings and lessons learnt information by sharing with each other
- iii Social networking by means of WhatsApp and Microsoft Outlook
- iv Ask the assistance of other student year groups
- v Assist each other to solve problems

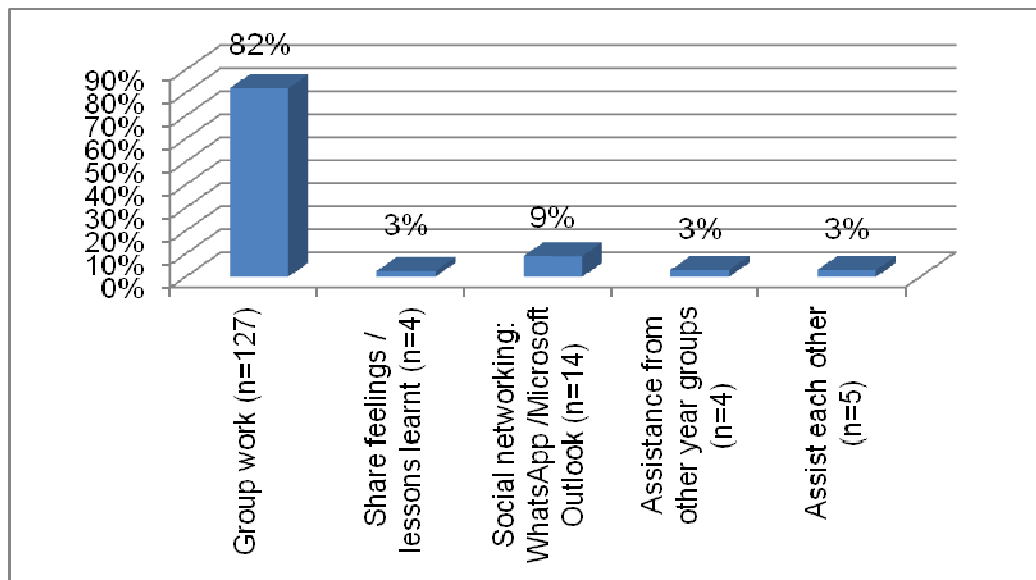


Figure 4.21: Networking methods encouraged by the nurse educators (n=155)

4.3.3 Clinical environment

The data relating to the clinical accompaniment of the student nurses in the clinical environment are analysed and discussed in this section.

4.3.3.1 Clinical accompaniment of students in the clinical environment

Student nurses were asked to indicate whether the nurse educators supported them in the clinical environment. If they indicated “Yes”, they had to indicate how often this happened and the length of time the nurse educators spent with them with each visit. In their response, 93% (n=187) indicated that the nurse educators did support them in the clinical environment, whereas 7% (n=15) indicated this did not happen. Seven respondents did not answer this question. The researcher did not code this data. According to Figure 4.22, the majority 61% (n=121) received monthly clinical support from the nurse educator. Forty-two per cent (n=84) felt the nurse educators spent between 30-60 minutes with them, 35% (n=71) indicated more than 60 minutes, and 23% (n=47) reflected that the time was less than 30 minutes as illustrated in Figure 4.23. Although 202 (97%) respondents indicated that the nurse educators did spend time with them in the nursing units, only 93% (n=187) felt that the nurse educators actually supported them in these units.

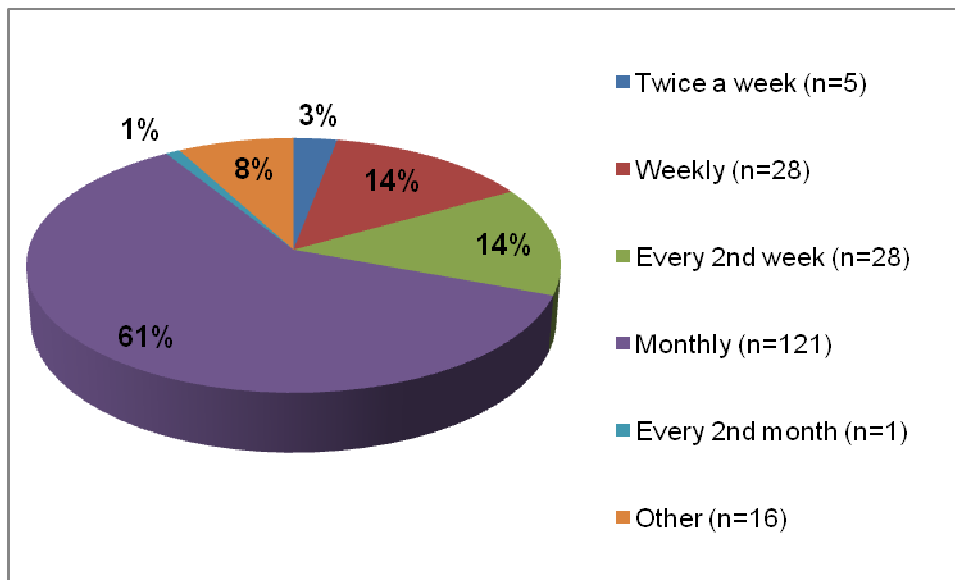


Figure 4.22: Frequency of nurse educators' support for student nurses in the clinical environment (n=199)

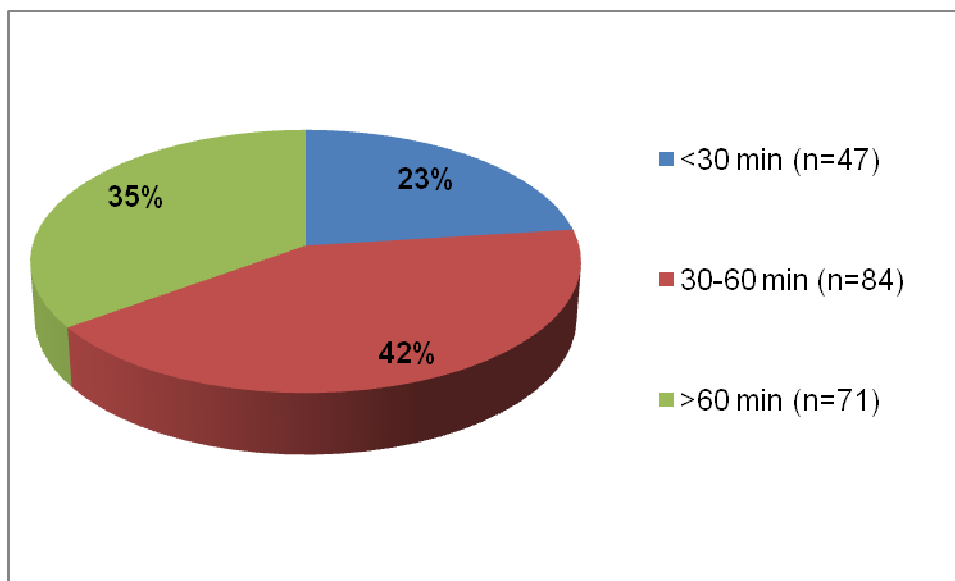


Figure 4.23: Time spent with the student nurse per visit (n=202)

4.4 DATA ANALYSIS: STRUCTURED OBSERVATION DATA

The observation checklist was used by an independent observer (an individual who was not involved in this study process) to indicate the teaching methods and teaching aids used by the nurse educators at the four HEI learning centres when structured observations were performed. This was done to validate the data generated from both the nurse educators' and student nurses'

questionnaires. Seventeen (17) nurse educators and 99 teaching periods of 40 minutes each were observed.

4.4.1 Teaching aids used by the nurse educators in the classroom

The data generated through the structured observations indicated that data projectors with PowerPoint slides were used in 63% (n=62) of the observed classes as illustrated in Table 4.16. The data also showed that whiteboards (13% [13]), textbooks (24% [n=24]) and other instructional aids (15% [n=15]) were used frequently. The rest of the teaching aids were used in less than 10% of the observed classes.

Table 4.16: Structured observation data of teaching aids used by nurse educators

Teaching aids used in the classrooms	Observation data
Training DVDs / videos	2% (n=2)
Training CDs	3% (n=3)
Research articles	0% (n=0)
Posters	5% (n=5)
Whiteboard	13% (n=13)
Overhead projector with transparencies	1% (n=1)
Data projector with PowerPoint slides	63% (n=62)
Models	7% (n=7)
Flipcharts	6% (n=6)
Textbooks	24% (n=24)
Other	15% (n=15)

The observation data revealed that the nurse educators used the following teaching aids 15 (15%) times:

- Patient documentation and policies: twice
- Laminated paper: three times

- Ingredients for scones: twice
- Jelly tots to build cells: once
- First aid box: once
- Quiz / interview cards: three times
- Laboratory: once
- Game cards: twice

4.4.2 Teaching methods used by the nurse educators in the classroom

It is a concern that although literature indicates that an overuse of formal lectures contributes to theory-practice gaps, the structured observation sessions in fact indicated that formal lectures were overused in 65% (n=64) of cases. The observation rate for the use of the following teaching methods (see Table 4.17) was low, but it nevertheless indicated that these teaching methods were indeed used:

- i Group discussion: 24% (n=24)
- ii Small group activities: 23% (n=23)
- iii Reflection on learning / experience: 24% (n=24)
- iv Problem-based/ -solving activities: 11% (n=11)
- v Scenarios: 10% (n=10)
- vi Nursing process: 11% (n=11)
- vii Evidence-based teaching: 12% (n=12)
- viii Self-directed learning: 24% (n=24)

The teaching methods listed above were identified in Chapter 2 as teaching methods that may contribute to better theory-practice integration. The following teaching methods, which were also identified as methods essential for theory-practice integration, were used in only 6% and less of the observed classes (see Table 4.17): demonstrations (2% [n=2]), projects (1% [n=1]), role-play (1% [(n=1)], concept / brain / mind mapping (2% [n=2]), case studies (0% [n=0]), simulation (1% [n=1]) and brainstorming (4% [n=4]). As shown in Table 4.17, games (6% [n=6]), class research

activities (2% [n=2]) and computer-based activities 1% [n=1]) were used in only 6% and less of the observed classes. The other teaching methods used by the nurse educators were: peer assessment, pre-test and a practical activity (baking scones).

Table 4.17: Structured observation data of teaching methods used by nurse educators

Teaching methods used in the classrooms	Observation data
Formal lectures	65% (n=64)
Demonstrations	2% (n=2)
Group discussions	24% (n=24)
Small group activities	23% (n=23)
Projects	1% (n=1)
Reflection on learning / experience	24% (n=24)
Role-play	1% (n=1)
Games	6% (n=6)
Problem-based/ -solving activities	11% (n=11)
Concept / brain/ mind mapping	2% (n=2)
Scenarios	10% (n=10)
Case studies	0% (n=0)
Class research activities	2% (n=2)
Computer-based activities	1% (n=1)
Simulation	1% (n=1)
Nursing process	11% (n=11)
Brainstorming	4% (n=4)
Evidence-based teaching	12% (n=12)
Self-directed learning (SDL)	24% (n=24)
Other	3% (n=3)

4.5 DATA ANALYSIS: COMPARISON OF RESULTS FROM NURSE EDUCATOR DATA, STUDENT NURSE DATA AND OBSERVATIONAL DATA

In this stage the data discussed in the three previous stages will be compared. This is done to determine the similarities and discrepancies between the data collected from the nurse educators, student nurses and structured observations with the aim of validating the data.

4.5.1 Educational facilities and aids accessible to student nurses at the HEI learning centres

The nurse educators and student nurses agreed that the students had access to the library, simulation room, computer room, facilities for group work, training DVDs and videos at the HEI learning centres. Both groups also indicated that the students had limited access to internet facilities as illustrated in Table 4.18; hence validating the data received from the nurse educators. They did, however, disagree about the accessibility to the intranet at the HEI learning centres.

Table 4.18: Comparison of nurse educators' and student nurses' responses to the accessibility of educational facilities and aids for student nurses

Accessibility of educational facilities and aids	Nurse educators' response	Student nurses' response
Library	92% (n=22)	90% (n=188)
Simulation room	96% (n=23)	88% (n=183)
Computer room	88% (n=21)	78% (n=163)
Internet	38% (n=9)	31% (n=64)
Intranet	83% (n=20)	56% (n=117)
Facilities for group work / discussions	88% (n=21)	91% (n=191)
Training DVDs / videos	75% (n=18)	84% (n=176)
Training CDs	58% (n=14)	53% (n=110)

4.5.2 Teaching aids used by the nurse educators

In their respective responses, as illustrated in Table 4.19, the nurse educators and student nurses concurred that posters, whiteboard, data projector with PowerPoint slides, and textbooks were mostly used in the classrooms. Teaching aids used the least were training DVDs / videos, training CDs and research articles. Although they did not agree about the frequency of use, both groups (8% of nurse educators and 48% of student nurses) shared that overhead projectors with transparencies were used minimally. The data from the nurse educators and the student nurse respondents concerning the use of models and flipcharts differed. Firstly, 79% (n=19) of the nurse educators and only 41% (n=81) of the student nurses indicated that models were used “Mostly” or “Always”. A possible reason for the difference in perceptions may be that the student nurses did not realise that models referred to manikins as well. Secondly, a higher percentage of nurse educators (58% [n=14]) indicated that flipcharts were used “Mostly” or “Always” as opposed to the 23% (n=46) of the student nurses.

What appears to be a concern is that the structured observation data (see Table 4.19) confirmed that the data projector with PowerPoint slides (63% [n=62]) were mostly used and textbooks (24% [n=24]), which may be seen as similar to formal lectures and a possible starting point for promoting the theory-practice gap, were used frequently. The structured observation data also confirmed that a whiteboard was one of the teaching aids used the most. Also obvious from the data, which were similar for nurse educators and student nurses and was confirmed by the structured observations, was that the following teaching aids were not used often: training DVDs / videos, training CDs, research articles and posters. The observational data also confirmed the student nurses' experience that flipcharts and models were not used often by the nurse educators (see Table 4.19). The 1% (n=1) use of the overhead projector correlates with the nurse educators' reported experiences, namely that it was “Seldom” or “Never” used.

Table 4.19: Comparison of nurse educators' and student nurses' responses to teaching aids used "Mostly" or "Always" and structured observation checklist data

Teaching aids used in the classrooms	Nurse educators' response	Student nurses' response	Observation data
Training DVDs / videos	35% (n=8)	33% (n=68)	2% (n=2)
Training CDs	13% (n=3)	17% (n=35)	3% (n=3)
Research articles	29%(n=7)	41% (n=81)	0% (n=0)
Posters	50% (n=12)	49% (n=97)	5% (n=5)
Whiteboard	75% (n=18)	77% (n=154)	13% (n=13)
Overhead projector with transparencies	8% (n=2)	48% (n=95)	1% (n=1)
Data projector with PowerPoint slides	92% (n=22)	97% (n=195)	63% (n=62)
Models	79% (n=19)	41% (n=81)	7% (n=7)
Flipcharts	58% (n=14)	23% (n=46)	6% (n=6)
Textbooks	100% (n=24)	95% (n=195)	24% (n=24)
Other	0% (n=0)	0% (n=0)	15% (n=15)

4.5.3 Teaching methods used by the nurse educators

The nurse educators and student nurses agreed that ten (10) teaching methods, which seem to enhance theory-practice integration, were used "Mostly" or "Always" (mainly illustrated in Table 4.20). These teaching methods are: demonstrations, small group activities, problem-based / -solving activities, case studies, brainstorming, group discussions, reflection on learning / experience, scenarios, nursing process and evidence-based teaching. Although there was a 20% difference between the two groups' responses, more than 60%, of both groups, indicated that SDL was used "Mostly" or "Always".

As reflected in Table 4.20 the nurse educators and nurse respondents were also in agreement that projects and role-play, considered as teaching methods used to integrate theory and practice, were "Seldom" or "Never" used. According to literature, it is not advisable for these two teaching methods to be frequently used in the classrooms. Role-play is invariably associated with ethics and professional practice teaching (Mellish *et al.*, 1998:131; Quinn & Hughes, 2007:255). Project work

is time consuming and can take between one day and several years to complete. Therefore, Meyer and Van Niekerk (2008:137) suggest that projects should rather form part of the curriculum than a stand-alone teaching method since the time involved can detract the student/s from other important learning activities. The two respondent groups rendered relatively similar data with regard to the use of formal lectures. In literature formal lectures were identified as a teaching method that does not enhance students' ability to link theory to practice, but both groups identified that this was the preferred teaching method mainly and continually used in the classroom (see Table 4.20).

Further illustrated in Table 4.20 is that there were discrepancies in the perceptions of the nurse educators and student nurses regarding the utilisation of teaching methods in the classroom. They did not agree about the frequency of use of two of the teaching methods which promote theory-practice integration, namely concept / brain / mind mapping and simulation. In fact, there was a 20% and higher difference between the two groups' responses. Firstly, 23% (n=5) of the nurse educator and 53% (n=105) of the student nurse respondents indicated that concept / brain / mind mapping were utilised "Mostly" or "Always" and, secondly, 52% (n=12) of the nurse educator and only 31% (n=61) of the student nurse respondents indicated that simulation was used "Mostly" or "Always". A possible reason for the difference in perceptions regarding simulation may be that the nurse educators took into account the simulation done in the simulation room whereas the students did not consider it because the question relating to teaching methods referred to teaching methods used in the classroom. There was also a 35% difference between the two groups' responses regarding the utilisation of class research activities. Twenty-three per cent (n=5) of the nurse educators indicated class research activities whereas 58% (n=117) of the student respondents indicated that class research activities were used "Mostly" or "Always".

Table 4.20: Comparison of nurse educators' and student nurses' responses to teaching methods used "Mostly" or "Always"

Teaching methods used in the classrooms	Nurse educators' response	Student nurses' response
Formal lectures	84% (n=20)	96% (n=193)
Demonstrations	79% (n=19)	78% (n=160)
Group discussions	100% (n=24)	96% (n=200)
Small group activities	78% (n=18)	88% (n=181)
Projects	32% (n=7)	46% (n=93)
Reflection on learning / experience	71% (n=17)	77% (n=152)
Role-play	37% (n=9)	39% (n=80)
Games	43% (n=10)	18% (n=36)
Problem-based / -solving activities	75% (n=18)	68% (n=135)
Concept / brain / mind mapping	23% (n=5)	53% (n=105)
Scenarios	75% (n=18)	82% (n=170)
Case studies	52% (n=12)	54% (n=111)
Class research activities	23% (n=5)	58% (n=117)
Computer-based activities	30% (n=7)	18% (n=37)
Simulation	52% (n=12)	31% (n=61)
Nursing process	73% (n=16)	81% (n=165)
Brainstorming	67% (n=16)	68% (n=134)
Evidence-based teaching	63% (n=15)	81% (n=161)
Self-directed learning (SDL)	65% (n=15)	85% (n=169)
Other	0% (n=0)	0% (n=0)

The structured observation checklist reflected that formal lectures were primarily used in the classrooms. The percentage indicated by the observation checklist (65% [n=64]) for the use of formal lectures correlates with the corresponding feedback received from the nurse educators and student nurses that formal lectures were used most of the times ("Mostly") or all of the time

(“Always”) (see Table 4.21). Although the structured observations revealed that the percentage of use of the teaching methods listed below, which is regarded as suitable to theory-practice integration, was low, it still showed that these methods were the ones used more often. This correlates with the perception of the student nurses and nurse educators that these listed teaching methods were used “Mostly” or “Always” (see Table 4.21).

- Group discussions
- Small group activities
- Reflection on learning / experience
- Problem-based / -solving activities
- Scenarios
- Nursing process
- Evidence-based teaching
- Self-directed learning

In contrast to the nurse educators’ and student nurses’ responses that demonstrations, case studies and brainstorming were used “Mostly” and “Always”, the structured observations indicate a limited use thereof during the structured observation sessions (see Table 4.21). A possible reason for these low percentages may be that when the structured observations were conducted, the study contents facilitated by the nurse educators at that time did not warrant the use of any of these methods.

Projects and role-play were perceived by the student nurses and nurse educators as teaching methods used “Seldomly” or not at all (“Never”). This correlates with the structured observation data that both these methods were used only once (1%) during the time the observations were done. The data generated by the structured observations (2% [n=2]) (see Table 4.21) reaffirms the perception of 23% (n=5) of the nurse educators that concept mapping was used most of the times (“Mostly”) or “Always”. Conversely, 53% (n=105) of the student nurses indicated that concept mapping was used most of the times (“Mostly”) or “Always”. The significant difference in the responses of the two groups may be ascribed to the fact that, as noted by All and Havens (1997:1212), concept mapping can also be used as a study method and not as a teaching method *per se*.

Table 4.21: Comparison of nurse educators' and student nurses' responses to teaching methods used "Mostly" or "Always" and structured observation checklist data

Teaching methods used in the classrooms	Nurse educators' response	Student nurses' response	Observation data
Formal lectures	84% (n=20)	96% (n=193)	65% (n=64)
Demonstrations	79% (n=19)	78% (n=160)	2% (n=2)
Group discussions	100% (n=24)	96% (n=200)	24% (n=24)
Small group activities	78% (n=18)	88% (n=181)	23% (n=23)
Projects	32% (n=7)	46% (n=93)	1% (n=1)
Reflection on learning / experience	71% (n=17)	77% (n=152)	24% (n=24)
Role-play	37% (n=9)	39% (n=80)	1% (n=1)
Games	43% (n=10)	18% (n=36)	6% (n=6)
Problem-based / -solving activities	75% (n=18)	68% (n=135)	11% (n=11)
Concept / brain / mind mapping	23% (n=5)	53% (n=105)	2% (n=2)
Scenarios	75% (n=18)	82% (n=170)	10% (n=10)
Case studies	52% (n=12)	54% (n=111)	0% (n=0)
Class research activities	23% (n=5)	58% (n=117)	2% (n=2)
Computer-based activities	30% (n=7)	18% (n=37)	1% (n=1)
Simulation	52% (n=12)	31% (n=61)	1% (n=1)
Nursing process	73% (n=16)	81% (n=165)	11% (n=11)
Brainstorming	67% (n=16)	68% (n=134)	4% (n=4)
Evidence-based teaching	63% (n=15)	81% (n=161)	12% (n=12)
Self-directed learning (SDL)	65% (n=15)	85% (n=169)	24% (n=24)
Other	0% (n=0)	0% (n=0)	3% (n=3)

As illustrated in Table 4.21 the data generated by the structured observations regarding the utilisation of simulation were in line with the perception of the student nurses. Only 31% (n=61) of them indicated that simulation was used "Mostly" or "Always" at the learning centres. In contrast,

52% (n=12) of the nurse educators indicated that it was used most of the time (“Mostly”) or “Always”.

In summary, the data generated by the questionnaires and structured observations indicated that the following teaching methods which can significantly enhance theory-practice integration, were used the most: group discussions, small group activities, reflections on learning / experience, problem-based / -solving activities, the nursing process, evidence-based teaching and self-directed learning. All these teaching methods are also essential for outcomes-based education. The use of scenarios, which forms the basis of many of these teaching methods such as projects and role-play, which apparently also may promote theory and practice integration, were used on a limited scale. Role-play, in particular, is not a teaching method used frequently as it is usually employed to facilitate subjects that deal with nursing ethos and professional practice.

4.5.4 Learning contracts and portfolio

As illustrated in Table 4.22 the nurse educators and student nurses agreed about the utilisation of the learning contract. Fifty-eight per cent (n=14) of the nurse educator respondents and 69% (n=140) of the student nurse respondents indicated that this teaching strategy was used “Mostly” or “Always”. Both the groups (nurse educators 71% and student nurses 79%) signified it was mostly utilised in the classroom; thus, validating the data received from the nurse educators. There was, however, a lack of agreement on the utilisation of the learning contract in the hospitals: 71% (n=17) of the nurse educator respondents indicated the hospital and only 44% (n=91) of the student nurse respondents indicated the hospitals.

Table 4.22: Comparison of nurse educator’s and student nurses’ responses to the utilisation of learning contracts by nurse educators

Respondents	Used “Mostly” or “Always”	Used in the classrooms	Used in the hospitals
Nurse educators	58% (n=14)	71% (n=17)	71% (n=17)
Student nurses	69% (n=140)	79% (n=166)	44% (n=91)

The responses of the nurse educators and student nurses regarding the use of the portfolio did not correlate. Of the nurse educators, 63% (n=15) responded that this strategy was used most of the times (“Mostly”) or “Always” and only 48% (n=95) of the student nurses felt that it was used “Mostly” or “Always”.

4.5.5 Reflection on learning

When asked whether they encouraged the student nurses to reflect on what they had learnt in the classroom and in the clinical environment, all the nurse educator respondents (100% [n=24]) believed they did. The student nurses (97% [n=202]) agreed, hence validating the data received from the nurse educators. However, there was disagreement as to where this was done (see Figure 4. 24). Despite their disagreement about the environment where reflection took place, it is reassuring that both groups reported that the students were encouraged to reflect on learning. The respondents of both groups (nurse educators 100% and student nurses 83%) also agreed that the discussion method was used.

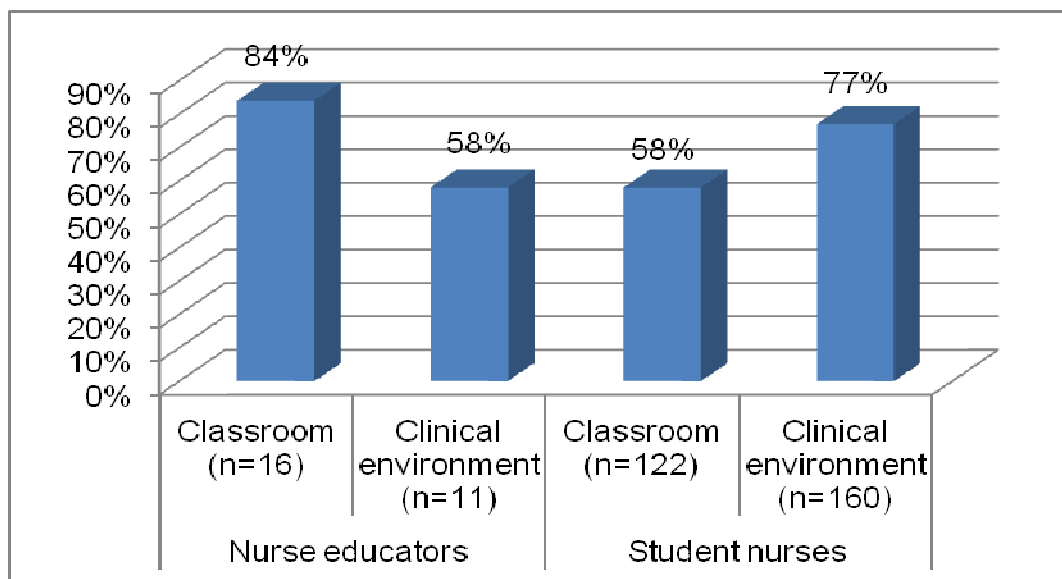


Figure 4:24: Comparison of nurse educators’ and student nurses’ responses where reflection on learning took place

The percentages illustrated in Figure 4.24 do not calculate to hundred per cent because the responses of both respondent groups are illustrated separately in this figure.

4.5.6 Encourage the use of multimedia when given assignments

A comparison of the nurse educators' and student nurses' response as to whether the nurse educators encouraged the students to use multimedia when they gave them their assignment evidenced that they were in agreement. Ninety-one per cent (n=21) of the nurse educators and 93% (n=191) of the student nurses indicated that the student nurses were encouraged to use multi-media, hence validating the data received from the nurse educators. There was, however, a 20% difference in the response rate pertaining to whether multimedia was provided to the students. Sixty-three per cent (n=132) of the student nurses and 43% (n=10) of the nurse educators indicated that multimedia was provided to the students. The difference in percentages may be due to the fact that the nurse educators were requested to identify the media provided by listing it on the questionnaire, whereas the student nurses were provided with a list of multimedia in their questionnaire which they could choose from.

4.5.7 Utilisation of scenarios and case studies

The responses from the two groups showed that they agreed on the type of case studies used (see Table 4.23). They also agreed that scenarios specifically pertaining to clinical problems were included in assignments. In their responses, 93% (n=191) student nurses and 86% (n=18) nurse educators indicated that scenarios of clinical problems were included in assignments. As illustrated in Table 4.23 both groups revealed that real life scenarios were used "Mostly" or "Always", but they did not agree on the frequency of use of problem-based (PB) scenarios. Of the respondents, 63% (n=15) nurse educators and 91% (n=175) student nurses indicated that problem-based scenarios were used "Mostly" or "Always". The nurse educators and student respondents further agreed that fictional scenarios were used minimally, as illustrated in Table 4.23, thus, validating the data received from the nurse educators.

Table 4.23 Comparison of nurse educators' and student nurses' responses to the type of scenarios and case studies used

Respondents	Case studies		Scenarios		
	Patient study	PB case study	PB scenario	Real life scenario	Fictional scenario
Nurse educators	70% (n=16)	67% (n=16)	63% (n=15)	75% (n=18)	48% (n=11)
Student nurses	83% (n=163)	78% (n=145)	91% (n=175)	83% (n=160)	52% (n=90)

4.5.8 Demonstrations

The nurse educators were asked to indicate whether they gave the students the opportunity to practice a procedure after the demonstration and, if the answer was “Yes”, they had to show whether they gave the students reflective feedback. The student nurses' responses reaffirmed that of the nurse educators for both questions (see Table 4.24), thereby validating the data received from the nurse educators.

Table 4.24: Comparison of nurse educators' and student nurses' responses to the two questions related to demonstrations

Demonstrations	Nurse educators	Student nurses
Opportunity to practice procedure after demonstration	92% (n=22)	76% (n=156)
Reflective feedback	86% (n=19)	91% (n=146)

4.5.9 Networking with peers

Another important factor to enhance theory-practice integration is networking with peers. The nurse educators and student nurses confirmed that the student nurses were encouraged to network with peers as 96% (n=22) nurse educators marked “Yes” and 85% (n=175) student nurses also chose “Yes”. Thus, the data received from the nurse educators were validated.

4.5.10 Support of the student nurse in the clinical environment

Student nurses were asked to indicate whether the nurse educators supported them in the clinical environment. If they chose the “Yes” answer, they had to indicate “How often” this was done. Ninety-three per cent (n=187) indicated that they were supported by indicating “Yes” on the questionnaire. The majority of both groups of respondents indicated that the student nurses were visited once a month by the nurse educators (see Table 4.25).

Table 4.25: Comparison of nurse educators’ and student nurses’ responses to the clinical accompaniment of students nurses

Clinical accompaniment	Nurse educators	Student nurses
Clinical accompaniment of student nurses: “Monthly”	65% (n=15)	61% (n=121)

Conversely, the majority of nurse educators, 70% (n=16), indicated that they saw the student for more than 60 minutes per visit, but the majority of student nurses, 42% (n=84), felt the nurse educators spent between 30 and 60 minutes with them. Only 35% (n=71) of the nurse students felt that it was more than 60 minutes (see Table 4.26). The reason for this discrepancy may be that the nurse educators keep record of the time spent with each student, as institution policy requires, whereas the students don’t. The student nurses indicated the time that they perceived that the nurse educators spent with them.

Table 4.26: Comparison of nurse educators’ and student nurses’ responses to time spent with student nurses

Respondents	Time spent with student nurses		
	<30 min	30-60 min	> 60 min
Nurse educators	4% (n=1)	17% (n=4)	70% (n=16)
Student nurses	23% (n=47)	42% (n=84)	35% (n=71)

4.6 CONCLUSION

Data collected from the nurse educators, student nurses and structured classroom observations were analysed and discussed in four different stages. The data pertained to the training of nurse educators as regards the teaching methods that enhance theory-practice integration. The teaching methods and aids they used to potentially better assist student nurses to integrate theory and practice were also analysed.

From the study it was evident that the perception of both the nurse educators and student nurses regarding the frequency of the teaching methods and strategies used largely corresponded. Both these groups indicated that a variety of teaching methods were used that all enhance the integration of theory and practice. These were predominantly, but in no particular order, as follows: demonstrations, group discussions, small group activities, reflection on learning / experience, problem-based / -solving activities, scenarios, case studies, the nursing process, brainstorming, evidence-based teaching and self-directed learning. Considerable use was made of formal lectures, viewed as a major cause of the theory-practice gap. Project work and role-play, two methods identified by literature as methods that augment theory-practice integration, were not frequently. The structured observation data, although confirming that numerous teaching methods were used in the classroom, denoted that formal lectures, PowerPoint slides and textbooks were principally used in the classrooms. According to the literature reviewed, formal lectures and the use of PowerPoint slides and textbooks are perceived to be the starting point of the theory-practice gap.

CHAPTER 5

DISCUSSION, CONCLUSIONS AND IMPLICATIONS OF THE STUDY

5.1 INTRODUCTION

In this chapter the aim, objectives and research question are re-stated, discussed and conclusions are drawn based on the study findings and its implications are indicated. The potential value and limitations of the study are presented.

5.2 AIM AND OBJECTIVES OF THE STUDY

The aim of this study was to explore in which respects current teaching methods utilised by nurse educators at the HEI comply or do not comply with teaching methods essential for theory-practice integration in an outcomes-based nursing education programme. To achieve the aim two objectives were set. Firstly, to establish which teaching methods nurse educators currently use in classrooms. Secondly, to establish whether the teaching methods used by nurse educators comply with the teaching methods identified by literature as essential methods to enhance theory-practice integration.

5.3 RESEARCH QUESTION

The research question explored in this study was:

Do nurse educators use teaching methods which enhance the closing of the potential theory-practice gap in a nursing education programme?

Two sub-questions were also formulated:

- i. *What current teaching methods are used by nurse educators to teach theoretical knowledge in a selected nursing education programme?*
- ii. *Do the teaching methods of nurse educators comply with teaching methods identified by literature as essential for enhancing theory-practice integration?*

5.4 DISCUSSION AND CONCLUSIONS REGARDING THE FIRST SUB-QUESTION

Based on the findings relating to the use of teaching methods (mainly reported in Table 4.20) it was established that there was agreement between nurse educators and student nurses that a wide spectrum of teaching methods are used for the DGNS programme. Teaching methods mostly used are formal lectures, demonstrations, group discussions, small group activities, reflection on learning / experience, problem-based / -solving activities, scenarios, case studies, nursing process, brainstorming, evidence-based teaching and self-directed learning.

The data also indicated (see Table 4.20) that methods such as projects, role-play, games, and computer-based activities are not sufficiently used. Less than half of both groups indicated a low usage rate of these methods.

The data revealed differences in the perceptions of nurse educators and students regarding the utilisation of methods such as concept / mind / brain mapping, class research activities and simulation (see Table 4.20). The following two differences were identified. Firstly, the minority (23%) of the nurse educators indicated concept / brain / mind mapping and class research activities, which both form an integral part of problem-based learning, are used “Mostly” or “Always” as teaching methods. On the other hand, more than half of the student nurses indicated these two methods are used “Mostly” or “Always”. The second difference was that more than half of the nurse educators (52%) but only a third of the student nurses (31%) indicated simulation as a method is used “Mostly” or “Always”.

Regarding formal lectures, the data generated from the structured observations concurred with the nurse educators' and student nurses' perceptions that formal lectures are overused (see Table 4.21). There is thus an over-reliance on formal lectures. The feedback relating to the methods used during the traditional formal lecture teaching showed that the data projector with PowerPoint slides, whiteboard and textbooks are the three teaching aids used "Mostly" (see Table 4.19). It correlates with the high utilisation rate of formal lectures since all three these methods can be associated with traditional teaching methods. However, whiteboards are also associated with group work (group discussions and small groups activities) which was indicated as being used "Mostly" or "Always" by both respondent groups and regularly during the observation classes (see Table 4.21).

The two groups also agreed (as validated by the structured observation data) that posters, an overhead projector with transparencies, training DVDs / videos, training CDs and research articles are not used much (see Table 4.19). Training DVDs / videos, training CDs and research articles are used the least as indicated by the "Seldom" or "Never" responses. But training DVDs / videos, training CDs, research articles and posters can be positively used to illustrate and explain concepts to the students to enhance their understanding of theory and practice. The use of research articles is also fundamental in project work, assignments, case studies, scenarios, problem-based / -solving activities and the nursing process.

The student nurses and nurse educators were not in agreement about the utilisation of models and flipcharts. Two differences were identified. Firstly, almost 80% of the nurse educators and less than half of the student nurses (41%) indicated that models are used "Mostly" or "Always". Secondly, more than half the nurse educators (58%) and less than a third of student nurse respondents (23%) indicated that flipcharts are used "Mostly" or "Always" (see Table 4.19). The structured observation data (see Table 4.19) confirmed the student nurses' perceptions that flipcharts and models are hardly ever used.

The data generated from the structured observations (mainly reported in Table 4.21) clearly showed that although the utilisation percentage of group discussions, small group activities, reflection on learning / experience, self-directed learning activities, problem-based / -solving activities, scenarios, the nursing process and evidence-based teaching is low, these are the teaching methods used most frequently in the classrooms. This data correlated with the perceptions of the nurse educators and student nurses (see Table 4.21) that these teaching methods are indeed used "Mostly" or "Always". However, according to the validated data, group discussions, small group activities, reflection on learning / experience and self-directed learning

activities were the four teaching methods primarily used (see Table 4.21). Moreover, it was found they were used twenty-three times and more during the structured observation lectures with more than 70% of both groups indicating these four methods as being used “Mostly” or “Always”.

Demonstrations, case studies, brainstorming, concept / brain / mind mapping, simulation, class research activities, projects, role-play, games and computer-based activities (mainly illustrated in Table 4.21) were identified as teaching methods used the least. It was used fewer than seven times during the time the non-researcher conducted the structured observations. The data from the first six teaching methods did not correspond with the nurse educators’ and student nurses’ responses. On the other hand, the four teaching methods listed last (projects, role-play, games and computer-based activities) did correlate with the perception of both groups as methods used the least.

Based on the findings from the utilisation of learning contracts, inclusion of clinical problem scenarios in assignments, encouraging students to use multimedia when given assignments and networking with peers, it was established that there was agreement between the nurse educators and student nurses that these strategies are used. In effect, more than half of both groups indicated a high usage of learning contracts (see Table 4.22). Both groups also indicated that the learning contract is mostly used at the learning centres.

More than 80% of both groups of respondents signified that scenarios of clinical problems are included in assignments given to the students (see section 4.5.7), that student nurses are encouraged to network with peers (see section 4.5.9), and that they are also encouraged to use multimedia when given assignments (see section 4.5.6).

In conclusion, the main teaching methods utilised by the nurse educators in the classrooms are formal lectures, group discussions, small group activities, reflection on learning / experience, problem-based / -solving activities, scenarios, the nursing process, evidence-based teaching and self-directed learning. The study results also showed the inclusion of clinical problem scenarios in assignments, a high utilisation rate of learning contracts, student nurses being encouraged to network with peers as well as to make use of multimedia when given assignments.

The teaching aids used the most are a data projector with PowerPoint slides, textbooks and a whiteboard which corresponds with the utilisation rate of formal lectures and group work (group

discussions and small group activities). The teaching aids used the least are posters, models, flipcharts, training DVDs / videos, training CDs and research articles.

In the next section conclusions are made related to the question whether the current teaching methods used comply with methods identified by literature as methods essential to the enhancement of theory and practice integration.

5.5 DISCUSSION AND CONCLUSIONS REGARDING THE SECOND SUB-QUESTION

The literature review in this study indicated that the following teaching methods are regarded as essential to enhance theory-practice integration: demonstrations, group discussions, small group activities, projects, reflection on learning / experience, role-play, problem-based/ -solving activities, concept / brain / mind mapping, scenarios, case studies, simulation, the nursing process, brainstorming, evidence-based teaching and self-directed learning.

It was revealed in literature that an overuse of formal lectures fosters and widens the theory-practice gap. Formal lectures are not conducive to enhance theory and practice integration. Furthermore, textbooks are synonymous with lectures and, according to McCaugherty (1991a:1057), it unwittingly provides the starting point for the theory practice gap. The results (validated by data triangulation) showed that formal lectures are primarily used in the classrooms as illustrated by the findings captured in Table 4.21. This clearly demonstrates an over-reliance on formal lectures that may lead to dependence on the part of the students. It is possible that the students can expect all information must simply be handed to them which will prevent or lessen their initiative to find the information themselves. Formal lectures do not comply with the teaching methods identified by literature as essential methods to enhance theory-practice integration. It also limits the students' ability to develop CT and may occasion the starting point of the theory-practice gap. The structured observation data showed that a data projector with PowerPoint slides were used more than 60% of the time. This correlates with the data obtained from the completed questionnaires of both the nurse educators and student nurses.

The data validated by means of person and method triangulation revealed that only the eight (8) teaching methods that comply with the teaching methods identified by literature as essential methods to enhance theory-practice integration were used. These methods are group discussion,

small group activities, reflection on learning / experience, self-directed learning, scenarios, problem based / -solving activities, the nursing process and evidence-based teaching.

Although not a teaching method, literature identified the independent use of multimedia by students (when given assignment) as most effective; it not only promotes the students' learning experience but also narrows the theory-practice gap (Meyer & Van Niekerk, 2008:142). Both groups responded that the student nurses are encouraged to use multimedia when they were given assignments with more than 90% of each group answering "Yes" to the following question: 'Do you encourage the utilisation of multimedia when giving assignments to students?' Conversely, only a third of the nurse educators referred the students to the internet. This concurred with the student nurses' responses which indicated approximately a third of them were referred to the internet by the nurse educators. As illustrated in the findings the reason for this poor referral may be that the student nurses had limited access to internet facilities at the learning centres.

In summary, the teaching methods identified by literature as methods essential to enhance theory and practice integration were discussed. From the literature research learning contracts, the use of multimedia and inclusion of clinical scenarios in assignments were identified as additional strategies to enhance theory and practice integration. The study findings showed that learning contracts, which are used in the theoretical and / or clinical environment to enhance theory and practice integration and CT skills (Quinn & Hughes, 2007:33; Jones, 2010:252), are used frequently. Networking with peers, also indicated to be used frequently, is another important strategy that enhances theory and practice integration thereby bridging the theory-practice gap (Wilson, 2008:2-3). Including scenarios of clinical problems in assignments also complies with strategies essential to enhancing theory and practice. It stimulates a student to seek and analyse information and apply the knowledge to real life situations, thus enhancing the student's ability to correlate theory and practice (Distler, 2007:56; Meyer & Van Niekerk, 2008:84; Van der Horst & McDonald, 2008:138). The validated response of nurse educators that student nurses are encouraged to use multimedia when given assignments complies with the strategies identified by literature as essential methods to enhance theory-practice integration.

Finally, it is evident from this study that the traditional teacher-centred lecture format still maintains a strong influence in the DGNS programme as it was indicated and validated as the teaching method mainly used. It raises concern as this method does not comply with teaching methods identified by literature as essential to enhance theory-practice integration. However, a positive factor is that the study findings showed that the nurse educators utilise approximately 53% of the

teaching methods essential to enhance theory and practice integration. If learning contracts, assignments related to clinical problem scenarios, networking with peers and students' use of multimedia use were also taken into account, then 63% of the teaching methods and strategies that comply with methods and strategies identified by literature as essential to enhance theory and practice are currently used in the study settings.

Another concern is that although literature indicates that the use of multimedia is necessary for student engagement and successful integration of theory and practice, only three teaching aids are used frequently. Two of these teaching aids, namely data projectors with PowerPoint slides and textbooks, are also synonymous with formal lectures which are a teacher-centred method. This method, when overused, is seen as closely related to the causes of the theory-practice gap. Additionally, the over-reliance on textbooks is perceived to be the root of the theory-practice problem and a possible starting point for the theory-practice gap (McCaugherty, 1991a:1056).

Although the study showed that teaching methods essential to enhance theory-practice integration are used to some extent, it is a significant concern that the data generated by the literature research indicated some important factors that have to be considered to ensure successful implementation of teaching methods essential to theory and practice integration. These are the theoretical grounding, competency and skills of nurse educators as well as the availability of educational and information technology resources. One key skill which enables nurse practitioners and student nurses to successfully integrate theory and practice is CT. Teaching students CT starts in the classroom; therefore nurse educators must be able to use and demonstrate CT skills to role model and teach students this skill. The findings of the study indicated that the perception of the majority of nurse educators was that they did utilise strategies to enhance nurse students' CT skills. Yet, only two nurse educators hold a master's degree in nursing and one a master's degree in nursing education. This is a concern as Chang *et al.* (2011:3224) state the CT skills of a nurse practitioner with a master's degree are significantly better than one who holds a bachelor's degree or a diploma. Secondly, there must be suitable educational and information technology resources available; this is not the case as pointed out in this study. The study results indicated that student nurses have limited internet access at the four learning centres. Research forms the basis of many of the teaching methods such as problem-based / -solving activities, self-directed learning and project work – all activities essential for enhancing theory and practice integration.

Lastly, the knowledge about the different teaching methods and facilitation skills of the educators were also mentioned as important factors in the successful implementation of active student-

centred teaching methods. In effect, the minority of nurse educators (less than a third) indicated they had not received training regarding facilitation of learning, problem-based learning, reflective learning, multimedia and methods essential to correlate theory and practice. Conversely, the comments made by the non-research observer in her notes raised the question whether the correct criteria and principles are used when the teaching methods essential to enhance the integration of theory-practice are utilised.

The comments made by the non-research observer have implications for the nurse educators. It also warrants an in-depth study because this study did not indicate whether the current teaching methods are used according to the principles and criteria of the specific teaching method.

5.6 IMPLICATIONS OF THE STUDY

The findings and conclusions drawn in this study have implications in three domains. The first is for nurse educators at the HEI, the second for nursing education at the HEI and finally for future research.

5.6.1 Implication for nurse educators

For nurse educators at the HEI the findings of this study may have a number of important implications. These implications are listed below.

- i The nurse educators should be encouraged to attend workshops regarding theory-practice integration, the teaching methods that are essential to enhance theory-practice integration, the use of multimedia and facilitation skills.

- ii All nurse educators, whether they have their diploma in nursing education or not, should be encouraged to obtain a master's degree in nursing. This is viewed as essential since it was evident from the literature research that nurse educators need strong theoretical grounding and CT skills to enhance theory and practice integration.

- iii Nurse educators should do more regular and longer clinical accompaniment of student nurses in the clinical environment. This will enhance the change of being more involved in the clinical supervision of students. It may also maximise the students' opportunity to integrate theoretical learning with practice.

5.6.2 Implications for nursing education

For nursing education in general at the HEI the findings may also have a number of important implications.

- i Nurse educators and student nurses should be encouraged towards an increase in the use of active student-centred teaching and learning methods. The implementation thereof has to be supported at the HEI by the availability of internet access for student nurses at all the learning centres.
- ii The curriculum team of the HEI, currently consisting of managers and some of the nurse educators, may have to consider a hybrid curriculum that combines problem-based learning, experiential learning, reflective learning and self-directed learning teaching and learning approaches when developing a curriculum for the new nursing qualifications.

5.6.3 Implications for future research

This study raised a number of questions which merit further investigation. The findings of the present study warrant a need for more in-depth studies regarding the following themes:

- i. The way in which teaching methods, essential to theory and practice integration, are used at the HEI.
- ii. Constraints and challenges for nurse educators and student nurses that are currently preventing the use of teaching methods that enhance theory-practice integration at the HEI.

- iii. Factors that currently may hinder theory-practice integration in the clinical teaching environment at the HEI.

It is evident that this study should be seen as a forerunner or baseline study for further investigations into the theory-practice problem in nursing education and quality nursing education in general at the HEI.

5.7 LIMITATIONS OF THE STUDY

This study was conducted at one higher education institution and involved approximately 54 nurse educators and 900 students. Therefore, the results cannot be generalised to any education institution other than the HEI learning centres.

5.8 POTENTIAL VALUE OF THE STUDY

This study was of value as it confirmed that teaching methods essential for theory and practice integration is currently used to some extent at the HEI. It further highlighted that the following were problematic aspects: the overuse of formal lectures, PowerPoint presentations and textbooks, limited internet access for student nurses, only three nurse educators with a master's degree qualification and three nurse educators who does not have a nursing education qualification. Implementing the recommendations may improve the utilisation of teaching methods that enhance theory-practice integration and assist the student nurses to successfully integrate theory and practice.

5.9 CONCLUSION

In order to assist student nurses to integrate their theoretical knowledge into practice, nurse educators at the HEI will have to accept the necessity of changing the way they facilitate theoretical learning. They need to increasingly use student-centred teaching methods more frequently and make less use of the traditional teacher-centred formal lecture method if they wish to assist student nurses to successfully integrate theory and practice.

Today's educational challenges force nursing education institutions to adapt to a dynamic student-centred environment. Nurse educators are challenged to facilitate student learning, become skilled in teaching methods essential to enhance theory-practice integration and then utilise these teaching methods effectively. Finally, the management of any higher education institution must ensure that the educational and information technology resources necessary and needed are made available for the successful implementation of student-centred active teaching methods which are essential for the enhancement of theory-practice integration.

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ANNEXURE A

NURSE EDUCATOR QUESTIONNAIRE

THEORY-PRACTICE INTEGRATION TEACHING METHODS



NURSE EDUCATOR QUESTIONNAIRE

Please answer all the questions.

Section 1: Demographic data

1. Name of your learning centre.....
2. Group of students responsible for.....
3. Years of clinical nursing experience.....
4. Years of nursing education experience.....
5. Do you have an assessor's qualification?.....
6. Do you have a moderator's qualification?.....

Please indicate your answer with an 'x' in the block provided.

7. What is your highest nursing qualification?

Nursing diploma		1
Nursing degree		2
Nursing dost-basic / graduate diploma (clinical)		3
Nursing honours		4
Nursing masters		5

8. What is your highest nursing education qualification?

Nursing education diploma		1
Nursing education degree		2
Nursing education masters		3

9. For which group of students do you facilitate contact sessions? *(if applicable indicate more than one)*

PEN 1 (R2175)		1	Bridging 1 st year group (R683)		3
PEN 2 (R2175)		2	Bridging 2 nd year group (R683)		4

10. What subjects do you facilitate for the PEN (R2175) students? *(if applicable indicate more than one)*

Ethos and Professional Practice (PEN 1)		1	Basic Science (PEN 2)		5
Basic Nursing Care (PEN 1)		2	General Nursing (PEN 2)		6
Anatomy and Physiology (PEN 1)		3			
Comprehensive Nursing (PEN 1)		4			

11. What subjects do you facilitate for the Bridging (R683) students? (if applicable indicate more than one)

Ethos and Professional Practice (year 1)		1	Ethos and Professional Practice (year 2)		4
Integrated Nursing Science (year 1)		2	Integrated Nursing Science (year 2)		5
Psychology and Sociology (year 1)		3	Psychology and Sociology (year 2)		6

Section 2: Theoretical environment

Please indicate your answer with an 'x' in the block provided.

1. What training have you received regarding outcomes-based education (OBE)?

Formal post-basic Nursing Education after implementation of OBE		1
In-service training		2
Facilitation course		3
Assessor's course		4
No training received		5
Other (please indicate):		6

2. What training have you received regarding problem-based learning?

Formal post-basic Nursing Education after implementation of OBE		1
In-service training		2
Facilitation course		3
Assessor's course		4
No training received		5
Other (please indicate):		6

3. What training have you received regarding teaching strategies / methods to integrate theory and practice?

Formal post-basic Nursing Education after implementation of OBE		1
In-service training		2
Facilitation course		3
No training received		4
Other (please indicate):		5

4. What training have you received regarding reflective learning?

Formal post-basic Nursing Education after implementation of OBE		1
In-service training		2
Facilitation course		3
No training received		4
Other (please indicate):		5

5. What training have you received regarding the use of multimedia?

Formal post-basic Nursing Education after implementation of OBE		1
In-service training		2
Facilitation course		3
No training received		4
Other (please indicate):		5

6. What training have you have regarding the facilitation of learning?

Formal post-basic Nursing Education after implementation of OBE		1
In-service training		2
Facilitation course		3
No training received		4
Other (please indicate):		5

7. What training have you received regarding computer skills?

Microsoft Word		1
Microsoft Excel		2
Microsoft PowerPoint		3

8. How often do you use the following computer programmes?

	Never (1)	Seldom (2)	Mostly (3)	Always (4)	
Microsoft Word					1
Microsoft Excel					2
Microsoft PowerPoint					3

9. To which educational facilities / aids do you have access to at the learning centre? *(you can choose more than one)*

Library		1
Simulation room		2
Computer room		3
Intranet		4
Facilities for group work / discussions		5
Training CDs		6
Training DVDs / videos		7
Internet		8
Other (please indicate):		9

10. To what extent do the students have access to the following teaching facilities / aids?

	At the learning centre	At another institution	Not at all	
Library				1
Simulation room				2
Computer room				3
Intranet				4
Facilities for group work / discussions				5
Training DVDs / videos				6
Training CDs				7
Internet				8
Other (please indicate):				9

11. How often do you use the following teaching methods in the **classroom**?

	Never (1)	Seldom (2)	Mostly (3)	Always (4)	
Formal lectures					1
Demonstrations					2
Group discussions					3
Small group activities					4
Projects					5
Reflection on learning / experience					6
Role-play					7
Games					8
Problem-based / -solving activities					9
Concept / brain / mind mapping					10
Scenarios					11
Case studies					12
Class research activities					13
Computer-based activities					14
Simulation					15
Nursing process					16
Brainstorming					17
Evidence-based teaching					18
Self-directed learning					19
Other (please indicate):					20

12. How often do you use the following teaching aids in the **classroom**?

	Never (1)	Seldom (2)	Mostly (3)	Always (4)	
Training DVDs / videos					1
Training CDs					2
Research articles					3
Posters					4
Whiteboard					5
Overhead projector with transparencies					6
Data projector with PowerPoint slides					7
Models					8
Flipcharts					9
Textbooks					10
Other (please indicate):					11

13. How often do you use the following teaching strategies?

	Never (1)	Seldom (2)	Mostly (3)	Always (4)	
Learning contract					1
Portfolio					2

14. If you answered 2, 3 or 4 in question 13, indicate where do you discuss the learning contract content with the student? *(you can choose more than one answer)*

Classroom		1
Hospital		2

15. If you answered 2, 3 or 4 in question 13, indicate where do you discuss the portfolio content with the student? *(you can choose more than one answer)*

Classroom		1
Hospital		2

16. Do you encourage the students to reflect on what they had learnt?

Yes		1
No		2

17. If you answered "yes" in question 16, please indicate where.

18. If you answered "yes" in question 16, please indicate the strategy you use. *(you can choose more than one strategy)*

Discussions		1
Reflective journals		2
Reflective essays		3
Other:		

19. Do you encourage the utilisation of multimedia when giving assignments to students?

Yes		1
No		2

20. Do you provide the students with any multimedia when giving the assignments?

Yes		1
No		2

21. If you answered "yes" in question 19 and 20, please indicate when and how.

22. Do the assignments include scenarios of clinical problems?

Yes		1
No		2

23. How often do you use the following type of scenarios in the classroom?

	Never (1)	Seldom (2)	Mostly (3)	Always (4)	
Problem-based scenarios					1
Real life scenario					2
Fictional scenario					3

24. How often do you use the following teaching methods to develop the student's problem-solving skills?

	Never (1)	Seldom (2)	Mostly (3)	Always (4)	
Patient studies					1
Problem-based case studies					2

25. Which of the following two strategies do you use when facilitating problem-based learning?

Give problem to solve to student prior to any form of input		1
First give information and then ask students to solve the problem		2

26. Do you give the students an opportunity to practice the procedure after the demonstration in the learning centre?

Yes		1
No		2

27. If you answered "yes" in question 26, do you give reflective feedback?

Yes		1
No		2

28. Which cognitive abilities, in your opinion, need to be developed to enhance theory and practice integration? (*you can choose more than one*)

Critical thinking skills		1
Decision-making skills		2
Abstract reasoning skills		3
Problem-solving skills		4
Group skills		5
Self-directed learning skills		6
Integrating knowledge around clinical and theoretical issues		7

29. Do you feel competent with OBE teaching strategies?

Yes		1
No		2

If you indicated "no", please indicate why.

.....

.....

30. Do you feel competent with problem-based teaching strategies?

Yes		1
No		2

If you indicated "no", please indicate why.

.....

.....

31. Do you feel competent with reflective learning strategies?

Yes		1
No		2

If you indicated "no", please indicate why.

.....

.....

32. Please answer the following questions by indicating "yes" or "no" with an "x" in the block provided.

Do you question assumptions?	Yes		1
	No		2
Do you promote questions during teaching?	Yes		3
	No		4
Do you experiment with new ideas during teaching?	Yes		5
	No		6
Do you model critical thinking skills during your everyday teaching?	Yes		7
	No		8

Do you encourage students to use a variety of sources when facilitating problem-based learning?	Yes		9
	No		10
Do you encourage students to engage in tasks that call for reasoned judgement and assessment?	Yes		11
	No		12
Do you engage students in critical discussion groups?	Yes		13
	No		14
Do you encourage the students to network with peers?	Yes		15
	No		16

Section 3: Clinical environment

Please indicate your answer with an 'x' in the block provided.

1. Do you receive support from the personnel in the nursing units during your guided practice/ assessments of a student?

Yes		1
No		2

If no, please explain

.....

.....

2. Do you repeat demonstrations in the nursing unit?

Yes		1
No		2

3. Please indicate why or why not you give demonstrations in the nursing unit.

.....

.....

4. If you answered "yes" in question 2, do you give the students the opportunity to practice the procedure after the demonstration in the nursing unit?

Yes		1
No		2

5. How often do you do clinical accompaniment with a student in the nursing units?

Weekly		1
Twice a week		2
Every 2 nd week		3
Monthly		4
Every 2 nd month		5
Other (please specify):		6

6. What is the average amount of time you spend with a student in the nursing unit?

< 30 minutes		1
30 – 60 minutes		2
> 60 minutes		3
Other (please specify):		4

7. To which teaching facilities do you have access at the hospitals? *(you can choose more than one)*

Books		1
Simulation room		2
Computer		3
Internet		4
Intranet		5
Other (please indicate):		6

Thank you for your valued participation.

ANNEXURE B

STUDENT QUESTIONNAIRE

THEORY-PRACTICE INTEGRATION TEACHING METHODS



STUDENT QUESTIONNAIRE

Please answer all the questions.

Section 1: Demographic data

1. Name of your learning centre.....
2. Name of the hospital where you are placed.....
3. Name of your course.....
4. Date your course commenced.....
5. Year group you are in (1st or 2nd year).....
6. Your age.....
7. Indicate with an 'x', next to the appropriate answer, your years of nursing experience.

0–11 months	<input type="checkbox"/>	1
1-5 years	<input type="checkbox"/>	2
6-10 years	<input type="checkbox"/>	3
11-15 years	<input type="checkbox"/>	4
More than 15 years	<input type="checkbox"/>	5

Section 2: Theoretical teaching methods

Please indicate your answer with an 'x' in the block provided.

1. To what extent do you have access to the following educational facilities / aids?

	At the learning centre	At another institution	Not available	
Library	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
Simulation room	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
Computer room	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
Intranet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4
Facilities for group work / discussions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5
Training DVDs / videos	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
Training CDs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7
Internet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8
Other (please indicate):	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9

2. How often does the nurse educator use the following teaching aids in the **classroom**?

	Never (1)	Seldom (2)	Mostly (3)	Always (4)	
Training DVDs / videos					1
Training CDs					2
Research articles					3
Posters					4
Whiteboard					5
Overhead projector with transparencies					6
Data projector with PowerPoint slides					7
Models					8
Flipcharts					9
Textbooks					10
Other (please indicate):					11

3. How often does the nurse educator use the following teaching methods in the **classroom**?

	Never (1)	Seldom (2)	Mostly (3)	Always (4)	
Formal lectures					1
Demonstrations					2
Group discussions					3
Small group activities					4
Projects					5
Reflection on learning / experience					6
Role-play					7
Games					8
Problem-based / -solving activities					9
Concept / brain / mind mapping					10
Scenarios					11
Case studies					12
Class research activities					13
Computer-based activities					14
Simulation					15
Nursing process					16
Brainstorming					17
Evidence-based teaching					18
Self-directed learning					19
Other (please indicate):					20

4. How often does the nurse educator use the following teaching strategies?

	Never (1)	Seldom (2)	Mostly (3)	Always (4)	
Learning contract					1
Portfolio					2

5. If you answered 2, 3 or 4 in question 4, indicate where does the nurse educator discuss the content of the learning contract with you? (*you can choose more than one*)

Classroom		1
Clinical setting (hospital)		2

6. If you answered 2, 3 or 4 in question 4, indicate where does the nurse educator discuss the portfolio content with you? (*you can choose more than one*)

Classroom		1
Clinical setting (hospital)		2

7. Are you encouraged to reflect on what you had learnt / experienced in the classroom / clinical setting (hospital)?

Yes		1
No		2

8. If you answered "yes" in question 7, please indicate with an 'x' where: (*you can choose more than one*)

In the clinical setting (hospital)		1
In the class		2

9. If you answered "yes" in question 7, please indicate with an 'x' by whom: (*you can choose more than one*)

Unit employees		1
Mentors		2
Educators		3
Clinical facilitator		4
Training and development consultant		5
Unit manager		6
Other (please indicate):		7

10. If you answered "yes" in question 7, please indicate how. (*you can choose more than one*)

Discussions		1
Reflective journals		2
Reflective essays		3
Other (please indicate):		4

11. Are you encouraged to utilise multimedia when given assignments?

Yes		1
No		2

12. Are you provided with multimedia when given assignments?

Yes		1
No		2

13. If the answer is "yes" in question 12, please indicate with an 'x' how: *(you can choose more than one)*

DVDs / video		1
CDs		2
Research articles		3
PowerPoint presentations		4
Library		5
Internet		6
Intranet		7
Other (please indicate):		8

14. Do the assignments include scenarios of clinical problems?

Yes		1
No		2

15. How often does the educator use the following type of scenarios in the classroom?

	Never (1)	Seldom (2)	Mostly (3)	Always (4)	
Problem-based scenarios					1
Real life scenario					2
Fictional scenario					3

16. How often are the following methods used to develop your problem-solving skills?

	Never (1)	Seldom (2)	Mostly (3)	Always (4)	
Patient studies					1
Problem-based case studies					2

17. Did you receive the opportunity to practice the procedures in the learning centre after the demonstration?

Yes		1
No		2

18. If you answered "yes" in question 17, did you receive reflective feedback?

Yes		1
No		2

19. Do the demonstrations of procedures at the learning centre correlate with how it is carried out in the nursing units?

Yes		1
No		2

20. If you answered "no" in question 19, please specify what you think the reasons are.

--

21. Do you find the content of your course useful in the nursing units?

Yes		1
No		2

If no, please explain.....

22. Do you think your practical workbook/portfolio is a good thing?

Yes		1
No		2

Yes or no, please describe why

.....

.....

23. Please specify the three teaching methods (see section 2, question 3) you think assisted you to apply the theoretical knowledge in the nursing unit?

24. Please indicate the teaching method you like the most.

--

25. Please indicate why you like this teaching method listed in question 24 the most.

.....

.....

26. Does your educator encourage you to network with your peers?

Yes		1
No		2

If you answered "yes", please describe how

.....

.....

27. Give a short description of your learning style.

--

Section 3: Clinical environment

Please indicate your answer with an 'x' in the block provided.

1. Do you receive orientation in each nursing unit?

Yes		1
No		2

If no, please explain.....

2. Is a mentor allocated to you on each shift?

Yes		1
No		2

If no, please explain.....

3. How often does the mentor help you?

Daily		1
Weekly		2
Monthly		3
Other (please indicate):		4

4. Do the nursing unit personnel call you when a learning opportunity appears in the nursing unit?

Yes		1
No		2

5. Do you receive help from your peers/other students in the nursing units?

Yes		1
No		2

If yes, which year group?

6. Do you achieve your objectives in each of the nursing units?

Yes		1
No		2

If no, explain.....

7. Did you receive the opportunity to practice the procedure after the demonstration in the nursing unit?

Yes		1
No		2

8. If you answered "yes" in question 7, please indicate with an 'x' how many times did you practice before the evaluation of a procedure?

None		1
Once		2
Twice		3
Three times		4
More than three times		5

9. Did you discuss your learning objectives before you start or on the first day with the unit manager?

Yes		1
No		2

10. Did you receive support from your supervisors in achieving your objectives in the nursing units?

Yes		1
No		2

11. Do you receive support from your nurse educator in the nursing units?

Yes		1
No		2

If no, please explain.....

12. How often does the nurse educator support you in the nursing units?

Weekly		1
Twice a week		2
Every 2 nd week		3
Monthly		4
Every 2 nd month		5
Other (please indicate):		

13. What is the amount of time the nurse educator spends with you when she supports you in the nursing unit?

< 30 minutes		1
30 – 60 minutes		2
> 60 minutes		3

14. To which educational facilities / tools do you have access to in the nursing units/ hospital? (*you can choose more than one*)

Books		1
Simulation room		2
Computer		3
Internet		4
Intranet (HEI internal computer network)		5
Other (please indicate):		

15. Which teaching methods are used by the nurse educator in the nursing units/hospital? *(you can choose more than one method)*

Portfolio of evidence		1
Simulation		2
Group work		3
Demonstrations		4
Scenarios		5
Direct at the patient's bedside		6
Reflection		7
Other (please indicate):		

Thank you for your valued participation.

ANNEXURE C

TEACHING METHOD OBSERVATION CHECKLIST

TEACHING METHOD OBSERVATION CHECKLIST

Date _____

PEN year group:

1st 2nd

Learning centre: _____

Bridging year group:

1st 2nd

Teaching Methods	Nurse educator 1					Nurse educator 2					Nurse educator 3								
Formal lectures																			
Demonstrations																			
Group discussions																			
Small group activities																			
Projects																			
Reflection on learning / experience																			
Role play																			
Games																			
Problem-based / -solving activities																			
Concept / brain / mind mapping																			
Scenarios																			
Case studies																			
Class research activities																			
Computer-based activities																			
Simulation																			
Nursing process																			
Brainstorming																			
Evidence-based teaching																			
Self-directed learning																			
Other (indicate)																			
•																			

Teaching aids	Nurse educator 1					Nurse educator 2					Nurse educator 3								
Training DVDs / Videos																			
Training CDs																			
Research articles																			

ANNEXURE D
LETTER OF PERMISSION FROM THE HEI

The copy of the letter of permission was removed to ensure the anonymity of the higher education institution where the study was conducted.

ANNEXURE E

ETHICAL APPROVAL



UNIVERSITEIT-STELLENBOSCH-UNIVERSITY
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Approval Notice New Application

20-May-2013
Van Zyl, Ann AE

Proposal #: DESC_VanzylAE2013

Title: Teaching strategies of nurse educators regarding a potential theory-practice gap: An explorative study

Dear Ms Ann Van Zyl,

Your DESC approved **New Application** received on **15-May-2013**, was reviewed by members of the **Research Ethics Committee: Human Research (Humanities)** via Expedited review procedures on **17-May-2013** and was approved.

Please note the following information about your approved research proposal:

Proposal Approval Period: **17-May-2013 - 16-May-2014**

Please take note of the general Investigator Responsibilities attached to this letter. You may commence with your research after complying fully with these guidelines.

Please remember to use your **proposal number (DESC_VanzylAE2013)** on any documents or correspondence with the REC concerning your research proposal.

Please note that the REC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

Also note that a progress report should be submitted to the Committee before the approval period has expired if a continuation is required. The Committee will then consider the continuation of the project for a further year (if necessary).

This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki and the Guidelines for Ethical Research: Principles Structures and Processes 2004 (Department of Health). Annually a number of projects may be selected randomly for an external audit.

National Health Research Ethics Committee (NHREC) registration number REC-050411-032.

We wish you the best as you conduct your research.

If you have any questions or need further help, please contact the REC office at 0218839027.

Included Documents:

Research proposal
Observation schedule
Permission letters
Questionnaire nurse
Informed consent
Questionnaire student
DESC form

Sincerely,

Susara Oberholzer
REC Coordinator
Research Ethics Committee: Human Research (Humanities)

ANNEXURE F

PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM



UNIVERSITEIT • STELLENBOSCH • UNIVERSITY
jou kennisvenoot • your knowledge partner

STELLENBOSCH UNIVERSITY: CONSENT TO PARTICIPATE IN RESEARCH

Title: Exploring the potential theory-practice gap in the teaching strategies of nurse educators.

You are asked to participate in a research study conducted by Ann van Zyl, MPhil (Higher Education) student, at Stellenbosch University. The results will contribute to the thesis. You were selected as a possible participant in this study because you are a *nurse educator* facilitating contact sessions for nursing students at the Higher Education Institution or you are enrolled as a *student nurse* at the Higher Education Institution.

1. PURPOSE OF THE STUDY

The purpose of the study is to explore possible ways in which the teaching strategies utilised by the nurse educators comply or do not comply with the teaching strategies to integrate theory and practice in a nursing education programme.

2. PROCEDURES

If you volunteer to participate in this study, we would ask you to complete the questionnaire and to consent to a validation check of the teaching methods used. You have the right to decide whether you want to participate in this study. It will take you approximately 15-20 minutes to complete the questionnaire and approximately 6-8 hours to conduct the validation check.

3. POTENTIAL RISKS, DISCOMFORTS AND POTENTIAL BENEFITS TO SUBJECTS

This research study is a non-experimental analysis and there is no risk involved in your participation of this study. There will be no benefits for the participants.

4. PAYMENT FOR PARTICIPATION

There will be no cost implication for you and no remuneration will be offered to you to take part in this study.

5. CONFIDENTIALITY

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. All information obtained in this study is strictly confidential. No name of any participant will be mentioned in any reports to ensure respondent anonymity. Only the researcher will have access to the completed questionnaires and validation checklist. The results of this study may be used for publication or presentation, but no participant will be implicated by name.

6. PARTICIPATION AND WITHDRAWAL

You can choose whether to participate in this study or not. If you volunteer to participate in this study, you may withdraw at any time without consequences of any kind. You may also refuse to answer any questions you don't want to answer and still remain in the study. The investigator may withdraw you from this research if circumstances arise which warrant doing so.

7. IDENTIFICATION OF INVESTIGATORS

If you have any questions or concerns about the research, please feel free to contact:

Principal Investigator: Ms A van Zyl: 082 924 8375

Supervisor: Prof E Bitzer: 021 021 8082297

8. RIGHTS OF RESEARCH SUBJECTS

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. If you have questions regarding your rights as a research subject, contact Ms Maléne Fouché [mfouche@sun.ac.za; 021 808 4622] at the Division for Research Development.

SIGNATURE OF RESEARCH PARTICIPANT

The information above was described to me, the participant, by the manager of the learning centre in English and I am the participant in command of this language. I the participant was given the opportunity to ask questions and these questions were answered to my satisfaction.

I hereby consent voluntarily to participate in this study. I have been given a copy of this form.

Name of Participant

Signature of Participant

Date

SIGNATURE OF THE MANAGER OF THE LEARNING CENTRE

I declare that I explained the information given in this document to _____. The participant was encouraged and given ample time to ask me any questions. This conversation was conducted in English and no translator was used.

Signature of Manager

Date

ANNEXURE G

LANGUAGE EDITING AND TRANSLATION

Suzette M. Swart

FULL MEMBER: Professional Editors' Group

2 October 2013

TO WHOM IT MAY CONCERN

I, Suzette Marié Swart (ID 5211190101087), confirm that I have edited the noted master's thesis. The accuracy of the final work is still the student's own responsibility.

Student:

ANN VAN ZYL

Title:

EXPLORING THE POTENTIAL THEORY-PRACTICE GAP IN THE TEACHING METHODS OF NURSE EDUCATORS

The edit included the following:

- Spelling
- UK vs USA English
- Vocabulary
- Punctuation
- Grammar (tenses; pronoun matches; word choice etc.)
- Language tips
- Correct acronyms (please supply list)
- Consistency in terminology, italisation etc.
- Sentence construction

- Suggestions for text with unclear meaning
- Basic layout, font, numbering etc.
- Logic, relevance, clarity, consistency
- Checking reference list (reference guide supplied by student) against in-text sources

The edit excluded:

- Correctness of crediting another's work – PLAGIARISM.
- Content
- Correctness or truth of information (unless obvious)
- Correctness/spelling of specific technical terms and words (unless obvious)
- Correctness/spelling of unfamiliar names and proper nouns (unless obvious)
- Correctness of specific formulae or symbols, or illustrations
- Style
- Professional formatting

Thank you

Suzette M Swart (not signed – sent electronically)

0825533302

smswart@vodamail.co.za

LANGUAGE PRACTITIONER/EDITOR/FACILITATOR:

The Consortium for Language and Dimensional Dynamics (CLDD)

University of Pretoria (UP)

Tshwane University of Technology (TUT)

University of Johannesburg (UJ)

Stellenbosch University (US)

University of South Africa (UNISA)

Milpark Business School

Aston University (UK)

South African National Defense Force (SANDF)

South African Civil Aviation Authority (SACAA)

ANNEXURE H

PERMISSION FROM VAN WYNGAARDEN TO USE QUESTIONNAIRE

From: Angeline van Wyngaarden [mailto:annavwyngaarden@hotmail.com]

Sent: 03 May 2013 08:37 AM

To: van Zyl, Ann

Subject: Permission to utilise questionnaire

Ann van Zyl

I, Angeline van Wyngaarden hereby grant permission to Ann van Zyl to utilise my questionnaire for her research study. I am honoured that another researcher finds my research study / thesis useful, and to be of assistance.

I would like to read your thesis when complete if you don't mind.

I hope this is in order, please confirm otherwise I could write a formal letter.

Kind regards

Angeline