COMPARISON OF CLINICAL JUDGMENT OF FIRST YEAR BACCALAUREATE NURSING STUDENTS WITH AND WITHOUT COGNITIVE SUPPORT FROM A CLINICAL PRECEPTOR DURING IMMERSIVE SIMULATION

By

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DECLARATION

I hereby declare that the dissertation submitted to the University of the Free State for the qualification Magister Societatis Scientiae in Nursing is my original work and has not previously been submitted to/in any other faculty/university for the same qualification. I further waive my copyright of the dissertation in favour of the University of the Free State.

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M. Bekker

If not for those unexpected turns in life – I would not be on this road....

الحمد لله

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SUMMARY

Clinical judgment is a skill that all nurses need in order to deliver safe patient care. It is a complex process and nursing students should be taught how to apply clinical judgment in practice as soon as possible. The first year baccalaureate nursing students at a nursing school of a university in Central South Africa, are taught from the first semester of their training what clinical judgment entails. Tanner's Clinical Judgment Model is used to support this process and was also used as conceptual framework in this study. However, students need to be assessed on clinical judgment in order to determine whether training is effective. Lasater's Clinical Judgment Rubric, based on Tanner's Clinical Judgment Model, was used to assess the application of clinical judgment in simulation by first year nursing students.

A quantitative, experimental pre-test/post-test control group design was used to describe first year nursing students' application of clinical judgment during an immersive simulation session and to compare it with those students that received cognitive support by a preceptor and those who did not.

All first year nursing students participated in this study because it was part of their curriculum and would add to their knowledge in both theory and clinical practice. Students participated in a pre-test simulation scenario that was recorded on digital video cameras. Thereafter, students were allocated to the clinical setting for at least five weeks in order to gain clinical experience. During this period of the study, the participating students were randomly divided into two groups. The students from the experimental group received cognitive support and feedback on their performance in the simulation session via the preceptors trained specifically for this process. The post-test took place, again in simulation, and was digitally recorded. The control group also received cognitive support, and feedback from the preceptors, but only after the post-test took place. Sixty five first year nursing students gave consent for footage analysis for the purpose of this study.

A biostatistician, who was consulted during the planning of the study, made use of Statistical Analyses Software (SAS) to analyse the collected data. Numerical and categorical variables were summarised by frequencies and percentiles and differences

between groups were assessed on a 95% confidence interval for unpaired data. The researcher made use of figures and tables to describe and present the data. Students in the experimental group gained higher marks in the upper developmental levels in the post-test than those in the control group. This indicates that students did benefit from receiving cognitive support and feedback on individual performance during simulation.

Recommendations focused on the refinement of Lasater's Clinical Judgment Rubric to be used in the School of Nursing for future studies on footage with other nursing student year groups. Cognitive support proved to be beneficial, although better results might be obtained if this kind of support could be extended over longer periods of time.

(***Key terms:*** Clinical judgment; immersive simulation; clinical preceptor; nursing students; cognitive support; footage)

OPSOMMING

Kliniese Oordeelsvermoë is ‘n vaardigheid wat alle verpleegkundiges benodig ten einde veilige pasiëntsorg te verseker. Dit is ‘n gevorderde proses en verpleegstudente moet so gou moontlik geleer word hoe om kliniese oordeelsvermoë toe te pas. Eerstejaar graad verpleegstudente by ‘n verpleegkunde skool aan ‘n universiteit in Sentraal Suid-Afrika, word vanaf die eerste kwartaal in hul opleiding geleer wat kliniese oordeelsvermoë behels. Die Kliniese Oordeelsvermoë model van Tanner is gebruik om hierdie proses te ondersteun en is ook as konseptuele raamwerk gebruik in hierdie studie. Dit is egter nodig om studente te meet ten opsigte van kliniese oordeelsvermoë ten einde te kan bepaal of opleiding wel effektief was. Die Kliniese Oordeelsvermoë rubriek van Lasater wat gebasseer is op Tanner se Kliniese Oordeelsvermoë model, is gebruik om eerstejaar verpleegstudente se toepassing van kliniese oordeelsvermoë gedurende simulasie, te bepaal.

‘n Kwantitatiewe, eksperimentele voor-toets/na-toets kontrolegroep studie is gebruik om eerstejaar verpleegstudente se toepassing van kliniese oordeelsvermoë gedurende ‘n simulasiesessie te beskryf asook die vermoëns van studente wat kognitiewe ondersteuning van ‘n preseptor ontvang het met die wat dit nie ontvang het nie, te bepaal.

Al die eerstejaar verpleegstudente het deelgeneem aan die studie aangesien dit deel was van die kurrikulum en kennis sou toevoeg tot teorie en kliniese praktyk. Studente het deelgeneem aan ‘n voor-toets simulasie scenario wat digitaal op kameras vasgelê is. Daarna is studente vir vyf weke in die kliniese areas geplaas vir praktiese ondervinding. Gedurende hierdie tydperk is die deelnemende studente ewekansig in twee groepe verdeel. Studente in die eksperimentele groep het kognitiewe ondersteuning en terugvoer ten opsigte van hul prestasie in die voor-toets simulasie sessie van preseptore ontvang. Die kontrole groep het ook kognitiewe ondersteuning en terugvoer ontvang vanaf preseptore, maar eers na afloop van die na-toets. Vyf-en-sestig eerstejaar verpleegstudente het toestemming gegee dat beeldmateriaal ontleed en gebruik kan word vir die doel van die studie.

‘n Biostatistikus is gekonsulteer gedurende die beplanning van die studie en het gebruik gemaak van ‘n statistiese sagteware program vir analisering van data. Nommer en

kategorie veranderlikes is opgesom deur middel van frekwensies en persentasies en verskille tussen groepe is geevalueer op ‘n 95% vertrouens interval vir ongepaarde inligting. Die navorser het gebruik gemaak van figure en tabelle om inligting te vertoon. Studente in die eksperimentele groep het beter punte behaal in die hoër ontwikkelingsvlakke in die na-toets as die kontrole groep. Dit toon dat studente wel baat vind by kognitiewe ondersteuning en terugvoer ten opsigte van prestasie gedurende simulasie sessies.

Aanbevelings het gefokus op verfyning van Lasater se Kliniese Oordeelsvermoë rubriek vir gebruik in die Skool vir Verpleegkunde asook in toekomstige studies van beeldmateriaal vir ander verpleegstudent jaargroepe. Kognitiewe ondersteuning is as positief bewys, alhoewel dit moontlik beter resultate mag lewer indien dit oor langer tydperke toegepas word.

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CHAPTER 1
OVERVIEW OF THE STUDY

1.1 INTRODUCTION

In this study the researcher compared the clinical judgment of first year baccalaureate nursing students using an experimental pre-test/post-test control group design. The researcher argued that students who received cognitive support during immersive simulation will demonstrate a higher level of clinical judgment than those who did not receive cognitive support. Respondents in this study included first year nursing students who were registered at a school of nursing at a university in the central part of South Africa. Eighty-three students were invited to participate in the study of which sixty-five students eventually participated. They were randomly divided into a control and experimental group.

In this chapter the background and problem statement is given, followed by the research questions, and the aim and objectives of the study. Furthermore this chapter includes a conceptual framework and concept clarifications. A discussion on the research design and technique is followed by an explanation of the study population and the data collection process. Interventions, random allocation of students to the experimental and control group, as well as the pilot study, reliability and validity are described. The data analysis, ethical issues and value of the study conclude this chapter.

1.2 BACKGROUND

> *In 1976 Domstead (1976:14) writes a letter to a nursing journal in which she describes how, in an isolated area and the use of theoretical knowledge and clinical skills, she finally understood the meaning of "good nursing judgment".*

What then was known as 'good nursing judgment' is currently accepted as having good 'clinical judgment'. Over the years clinical judgment has been described as critical thinking (Chan, 2013:236; Robert & Petersen, 2013:85; Andersson, Klang & Peterson, 2012:870; Rush, Dyches, Waldrop & Davis, 2008:501;), problem solving (Uys, van Rhyn, Gwele, McInerney & Tanga, 2004:500) and clinical reasoning (Simmons, 2010:1151).

Several authors (Lasater, 2011:86; Elliot, 2010:1712; Tanner, 2006:205) describe clinical judgment as a complex process where health professionals, including nurses, need to manage scenarios in the clinical environment that is not only challenging, but often ambiguous and laden with ethical dilemmas. In the nursing profession, clinical judgment is described as a 'complex multifaceted phenomenon' and a fundamental skill for all nurses (Elliot, 2010:1712). Within the context of nursing research, the concepts: clinical judgment, problem solving, critical thinking and decision making, are used as synonyms (Tanner, 2006:204).

Kienle and Kiene (2011:621) state that clinical judgment forms the main component of the medical profession whereas Bell and Mellor (2009:112) echo this opinion in the psychology profession by explaining the central place clinical judgment take in the prognosis, planning and implementation of the treatment of a patient. In physiotherapy (Masley, Havrilko, Mahnensmith, Aubert & Jette, 2011:906) and pharmacology (Vyas, Ottis & Caligiuri, 2011:1) clinical reasoning and problem solving skills are emphasised in the assessment and treatment of the patient.

Clinical judgment is an important and essential skill for health professionals (Tanner, 2006:204). In the nursing profession, clinical judgment is embedded in the nursing care process that consists of the phases of assessment, planning, implementation and the formulation of a nursing diagnosis (Tanner, 2006:204). To be considered as competent, nurses should be critical thinkers and well trained in the process of clinical reasoning to eventually make correct clinical judgments (Botma, 2014:1).

Proof that processes such as critical thinking and clinical reasoning are promoted through the use of applicable teaching methods do exist (Coulter Smith, Smith & Crow, 2013:784; Gerdeman, Lux & Jacko, 2013:11), but according to Botma (2014:1) it is difficult to prove that a teaching method enhance clinical judgment. In this study Tanner's Clinical Judgment Model (2006:208) describes clinical judgment as the ability to interpret or to come to a conclusion regarding a patient's needs, concerns about health problems, to take action, or to modify standard approaches to patient care. This model was the cornerstone to utilise in the teaching and developing of first year nursing students' clinical judgment skills.

1.3 PROBLEM STATEMENT

Research on clinical judgment addresses issues such as reasoning processes, the role of knowledge and experience in these processes, the factors that affect clinical reasoning patterns and were mostly descriptive in nature (Tanner, 2006:205). Based on the conclusions obtained after a review of nearly 200 studies, Tanner (2006:208) designed a Clinical Judgment Model to develop clinical judgment. Lasater (2007:500-501), concerned with the assessment of clinical judgment, then used Tanner's (2006:208) model to develop the Clinical Judgment Rubric (Lasater, 2007:500-501). Lasater's (2011:88) aim was to provide nursing educators, preceptors and students with a "validated, evidence-based clinical judgment rubric", a tool that introduces a "common language" with regard to clinical judgment.

The School of Nursing at the University of the Free State considers clinical judgment as a very important aspect in the undergraduate curricula and decided to utilise both Tanner's Model (2006:208) and Lasater's Rubric (2007:500-501). Efforts were made by academic staff to orientate students, especially first year students on the "common language" promoted by Lasater (2007:500-501) and how to apply the Clinical Judgment Model (Tanner, 2006:208) in practice.

Recently the School of Nursing also upgraded the clinical facilities that consist of four authentic spaces and a skills laboratory. It was now possible to involve nursing students individually, or in groups, in simulation sessions. High-, medium- or low fidelity patient simulators and simulated patients can be used to support the development of, and test, clinical judgment. However, evidence that these efforts promoted clinical judgment, was not available. Furthermore, a specific method that included Lasater's Clinical Judgment Rubric (2007:500-501) to assess students' clinical judgment, was not promoted. Assessment of students within a simulation environment at the School of Nursing was also not well investigated.

The researcher used this opportunity to address the challenge posed by Lasater (2007:500-501) regarding the formative assessment of clinical judgment. In this study, clinical judgment skills of first year baccalaureate nursing students were assessed after exposure to Tanner's Clinical Judgment Model (2006:208), Lasater's Clinical Judgment Rubric (2007:500-501) and cognitive support by preceptors.

1.4 RESEARCH QUESTIONS

The following two research questions were used to guide the study:

- Do students apply clinical judgment during immersive simulation?
- Does cognitive support during immersive simulation improve clinical judgment?

1.5 AIM AND OBJECTIVES

The aim of this study was to compare the clinical judgment skills of first year baccalaureate nursing students, with and without cognitive support from a clinical preceptor, during immersive simulation.

1.5.1 OBJECTIVES

The objectives of this study were to:

- Describe first year students' application of clinical judgment during an immersive simulation session
- Compare the application of clinical judgment by first year students who received cognitive support from a clinical preceptor during an immersive simulation practice session, to those students who were not exposed to cognitive support – to enhance current practice in the School of Nursing.

1.6 CONCEPTUAL FRAMEWORK

Tanner's Clinical Judgment Model (2006:208) describes the clinical judgment of qualified nurses and therefore this model was used to teach nursing students the necessary steps towards developing adequate clinical judgment skills.

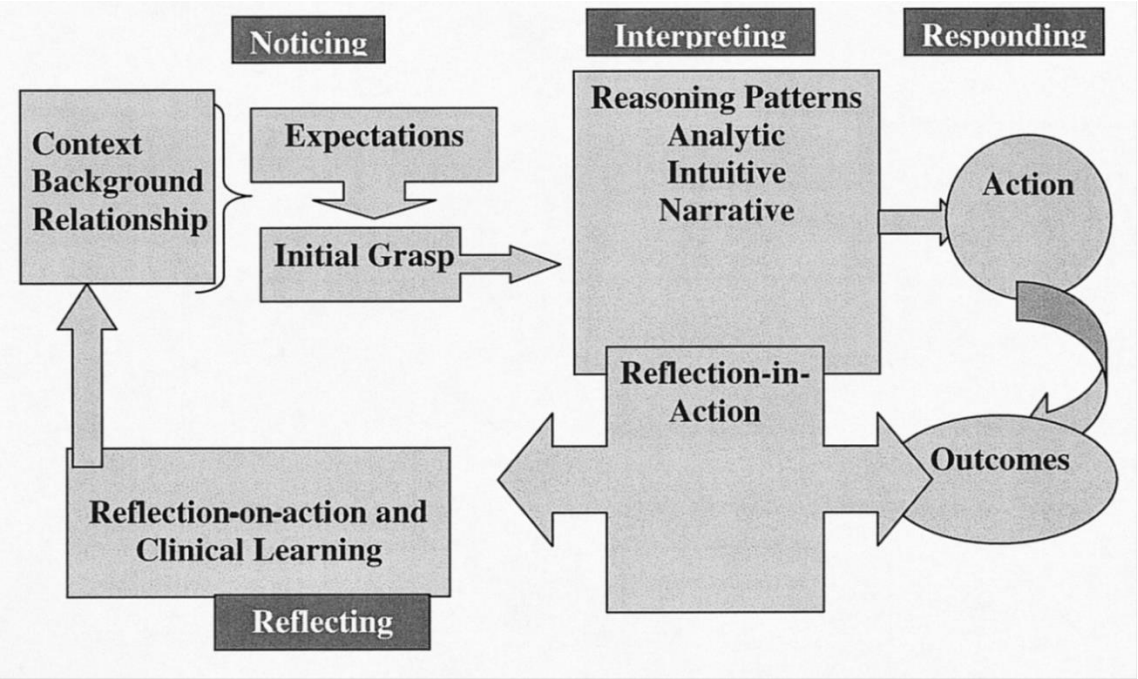


Figure 1.1 Tanner's Clinical Judgment Model (2006:208)

The model describes clinical judgment as a process that includes four phases, namely:

- noticing – awareness of what the situation is about (using senses);
- interpreting – understanding what the situation is about;
- action – acting on the above perceptions;
- reflection – evaluate outcomes of actions.

1.7 CONCEPT CLARIFICATION

Clinical judgment

Clinical judgment refers to the ways in which nurses come to understand the problems, issues or concerns of clients/patients (Benner, Tanner & Chesla, 2009:200). Tanner (2006:204) describe clinical judgment as "an interpretation or conclusion about a patient's needs, concerns, health problems, and/or the decision to take action or respond in concerned and involved ways (or not), to use or modify standard approaches, or improvise new ones as deemed appropriate by the patient's response".

For the aim of this research study, clinical judgment was based on Tanner's Clinical Judgment Model (2006:208), namely, the ability of a student to notice, interpret and respond to a patient

in a simulated environment. Clinical judgment skills of students were assessed by means of Lasater's Clinical Judgment Rubric (2007:500-501) based on the fact that both the model and the rubric are utilised to facilitate clinical judgment in the undergraduate programme of the School of Nursing.

Clinical preceptor

Clinical preceptor requirements for employment at a Higher Education Institution (HEI) are experience, competence, and a positive attitude towards Nursing as a profession as well as towards students and her-/himself (Uys & Klopper, 2012:51). Merriam-Webster (2014: Online) describes the clinical preceptor as one that helps to achieve an outcome by providing assistance, guidance, or supervision.

Both definitions were considered in this study, thus a clinical preceptor was identified as an experienced and competent registered nurse, enrolled in the post basic nursing education program at the School of Nursing – specifically trained to provide students with cognitive support after immersive simulation in order to promote clinical judgment.

Clinical supervisor

A Clinical supervisor is a registered nurse employed by the University with the exclusive task to support smaller groups of nursing students (8 – 10 per group) in the clinical areas.

Cognitive support

According to Webster (2002:73), 'cognitive' means knowledge and also includes aspects such as awareness, perception, reasoning and judgment (Farlex, 2014: Online) whereas 'support' means the giving of power (Webster's, 2002:381) aid or encouragement to another person (Farlex, 2014: Online).

Addressing the aim of this study, cognitive support entails the clinical preceptor's support to the student with the necessary knowledge to enhance thinking, insight and reasoning skills in a given clinical situation with the utilisation of Tanner's Clinical Judgment Model (2006:208) and Lasater's Clinical Judgment Rubric (Lasater, 2007:500-501).

Immersive simulation Simulation is defined as "conditions similar to actual occurrence" (Webster, 2002:351) and immersive is explained as "being deeply involved" (Webster, 2002:186). The Stanford School of Medicine defines immersive simulation as the "connection between classroom learning and actual clinical experience" (2015: Online).

In this study, immersive simulation meant the application of a developed scenario in an authentic space with full involvement of the nursing student, practicing skills in a safe environment.

Nursing Student The South African Nursing Council refers to a nursing student as a learner nurse that is defined as "a person undergoing education or training in nursing" (Nursing Act 33 of 2005).

In this study, a nursing student referred to a first year student enrolled in the baccalaureate nursing programme.

1.8 RESEARCH DESIGN

An experimental pre-test/post-test control group design (Bless, Higson-Smith & Sithole, 2013:137) was used to compare the clinical judgment of first year baccalaureate nursing students that received cognitive support from a clinical preceptor during immersive simulation, with those who did not receive cognitive support.

Presumptions to the possible outcome could decrease the effectiveness of this design, therefore the checklist proposed by Campbell-Yeo, Ranger, Johnston and Fergusson (2009:35-37) was used as a guideline to decrease bias of study outcomes. Areas that had the potential to reduce bias, included: necessity for the study; an accurate definition of the intended intervention; selection of an appropriate comparison group; randomisation to ensure groups are equal at baseline and integrity of the intervention, as well as ascertainment of outcomes through the use of a single-blinded design. In such a design the researcher is blinded to the allocation of participants in either the control group or the experimental group.

1.9 RESEARCH TECHNIQUE

In this study direct observation, utilising Lasater's Clinical Judgment Rubric (2007:500-501), based on Tanner's Clinical Judgment Model (2006:208), was used to analyse footage. The latter were obtained from nursing students to assess and compare their clinical judgment, practiced during immersive simulation sessions.

Lasater's Clinical Judgment Rubric (2007:500-501) consists of 4 phases: effective noticing; interpreting; responding and reflecting. Eleven dimensions are used to refine these four phases. Clinical judgment is evaluated in each dimension under one of the four developmental levels, namely exemplary (4 marks), accomplished (3 marks), developing (2 marks) and beginning (1 mark). The highest mark a student can score on Lasater's Clinical Judgment Rubric (2007:500-501) is 44 and the lowest 11 marks. Reflection was not used to address the aim of this study, therefore it was not measured or described. The scored marks were adjusted to a maximum of 36 and a minimum of 9 marks, where a higher mark then demonstrated a better understanding of clinical judgment (refer Addendum B).

1.10 POPULATION AND SAMPLE

All 83 first year baccalaureate nursing students participated in the immersive simulation sessions that were scheduled as part of their programme requirements. It is standard procedure in the School of Nursing to obtain students' informed consent when participating in immersive simulation. The participants also agree that video footage, obtained during these sessions, could be used for research purposes (refer Addendum C).

In this study the researcher excluded the footage of five students who had repeated their first year studies because they might have gained experience in clinical judgment during the previous year. The footage of 10 students, who did not consent that their footage be used for this study, was also excluded. One student discontinued her studies before the pre-test took place. The purposive sample therefore consisted of a total of 65 students.

1.11 DATA COLLECTION

The first year students who gave consent to participate in the study, were assessed on clinical judgment abilities during immersive simulation through the application of a designed scenario. The assessment of six students at a time in separate rooms, as well as to obtain the necessary footage of each student, was made possible in the simulation facilities of the School of Nursing. Students had twenty minutes to complete the scenario. The simulation room consists of a hospital bed with a simulated patient[1] and a washbasin for hand washing. An immersive simulation scenario, based on the first year nursing curriculum content and clinical outcomes, was formulated and the necessary equipment to perform the skills required in the scenario and documents needed to record findings, were supplied (refer Addendum D).

After completion of the tasks in the scenario, a clinical instructor debriefed the students in a separate room. This gave students the opportunity to reflect on their own performances and voice any fears and/or distresses they experienced. The discussions during the debriefing sessions were not part of the main study, but remain an important part of any simulation session during assessment in the School of Nursing.

1.12 INTERVENTION

The following interventions were implemented before, during and after the data collection process.

1.12.1 PREPARATION OF STUDENTS

The current first year curriculum includes theoretical background knowledge of Tanner's Clinical Judgment Model (2006:208) and the application thereof during patient care delivery. Nursing students are also familiarised with Lasater's Clinical Judgment Rubric (2007:500-501) that is suitable for the assessment of clinical judgment.

Three months into the study year, first year nursing students were prepared by allocated facilitators for entrance into the clinical area. These preparations took place in the

[1]A simulated patient refers to an individual or actor specially trained to repeatedly portray a patient with a pre-learned condition in a simulated environment.

simulation facility of the School of Nursing. The exposure of students to an immersive simulation scenario on clinical judgment was utilised to obtain pre-test data for this study. The researcher, first year- and clinical coordinator for first year students developed a clinical scenario for immersive simulation according to a template that was designed by and used in the School of Nursing.

On completion of the pre-test immersive simulation, all nursing students (including those who did not meet the selection criteria or did not give consent) were exposed to clinical areas. Before the post-test, the experimental group received cognitive support from the clinical preceptors by means of Tanner's Clinical Judgment Model (2006:208) as well as Lasater's Clinical Judgment Rubric (2007:500-501). With the post-test, the same skill was assessed but a different clinical scenario was used. To adhere to ethical guidelines, the control group received the same cognitive support from the clinical preceptors after completion of the post-test.

1.12.2 PREPARATION OF CLINICAL PRECEPTORS

Post graduate students in the Nursing Education qualification programme were trained as clinical preceptors for first year nursing students. These preceptors studied both Tanner's Clinical Judgment Model (2006:208) and Lasater's Clinical Judgment Rubric (2007:500-501) as part of the post basic nursing education curriculum. After being trained, every clinical preceptor was assigned to a group of not more than 10 students (Hughes & Quinn, 2013:201) for cognitive support after the immersive simulation sessions had been completed.

1.13 RANDOMISATION

To facilitate group activities and to manage the requirements for clinical placement throughout the year, students were divided into groups A and B. The same two groups were used to represent either the experimental or control group. The first year and the clinical coordinators randomly selected the experimental group by taking a tag numbered A or B from a container. The first tag, namely group A, was therefore selected as the experimental group. Students were not informed whether they were part of the experimental or the control group.

The researcher and the independent second assessor were only informed about the group allocations after the data collection and analysis of footage were completed.

1.14 PILOT STUDY

Although Lasater's Clinical Judgment Rubric (2007:500-501) has been developed and pilot tested in a simulation facility, it was necessary to test the validity and reliability of the rubric in assessing footage of students during an immersive simulation scenario.

The existing footage of eight (10%) third year baccalaureate nursing students was used for this purpose. The third year nursing students completed the session under almost the same circumstances in an authentic teaching and learning environment using simulated patients. The only difference was that the simulated scenario was based on third year content.

As the footage of the third year nursing students were available, a special simulation session to replicate conditions for the study was not necessary. This was the only reason for using the third year footage that already existed.

The researcher and the independent second assessor together tested Lasater's Clinical Judgment Rubric (2007:500-501) on the existing footage in order to rule out notable differences in using the instrument.

1.15 RELIABILITY AND VALIDITY

Lasater's Clinical Judgment Rubric (2007:500-501), after it has been developed, was tested in a simulation facility. The researcher tested the rubric to determine if it would be relevant to address the aim of the study. Although Lasater (2007:501) mention the scoring of clinical judgment, it is not stipulated on the rubric and a section to code the scores were added to the developmental phases (refer Research technique). A biostatistician, from the Department of Biostatistics, and the study leader were consulted before the use of the rubric in the pilot- and main studies.

1.16 DATA MANAGEMENT AND ANALYSIS

The footage taken from first year nursing students obtained during the immersive simulation sessions, were assessed by the researcher according to Lasater's Clinical Judgment Rubric (2007:500-501). Footage of the assessments was locked in a safe available at the simulation facility. Access to the safe was only granted to the researcher. The independent assessor, with a master's degree – and who had intensive training and experience in immersive simulation – also viewed the footage materials. The scores allocated by both the researcher and independent assessor, were used in compiling the final results of the study. Numerical variables were summarised by frequencies and percentiles. Categorical variables were summarised by frequencies and percentages. Differences between groups were evaluated using statistical tests and confidence intervals for unpaired data.

1.17 ETHICAL CONSIDERATIONS

Approval for study was obtained from the Nursing School Evaluation Committee as well as from the Ethics Committee of the Faculty of Health Sciences. An Ethics number was provided for all correspondence pertaining to the study (refer Addendum A).

Permission to conduct the study at the School of Nursing was obtained from the Head of the School of Nursing, the Dean of Health Sciences and the Vice-rector of Teaching and Learning at the University.

Participation of all first year baccalaureate nursing students was voluntary and students who did not wish to participate in the research, were not discriminated against. Students that did participate were free to withdraw from the study at any time and contact details of the researcher were available to students for questions and/or queries. Anonymity of students were not possible due to the footage taken, however, no personal information has been made available on the assessment rubric or in the dissemination of results.

There were no financial implications for any student – they neither had to pay for participating nor were they paid to participate. Benefits from this study, such as additional clinical training and individual support based on skills in clinical judgment, were received by the participating students.

1.18 VALUE OF STUDY

The School of Nursing considers the development of clinical judgment abilities in nursing students as very important. Although clinical judgment measurement in terms of Lasater's Clinical Judgment Rubric (2007:500-501) is used routinely, the faculty is still exploring the use thereof in the new simulation facility.

The aim of this study was to describe first year students' application of clinical judgment during an immersive simulation session and also to compare the results with those first year students who received cognitive support from clinical preceptors and those who were not exposed to cognitive support – in order to enhance current practice in the School of Nursing.

An illustration of improved performance in the experimental group of this study could mean that clinical facilitators, of all year groups, may follow the methods used in this study and be able to improve clinical judgment in students from their first year of study. The focus on the students' clinical judgment abilities could better prepare them for clinical practice, especially when they finish their training and return to the workforce as registered nurses.

1.19 CHAPTER LAYOUT

This study is presented in five chapters. Chapter 1 introduces the study and the reason of importance. The aim was to compare the clinical judgment of first year baccalaureate nursing students with and without cognitive support from a clinical preceptor during immersive simulation. Chapter 2 is dedicated to available literature on aspects that were relevant to this study, including clinical judgment, the clinical preceptor and simulation. A diagrammatic presentation of the study precedes the third chapter (refer diagram 2.1). Chapter 3 outlines the methodology implemented, including the research design, research technique and the study intervention. In Chapter 4 the data analysis and findings is discussed and Chapter 5 provides the conclusion to the study with recommendations for further studies in this field.

1.20 SUMMARY

The summary encloses the importance of clinical judgment in Nursing, thus, the reason for this study. The research technique includes Tanner's Clinical Judgment Model (2006:208) and Lasater's Clinical Judgment Rubric (2007:500-501) as well as the interventions performed during this study. More information is given on available research with regard to clinical judgment and simulation as well as the use of preceptors in this field of Nursing.

CHAPTER 2
LITERATURE REVIEW

2.1 INTRODUCTION

In the previous chapter the objectives of the study were discussed, namely 1) describe the first year students' application of clinical judgment during immersive simulation sessions and 2) compare students' application of clinical judgment between those who received cognitive support by a preceptor and those who did not. The research design and methodology were discussed as well as the intervention planned for the students with the preceptors.

In this chapter the main themes of the study will be discussed, namely clinical judgment, simulation, preceptors and cognitive support. Clinical judgment, as the focus of the study, is discussed in more detail with the Clinical Judgment Model (Tanner, 2006:208) as conceptual framework. Topics mentioned under clinical judgment include the Dreyfus model of skill acquisition (Benner, 1982:402), Lasater's Clinical Judgment Rubric (2007:500-501) and related terms such as clinical reasoning, critical thinking and clinical decision-making. The benefits of simulation are discussed and immersive simulation is explained. The role and training of the preceptor then followed. Lastly, a description of cognitive support and a conceptual framework (Botma, van Rensburg, Coetzee & Heyns, 2013:6), currently used for the development of lesson plans in the School of Nursing, are described.

2.2 CLINICAL JUDGMENT

Clinical judgment involves the reasoning ability of a person to make decisions about accessible information that can also be applied in everyday life and in all situations (Facione & Facione, 2008:2). In the health sciences, such as medicine, clinical judgment is described as the starting point of patient care (McCullough, 2013:1), the basis of the profession (Kienle & Kiene, 2011:621) and "the sum total of all the cognitive processes involved in clinical decision making" (Karthikeyan & Pais, 2010:623). Clinicians have to consider the symptoms and clinical health status of the patient and at the same time, use skills and knowledge, consider the effects of their treatment and monitor the performed

treatment – with continuous application of clinical judgment (Facione & Facione, 2008:2). In Psychology, clinical judgment is essential in the selection, planning and commencement of therapies, observation of progress with therapeutic interventions as well as evaluation of improvement as a result of therapy (Bell & Mellor, 2009:112).

In 1859 Florence Nightingale published a book called "Notes on Nursing". From these 'notes' it can be surmised that nursing, since the very early years, is not just the mere giving of medications or making sure the patient's bed is clean (Nightingale, 1859:9). The nurse not only had to consider the patient, but also the patient's environment, including ventilation, sanitation, noise, food, light, cleanliness of room, personal hygiene, etc. In discussions of each of these elements, Nightingale (1859:5) used dialogue to explain the reasoning behind statements and the importance of applying these concepts in order to obtain the best patient outcomes.

Benner, Tanner and Chesla (2009:200) define clinical judgment in nursing as "*the ways in which nurses come to understand the problems, issues, or concerns of clients and patients, to attend to salient information, and to respond in concerned and involved ways*".

Through the years the concept that was first recorded by Nightingale (1859), have been emphasised in literature through the use of concepts such as clinical judgment, critical thinking, clinical reasoning and clinical decision-making. Each one of these concepts as well as the models that developed as basis for clinical judgment will be discussed.

2.2.1 MODELS OF CLINICAL JUDGMENT

Two models applicable to clinical judgment will be described in this section: Firstly Benner's study on the Dreyfus Model of Skill Acquisition (1982:402) and secondly Tanner's Clinical Judgment Model (2006:208).

2.2.1.1 Dreyfus Model of Skill Acquisition

Newly graduated nurses are expected to have excellent clinical decision-making skills when entering the profession as registered nurses (Lindsey & Jenkins, 2013:61), but few possess the ability to sort through the available clinical information in order to act upon it (Guhde, 2010:387).

Benner (1982:402) understood the need for experienced nurses and explained the differences between the novice and expert nurse by means of the Dreyfus Model of Skill Acquisition. When applied to nursing, the model takes into account the process that the novice nurse will, or need to, follow to become an expert nurse.

The five levels of proficiency according to Benner (1982:403-406) can be summarised as follows:

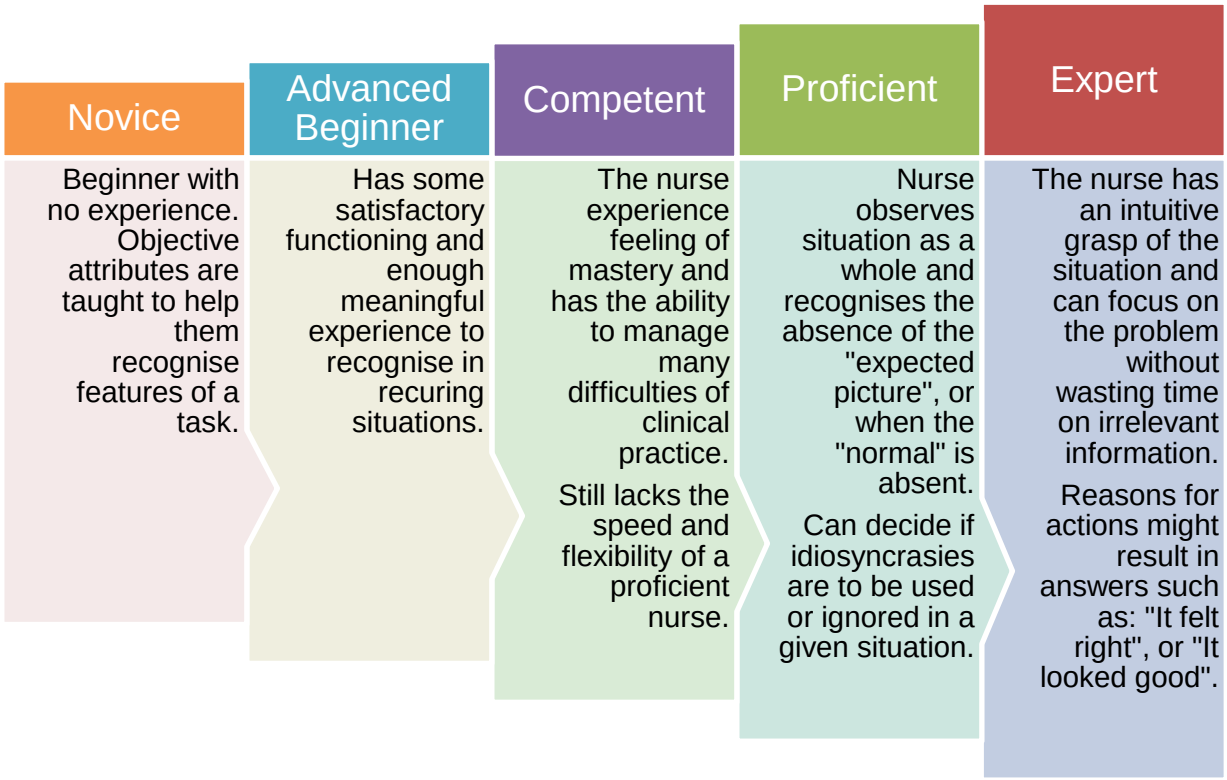


Figure 2.1 Summary of Benner's Novice to Expert (1982:403-406)

Benner (2004:188) conducted three studies in twenty one years based on the Dreyfus model of skills acquisition (Dreyfus & Dreyfus, 1980:15) and consistently re-affirm the levels of proficiency and the importance of progressing through the levels for the development of clinical judgment (Benner, 2004:189). Benner (2004:191) clarified the level of development that can be expected of a newly graduated nurse in the nursing profession. During training and learning the concepts of clinical judgment and the application thereof, a nursing student is first seen as a Novice, newly graduate nurses are seen as on the second level of development, the Advanced Beginner, and only one or two years into practice does the registered nurse become Competent. The fourth and fifth phases are the upper levels of development, namely Proficient and Expert.

Although this model underwrote an excellent explanation of clinical judgment development, further research of clinical judgment illuminated the methods of communicating this very important concept to student nurses.

2.2.1.2 Clinical Judgment Model

In the past decades, a large number of research was generated on clinical judgment and Tanner (2006) searched for articles by using the terms “clinical judgment” and “clinical decision-making” in the English language. Most of the studies found were descriptive in nature and addressed questions such as:

- Processes used by nurses when assessing patients
- The role of knowledge and experience in these processes
- Factors affecting clinical reasoning patterns

In these studies, different theoretical perspectives were used, including the statistical decision theory, information processing theory and phenomenological theory as well as different research methods, e.g. case scenarios, narrative accounts, interviews, observations of nurses in practice, chart audits and self-report of the decision-making process.

Based on the review of 191 studies, Tanner (2006) developed a model of clinical judgment that can assist faculty in teaching clinical judgment skills to nurses (refer Figure 2.5).

Tanner’s Clinical Judgment Model (2006:208) consists of five prominent aspects (Tanner, 2006: 204-207). Firstly, the nurse is more important than the situation since clinical judgment requires various types of knowledge, most of which is obtained through experience in similar situations. Secondly clinical judgment is influenced by how well the nurse knows the patient. The third aspect depends on the context in which the situation occurs, including tradition and culture of nursing units. Patterns of reasoning is another important aspect that can be used in combination with others or on its own. The last factor includes reflection on practice and learning from experience.

These major points are merged into a visual presentation that can assist faculty in teaching this difficult and complex topic to novice nurses. The focus is on the following

four aspects: noticing; interpreting; responding and reflecting. The importance of these aspects is discussed below and each part of the model is explained separately.

2.2.1.2.1 Noticing

Identifying what is important, making connections between facts and using previous knowledge are all part of *noticing* (Watson & Rebair, 2015:515). In the nursing profession patient related matters needs to be noticed before it can be addressed. If the patient's needs are not noticed, it cannot be attended to properly. The nurse is dependent on textbook knowledge to notice critical indicators in patient care; however, *noticing* is also dependent on previous knowledge, usually acquired through experience (Watson & Rebair, 2014:515).

Factors that influence *noticing* (refer Figure 2.2) includes background of the situation, relationship with the patient and complexity and culture of the ward/unit/hospital, as well as the patterns of care (Tanner, 2006:206). These factors will influence the nurse's expectations for each patient, in similar situations, and create the initial idea of what needs to be done.

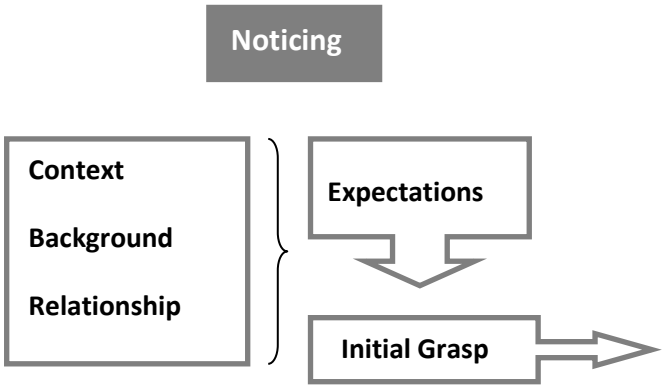


Figure 2.2 Tanner's Clinical Judgment Model (2006:208) – noticing

2.2.1.2.2 Interpreting and Responding

The quality of noticing will determine the outcome of the process (refer Figure 2.3). If noticing did not occur, *interpreting* and *responding* will either be absent or fragmented (Purling & King, 2012:3462).

Initial *noticing* of the patient's condition will prompt one or more reasoning patterns and therefore influence the course of action. *Interpreting* is determined through analytic, intuitive and/or narrative reasoning patterns, whereas *responding* is the action taken as a result of the interpretation and the outcomes that result in 'reflection-in-action' (Tanner, 2006:209).

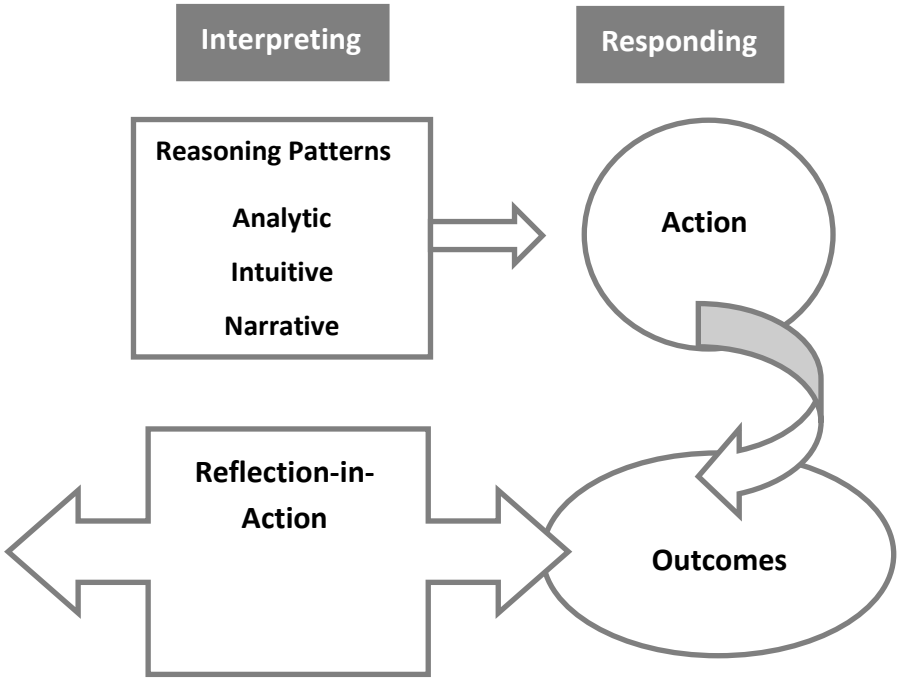


Figure 2.3 Tanner's Clinical Judgment Model (2006:208) – interpreting and responding

2.2.1.2.3 Reflecting

Reflection occurs in two parts. 'Reflection-in-action' (refer Figure 2.3) can be seen as part of the interpreting and responding phase where the nurse continually reflects on actions taken and the patients response to treatment (Tanner, 2006:209).

'Reflection-on-action' (refer Figure 2.4) is when the nurse reflects on an event. This reflection is usually the result of a confusing and unusual incident where the whole clinical situation is analysed for evaluation, interpretation and self-examination (Asselin, Schwartz-Barcott & Osterman, 2013:911). The nurse acquires knowledge from experience which could be applied in other situations where the application of clinical judgment is necessary (Tanner, 2006:209).

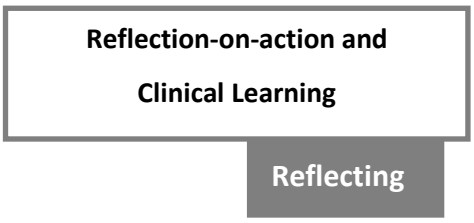


Figure 2.4 Tanner's Clinical Judgment Model (2006:208) – reflecting

Tanner's Clinical Judgment Model (2006:208) not only explains how clinical judgment occurs, but also serves as a starting point from which the development of clinical judgment can be enlightened to novice students.

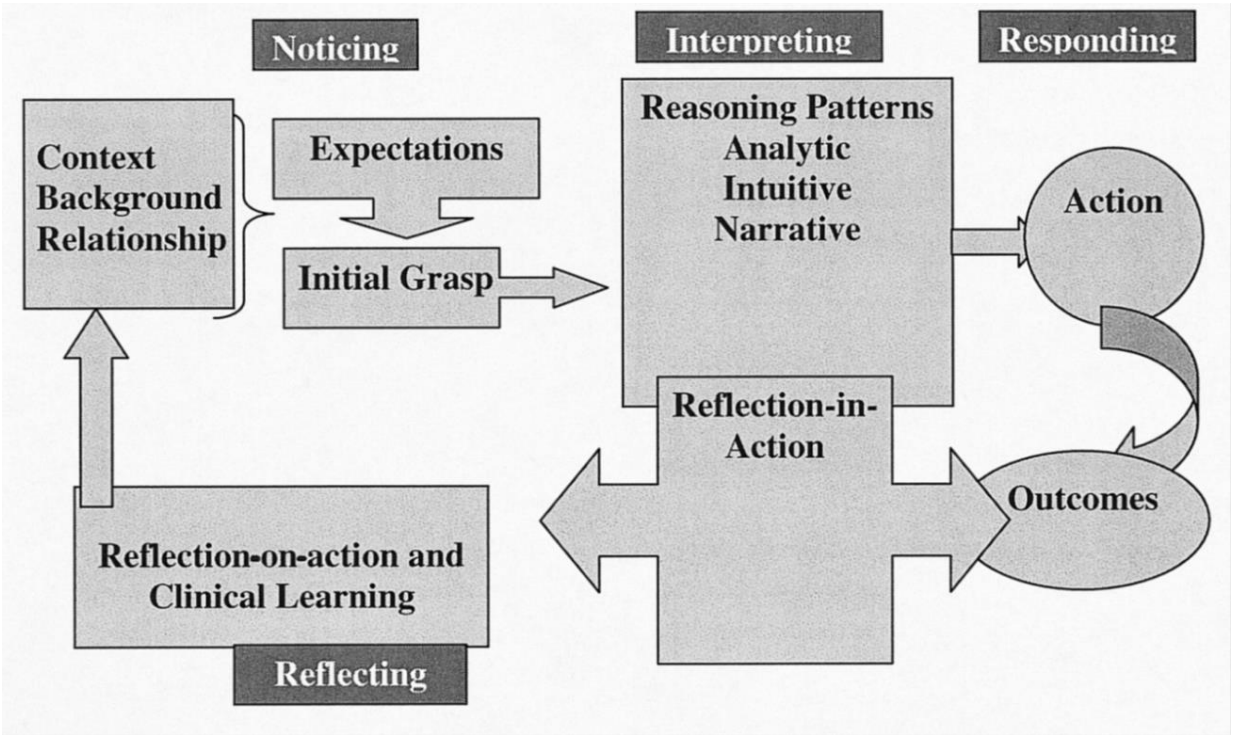


Figure 2.5 Tanner's Clinical Judgment Model (2006:208)

2.2.2 CLINICAL JUDGMENT RUBRIC

Utilising Tanner's Clinical Judgment Model (2006:208), the faculty was able to teach clinical judgment; however, the remaining problem was to determine whether learning had taken place or not. Lasater (2007) identified the need for assessment of clinical judgment and developed Lasater's Clinical Judgment Rubric (2007:500-501). The rubric defines

expectations of students during clinical judgment and assists in the communication process between the faculty and students.

The four phases of Tanner's Clinical Judgment Model (2006:208) were used as the basis for Lasater's Clinical Judgment Rubric (2007:500-501), namely noticing, interpreting, responding and reflecting. Each of these phases was further divided into two or three dimensions that outline the essential steps in each phase. In Table 2.1 the first three phases as well as the relevant dimensions, are portrayed.

Table 2.1 Example of Lasater's Clinical Judgment Rubric (2007:500-501) – phases and dimensions of clinical judgment

Effective noticing involves:				
Focused observation				
Recognising deviations from expected patterns				
Information seeking				
Effective interpreting involves:				
Prioritising data				
Making sense of data				
Effective responding involves:				
Calm, confident manner				
Clear communication				
Well-planned intervention/flexibility				
Being skilful				

The four phases and dimensions were displayed on a Likert scale, divided into four developmental categories, namely beginning (1 mark), developing (2 marks), accomplished (3 marks) and exemplary (4 marks) (refer Table 2.2).

Table 2.2 Lasater's Clinical Judgment Rubric (2007:500-501) – developmental categories

	Exemplary 4	Accomplished 3	Developing 2	Beginning 1
Effective noticing involves:				
Focused observation				
Recognising deviations from expected patterns				

For further clarification Lasater (2007:500-501) explained what is expected in every developmental category with regard to every dimension (refer Table 2.3), e.g. in the dimension of "focused observation" in the phase of noticing, students who obtained an exemplary (4) mark would be seen as appropriately focused with the ability to observe and monitor a variety of objective and subjective information.

Table 2.3 Lasater's Clinical Judgment Rubric (2007:500-501) – clarification

	Exemplary 4	Accomplished 3	Developing 2	Beginning 1
Effective noticing involves:				
Focused observation	Focuses observation appropriately; regularly observes and monitors a wide variety of objective and subjective data to uncover any useful information.	Regularly observes and monitors a variety of data, including both subjective and objective; most useful information is noticed; may miss the most subtle signs.	Attempts to monitor a variety of subjective and objective data but is overwhelmed by the array of data; focuses on the most obvious data, missing some important information.	Confused by the clinical situation and the amount and kind of data; observation is not organized and important data are missed, and/or assessment errors are made.

The student can score between 1 and 4 in each dimension from the eleven dimensions, therefore a student's lowest score on Lasater's Clinical Judgment Rubric (2007:500-501) will be 11 and the highest 44.

With the use of Lasater's Clinical Judgment Rubric (2007:500-501), the faculty can measure students' clinical judgment by following each dimension and assessing each developmental category. The description in each developmental category explains what is expected in each phase and makes clarification of scoring easier during feedback. This helps to improve communication between faculty and students.

2.2.3 TERMS RELATED TO CLINICAL JUDGMENT

Although the concepts critical thinking, clinical reasoning and clinical decision-making are often used synonymously with clinical judgment, everyone is distinctly different from the other. Facione and Facione (2008:2) explain the connection in stating that critical thinking and clinical decision-making are the cognitive aspects in clinical reasoning, whereas clinical judgment is dependent on critical thinking and clinical reasoning.

2.2.3.1 Clinical reasoning

Clinical reasoning is based on theoretical knowledge and clinical skills (Cerulo & da Cruz, 2010:126) and implies the cognitive processes necessary before decisions are made and/or actions are taken (Simmons, 2010:1152, 1154).

Based on a literature review of clinical reasoning, Simmons (2010:1155) found the attributes of clinical reasoning (refer Figure 2.6) to be data analysis (interpreting information), deliberation (rumination), heuristics (informal thinking strategies), inference (speculation), metacognition (reflective thinking), logic (argument), cognition (perception or awareness), information processing (organising data) and intuition (insight independent of reasoning). Apart from these attributes used in clinical reasoning, variables such as cognitive ability, life experience, maturity, skill level in practice, amount of information available, degree of risk involved and level of uncertainty also influence clinical reasoning (Simmons, 2010:1155).

Figure 2.6 Attributes of clinical reasoning (Simmons 2010:1155)

Although clinical reasoning is a complex cognitive process (Simmons, 2010:1155) it is present in all nursing actions (Cerullo & da Cruz, 2010:125) and therefore an important skill to master.

2.2.3.2 Critical thinking

Critical thinking is the making of decisions (Robert & Petersen, 2013:91) between ideas or occurrences, therefore, a process to make a judgment, resulting in clinical judgment (Facione & Facione, 2008:1). In clinical practice, critical thinking enables the nurse to solve problems and make decisions with regard to patient care (Romeo, 2013:248) and is necessary to ensure safe competent care delivery to patients (Robert & Petersen, 2013:85).

A variety of cognitive processes are used in critical thinking and Lechasseur, Lazure and Guilbert (2011:1930) found various types of knowledge to be important in the process of critical thinking, including intrapersonal-, interpersonal-, perceptual-, moral/ethical-, experiential-, practical-, scientific- and contextual knowledge. The ability to apply critical thinking translates to safe patient care (Robert & Petersen, 2013:91).

In one study by Eisenhauer, Hurley and Dolan (2007:82), the highly complex role of critical thinking was described through the preparation of medication administration. Medication administration, to an individual patient, is a single task in the daily course of a nurse's shift. Before the medication was administered to the patient, ten dimensions of thinking were counted to prepare the medication, considering all relevant facts and possible influences and outcomes before administration. This result in three more dimensions than the average human mind can hold in short-term memory at a time. This study not only emphasised the importance of critical thinking, but also highlighted the complexity thereof.

Though many studies focus on the importance of critical thinking in the nursing profession and question the lack thereof (Robert & Petersen, 2013:91; Romeo, 2013:248; Del Bueno, 2005:279), little information exist to explain how this important concept can best be taught to student nurses that would ensure the acquisition and application of critical thinking in practice. Del Bueno (2005:281) does mention though that the solution does not lie in more education but in clinical practice, confirming Tanner's (2006:205) findings of experience in clinical practice and Benner's (2004:191) acquisition of skills through clinical practice.

2.2.3.3 Clinical decision-making

Decision-making depends on the gathering of information, forming a hypothesis, interpreting and assessing gathered information before making a decision (Clack, 2009:24; Ramezani-Badr, Nasrabadi, Yekta & Taleghani, 2009:353). Clinical decision-making is strongly influenced by the context in which they are made (Bucknall, 2003:310), for example patient situation, resources, interpersonal relationships and clinical setting.

A qualitative descriptive study by Ramezani-Badr *et al.* (2009:353) revealed that critical care nurses made decisions based on reasoning strategies and available criteria. The three main themes concerning reasoning strategies include intuition, recognising similar situations and hypothesis testing. The three important criteria, when making clinical

decisions, include the patient's risk-benefits, organisational necessities and complementary sources of information.

In another study, Clack (2009:24) used a four-stage information processing framework, namely cue acquisition, hypothesis generation, interpretation and evaluation to critique decision-making on a clinical scenario. The conclusion was that there are different phases and various influences that affect decision making, and hypothetico-decuctive logic could not explain all the levels of decision-making in the scenario. Clack (2009:27) also found that intuition and analytic thought processes played a role in decision-making in particular scenarios.

Simmons (2010:1154) suggests that clinical decision-making indicate an outcome or result of thinking and is the cognitive aspect of clinical judgment (Facione & Facione, 2008:1).

2.3 SIMULATION

Traditionally clinical skills were acquired in the clinical setting with patients (Irvine & Martin, 2014:94) and simulation was used only for the acquisition of essential skills (Dunnington, 2014:15). In the last few years, there has been an increased emphasis on the utilisation of simulation for the initial learning of clinical skills (Irvine & Martin, 2014:94).

2.3.1 BENEFITS OF SIMULATION

Simulation provides opportunities for students to learn and practice fundamental nursing skills in a location that represents reality (Berragan, 2014:1143) and yet to practice the same skills repeatedly by recreating scenarios (Limoges, 2010:62). Simulation also improves students' confidence to work in any clinical setting (Dillard, Sideras, Ryan, Carlton, Lasater & Siktberg, 2009:103), help them to apply theoretical knowledge in a controlled setting (Comer, 2005:360), develop competence and consolidate learning (Issenberg, McGahie, Petrusa, Gordon & Scalese, 2005:5).

In a narrative case study, Berragan (2014:1146) gave first year undergraduate nursing students the opportunity to participate in small group lecturer facilitated simulation sessions. These sessions were repeated on eight occasions for two hours each and were concluded with an Objective Structured Clinical Examination (OSCE). Nursing Educators

involved in this study found the outcomes of the simulation learning divided into three key areas.

Students who successfully become nurses:
This meant students who had passed the OSCE assessment, practiced in simulation sessions and matured in the process. Students in this key area found simulation and OSCE informative and gained knowledge and confidence in the process. They felt like nurses and had a sense of responsibility.

Struggling or working hard to become nurses:
In this category nurses were not successful, but simulation helped them to see where they can improve. Students found simulation and OSCE helpful to reflect on their nursing performances and to recognise areas of concern where skills could be improved.

Not becoming nurses:
These students failed the first year of study and simulation might be the way to show them that nursing is not the profession for them. Students are aware of their deficiencies and that they did not know enough or learnt enough.

Through this study Berragan (2014:1147) ascertained that simulation might offer an environment where students can practice their skills, interpret information and develop as professional nurses.

Simulation is also beneficial for the transfer of learning, serves as a tool to bridge the theory-practice gap, develop and apply critical thinking and help with the retention of knowledge through active engagement of learning material in immersive simulation sessions (Botma, 2014:3). In a qualitative descriptive study, 25% of students pronounced their preferences of simulation to be high-fidelity simulation and 25% percent preferred standardised patients. The other 50% of the group articulated that they had benefited from both methods, through participation in the simulation sessions and also from observing simulation (Botma, 2014:2-3). Botma (2014:4) concludes that simulation should be part of every nursing program as "*simulation serves as a strong motivator to learn and apply knowledge and skills*".

2.3.2 SIMULATION METHODS

High-fidelity simulation is currently a very popular method of simulation training (Botma, 2014:2; Skrable & Fitzsimons, 2014:120; Taplay, Jack, Baxter, Eva & Martin, 2015:26) and can be explained as the use of a full-body simulator that is programmed to respond physiologically and affectively through computer programming (Skrable & Fitzsimons, 2014:120). Using this method of simulation requires intensive training of instructors, not only on the use of the simulators, but also on the integration of high-fidelity simulation into the nursing curriculum (Taplay *et al.* 2015:30-31).

The use of a full-body model with human qualities, such as breathing sounds, is identified as medium-fidelity simulation (Skrable & Fitzsimons, 2014:120) whereas low-fidelity simulation includes anatomical models (Shin, Park & Kim, 2015:176).

In a study to assess the global status of simulation in health care, it was found that methods used in simulation include: high- and low-fidelity human patient simulators; task trainers; virtual reality workstations; on-line simulation modules and standardised patients (Qayumi, Pachev, Zheng, Ziv, Koval, Badiei & Cheng, 2014:462).

Simulation can be utilised in different teaching methods, e.g. lectures, student group interactions, case studies, structured clinical debriefing, tests and self-learning packages. The most valid assessment measures of knowledge and skills used, were Objective Structured Clinical Examinations (OSCEs) (Cant & Cooper, 2010:6).

2.3.3 IMMERSIVE SIMULATION

A slight distinction is made between simulation and immersive simulation. Kozhevnikov, Gurlitt and Kozhevnikov (2013:952) describe ‘immersive simulation’ as a three-dimensional environment in which a person can have interaction within the space. Although this is mentioned in the context of computer simulation, the concept has been transferred to health sciences in order to increase practicality of simulated scenarios (Lee, Liu & Caudell, 2009:1009) and enrich conceptual thinking for learning (De Freitas & Neumann, 2009:351).

Botma (2014:4) described immersive simulation as "*active engagement with learning material that supports the retention of knowledge*".

One division of the simulation facility in the School of Nursing has been designed to represent a hospital room, including relevant equipment like oxygen and suction connections, hospital beds and lockers, a washbasin for aseptic hand washing, over bed trolleys as well as other material supplies needed as per simulation scenario.

2.3.4 SIMULATED PATIENTS

Simulated patients include the use of humans who are trained to embody a predetermined condition that will be represented to the student in a scenario (De la Croix & Skelton, 2013:50; Churchouse & McCafferty, 2012:e364).

The main advantages of simulated patients are the reality of the situation in which students can communicate with an actual person (Irvine & Martin, 2014:96), the opportunity for reflection and the ability to observe the student (Sideras, McKenzie, Markle, Frazier & Sullivan, 2013:421).

Preparation of the simulated patient needs careful planning as the scenario should enable the students to master a particular skill, communicate effectively and demonstrate critical thinking and professionalism (Irvine & Martin, 2014:96). A method of preparing students to master a simulated skill (refer Figure 2.7) according to Irvine and Martin (2014:96), is to firstly teach with the use of a part-task model, then practising with the model and finally to use simulated patients, followed up with self-assessment and feedback.

Sometimes, especially in medicine, a patient from the community who has a teachable condition, for example arthritis, will be asked to present "themselves" in a simulation situation. These patients are referred to as standardised patients and are sometimes confused with simulated patients (Churchouse & McCafferty, 2012:e364).

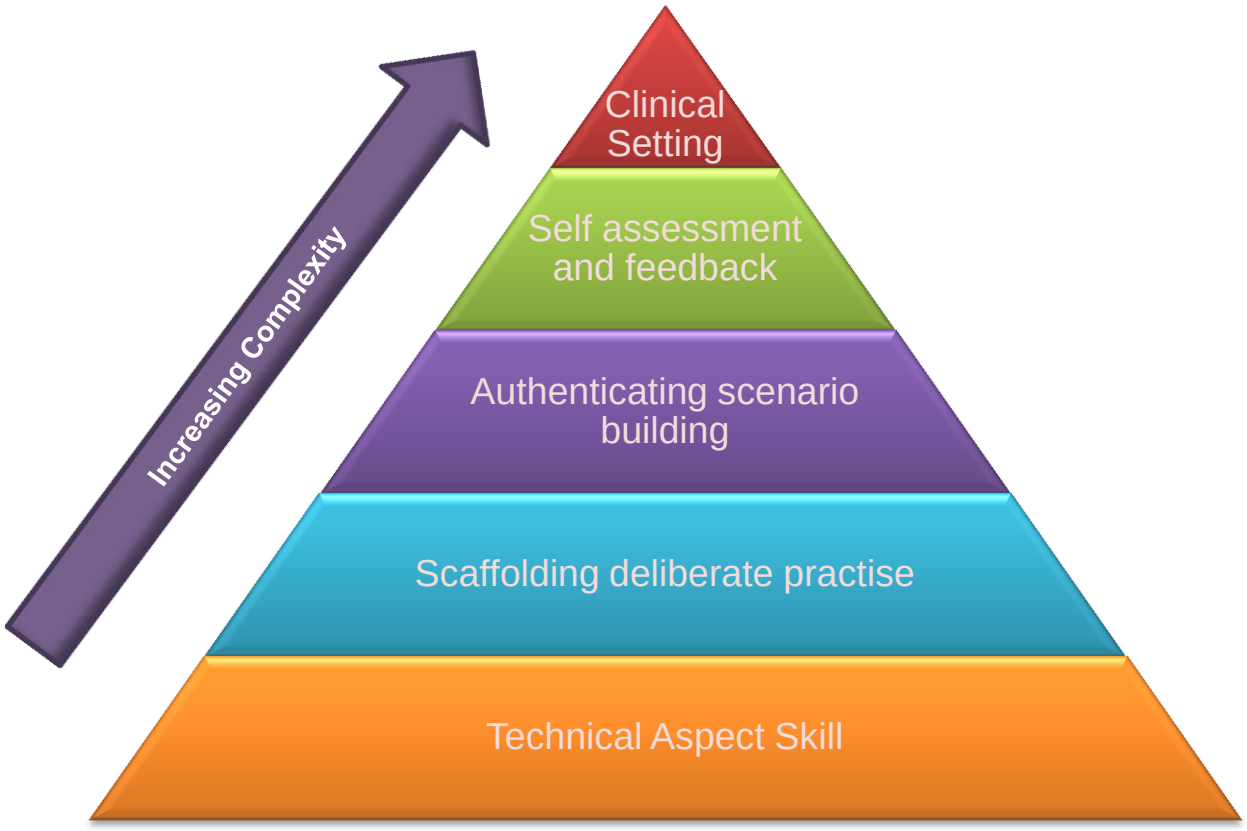


Figure 2.7 Increasing sequence of events and complexity in skills training (Irvine & Martin, 2014:97)

As the first year students, participating in this study, were to enter the clinical setting for the first time, simulated patients were used in simulation sessions to better prepare them for patient contact (Rutherford-Hemming & Jennrich, 2013:118) through communication and practicing professionalism (Irvine & Martin, 2014:95).

2.4 PRECEPTOR

The preceptor can be defined as a registered, or experienced, nurse who provides clinical teaching and instruction to a nursing student (Yonge, Billay, Myrick & Luhanga, 2007:8) and has been proposed as an appropriate alternative for clinical teaching in several institutions in the United States and United Kingdom (Zilembo & Monterosso, 2008:194; Burns, Beauchesne, Ryan-Krause & Sawin, 2006:172; Mantzorou, 2004:1).

2.4.1 PRECEPTOR EXPERIENCE

In the past nursing students had to attach themselves to a professional person in the clinical setting and were mostly responsible for self-learning (Facione & Facione, 2008:8). Due to changes in the health care system and declining numbers in nurses (Zilembo & Monterosso, 2008:194), clinical learning can no longer be left to trial and error. Preceptorship was a welcome solution to bridging the gap between the classroom and the clinical setting (Smedley & Penny, 2009:31).

In a self-report survey study by Broadbent, Moxham, Sander, Walker and Dwyer (2014), quantitative and qualitative data was collected from thirty four registered nurses who were acting as preceptors to undergraduate baccalaureate nursing students in Australia. A summary of results reflects the influences (Broadbent *et al.* 2014:407) of preceptoring on preceptors (refer Figure 2.8).

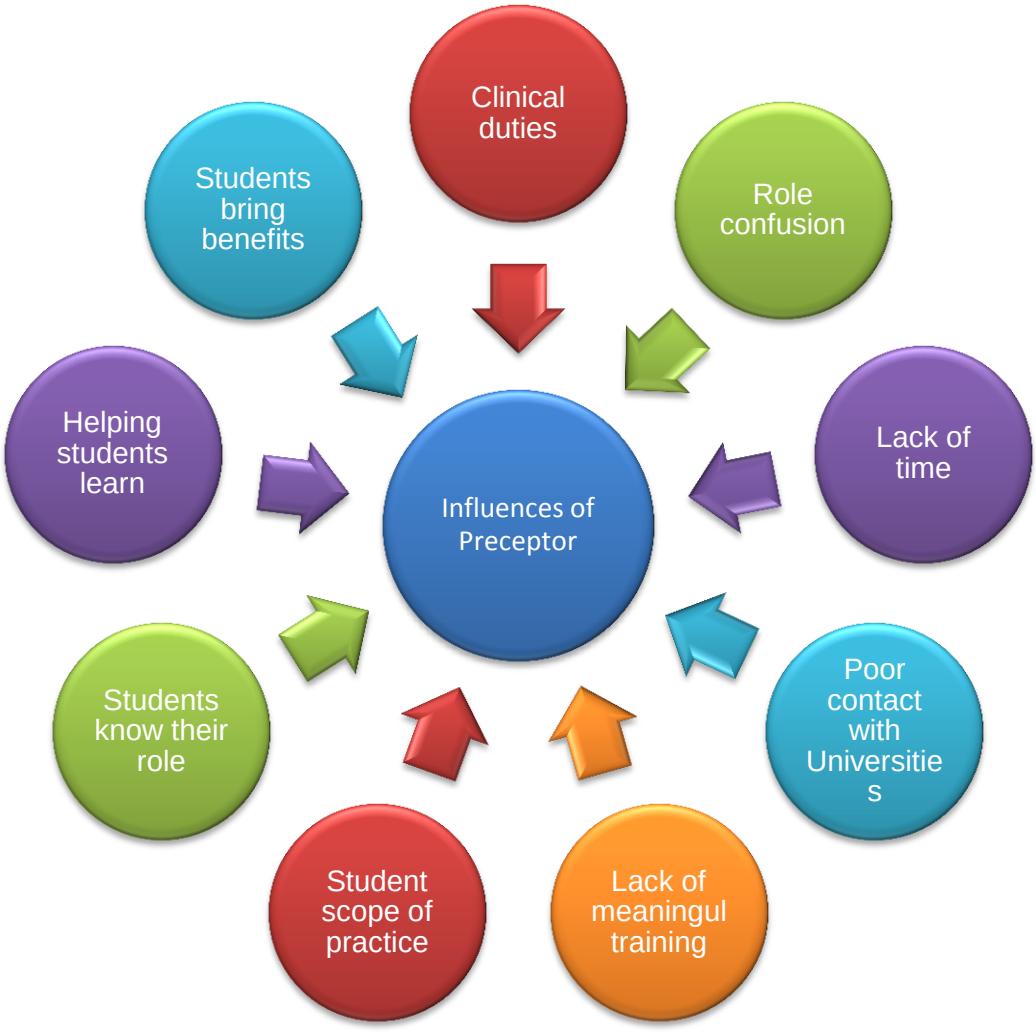


Figure 2.8 Influences on the preceptor

Registered nurses found that preceptoring contribute to their own development and could, as a result, focus on further developmental needs. They also felt that preceptoring helped them to expand on their own skills and knowledge. Preceptoring did not take place without some challenges. Communication problems with faculties left preceptors with uncertainties with regard to role expectations and the lack of support resulted in difficulties in the clinical placement of students. Another problem that existed was a lack of time to support students that resulted in less student-preceptor involvement. Most preceptors in this study wanted to attend preceptorship training and asked for more support from faculty in the process (Broadbent *et al.* 2014:406-408).

Another research study, a quantitative descriptive correlational design, was used to report preceptors' views on benefits and challenges of the preceptor role in a Canadian undergraduate baccalaureate nursing program (Kalischuk, van den Berg & Awosoga, 2013:30). Challenges that preceptors faced, included an extra workload, having to complete the work and to explain what and why specific tasks had to be performed. Finding the time to give feedback and continuously rendered support to students, were especially difficult. Another challenge was vague formulation of goals and objectives and the difficulty of deciding what should be addressed with students. Faculty support to preceptors and time spent with nursing students were also challenges. On the other hand, positive experiences in this study was highlighted as being able to see the changes and growth taking place in nursing students, observing when they understood certain actions and how they then applied those actions in practice. Most preceptors wished for more support from faculties, co-workers and management and the ability to attend workshops on preceptorship (Kalischuk, van den Berg & Awosoga, 2013:33-35).

No literature was found regarding the use of preceptors as was done in this study. Registered nurses, enrolled as students in the postgraduate nursing education qualification at the university, represented several provincial hospitals and were asked to act as preceptors for first year nursing students during clinical experience in the course. Although no formal data collection was done to assess the experience of the preceptors in this study, informal conversations with preceptors, who participated in the study, experienced their involvement with the students and in the study very positively. Some of the preceptors indicated that they enjoyed working with the students whereas others said they could reflect on own practice – echoing the findings of preceptors in the study of Kalischuk, van den Berg and Awosoga, (2013:33) and Broadbent *et al*. (2014:406).

2.4.2 PRECEPTOR ROLE

The exact role of the preceptor is complex and broad – no literature could be found with specific roles of the preceptor. It is generally understood that the preceptor teaches the nursing student specific clinical skills and patient care (O'Brien, Giles, Dempsey, Lynne, McGregor, Kable, Parmenter & Parker, 2014:20; Omansky, 2010:700) and, being a role model, assesses the students' progress in the clinical setting (Omansky, 2010:700).

In this study, the role of the preceptor was to give cognitive support to the first year nursing students in a feedback session on immersive simulation.

2.4.3 PRECEPTOR TRAINING

Preceptors are registered nurses in the clinical setting that support nursing students on behalf of an educational institution (Broadbent *et al.* 2014:403). In literature reviews, most registered nurses attend workshops to prepare them for a preceptor role (Broadbent *et al.* 2014:405; Hallin & Danielson, 2010:298; Danielsson, Sundin-Andersson, Hov & Athlin, 2009:107). Some registered nurses did not receive any training to function as a preceptor and some were not even interested in being preceptors (Hallin & Danielson, 2010:298).

Despite the importance of preceptors in the training of undergraduate nursing students (Broadbent *et al.* 2014:403; Kalischuk, van den Berg & Awosoga, 2013:30; Omansky, 2010:697), no unified training exists in the preparation of preceptors, however, several studies emphasise the difficulties preceptors face in the clinical setting, including extra workload, little time and little support (Broadbent *et al.* 2014:403; Kalischuk, van den Berg & Awosoga, 2013:30; Omansky, 2010:697; Carlson, Philhammar & Wann-Hansson, 2009:432; Hyrkäs & Schoemaker, 2007:513). More research is needed to indicate if formal training and registration of preceptors could pose a solution to the current situation.

2.5 COGNITIVE SUPPORT

In this study, cognitive support was used to describe the provision of knowledge to the nursing student in order to assist in thinking- and reasoning processes. Cognitive support was given to students through clinical skills training and theoretical knowledge of Tanner's

Clinical Judgment Model (2006:208), Lasater's Clinical Judgment Rubric (2007:500-501) and one-on-one contact with a clinical preceptor both in the clinical setting and in a special feedback session.

According to Lin, Yang and Lai (2013:19-20), cognitive support will assist in enhancing the learning experience of students. Support given to nursing students in this study, included peer support with feedback from simulation sessions in groups as well as instructional support from the preceptors by means of footage from their simulation sessions (Lin, Yang & Lai, 2013:20).

2.5.1 CONCEPTUAL FRAMEWORK

Botma *et al.* (2013:6) developed a conceptual framework that serves as a foundation for designing lesson plans that will ensure the transfer of knowledge, skills, conduct and attitudes taught to students during allocation in clinical practice. The framework consists of four steps, including "the activation of existing knowledge, engagement with new information, demonstration of competence and application in real-world practice" (refer Figure 2.9).

The conceptual framework is dependent on two principles. Firstly, it is important that the learner know what the outcome or aim of the learning session is, and secondly, learning must take place in an environment that includes peers, facilitators and experts that interact with one another to help students developing critical thinking skills.

The four steps of the conceptual framework (refer Figure 2.9) can be summarised as follows (Botma *et al.* 2013:6-8):

Step 1: activate existing knowledge

It is important to first establish what students already know about the topic that will be discussed before the new knowledge is shared. The stimulation of long-term memory will assist in the internalisation of knowledge formation. It is also important that students know what the outcomes of the lesson will be as it will enhance motivation to learn new information.

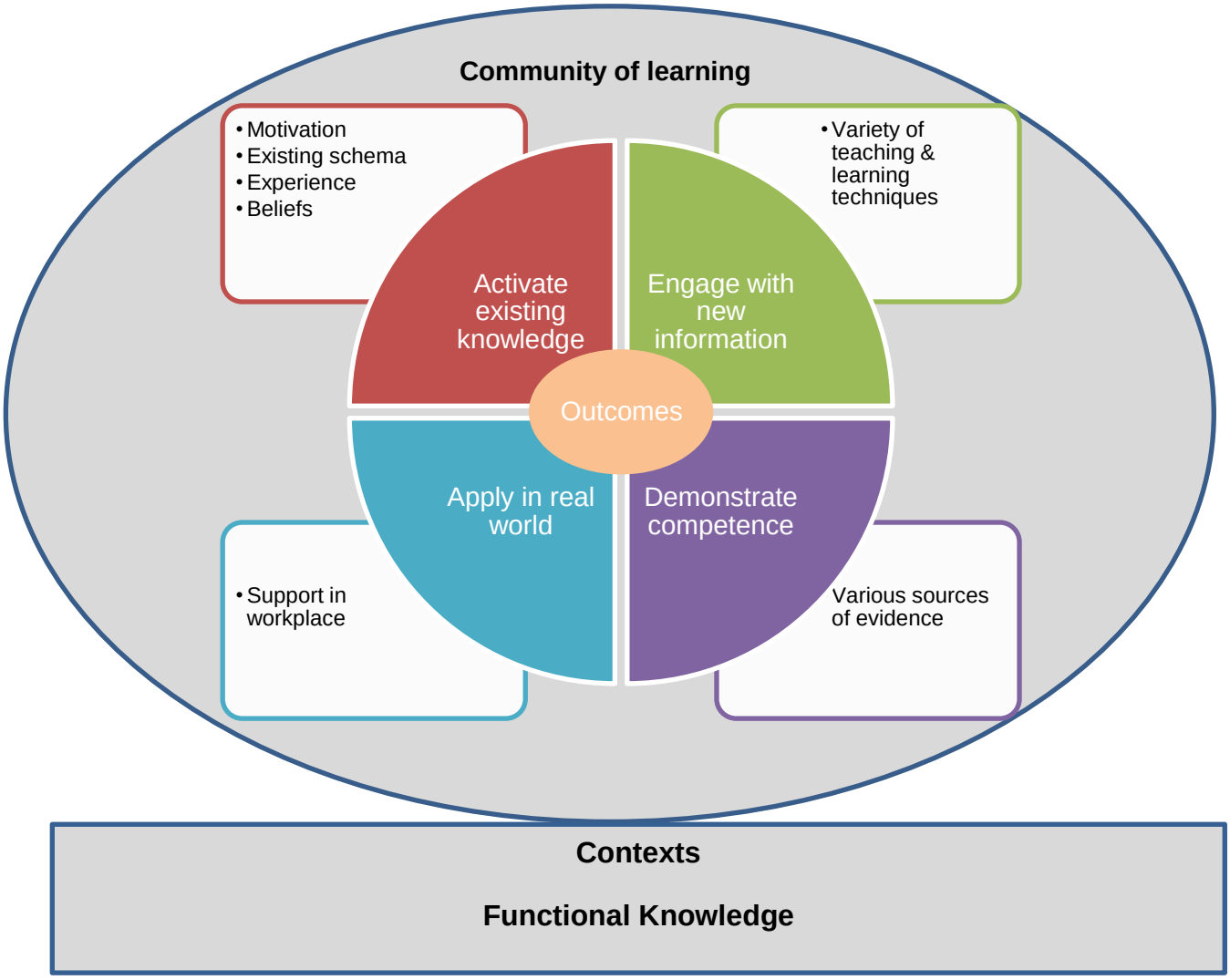


Figure 2.9 Conceptual framework for educational design at modular level to promote transfer of learning (Botma *et al.* 2013:6)

Step 2: engage with new information

Learning improves when nurses understand the outcomes of the lesson (step 1) and the outcomes are associated with what they are learning. When students are involved in finding the purpose between theory and tasks, deep learning takes place. It is important to remember that the involvement of more than one sense will increase learning, for example seeing and hearing.

Step 3: demonstrate competence

When incorporating Benner's (1982:402) novice to expert proficiency levels, it can be expected that students will at first need guidance and support when making decisions. It is important that involvement in tasks is part of the learning experience and strategies should be put in place to ensure that students achieve competence.

Step 4: apply in real world

When planning lessons, it is important to also plan where students need to apply their skills. If the workplace climate, or organisational culture, negatively influences learning, alternative clinical settings should be sought to make sure students have the opportunity to apply in practice what they have learnt in the classroom.

This conceptual framework served as a foundation for the development of learning material for first year students participating in this study.

2.6 RESEARCH PROCESS FOLLOWED

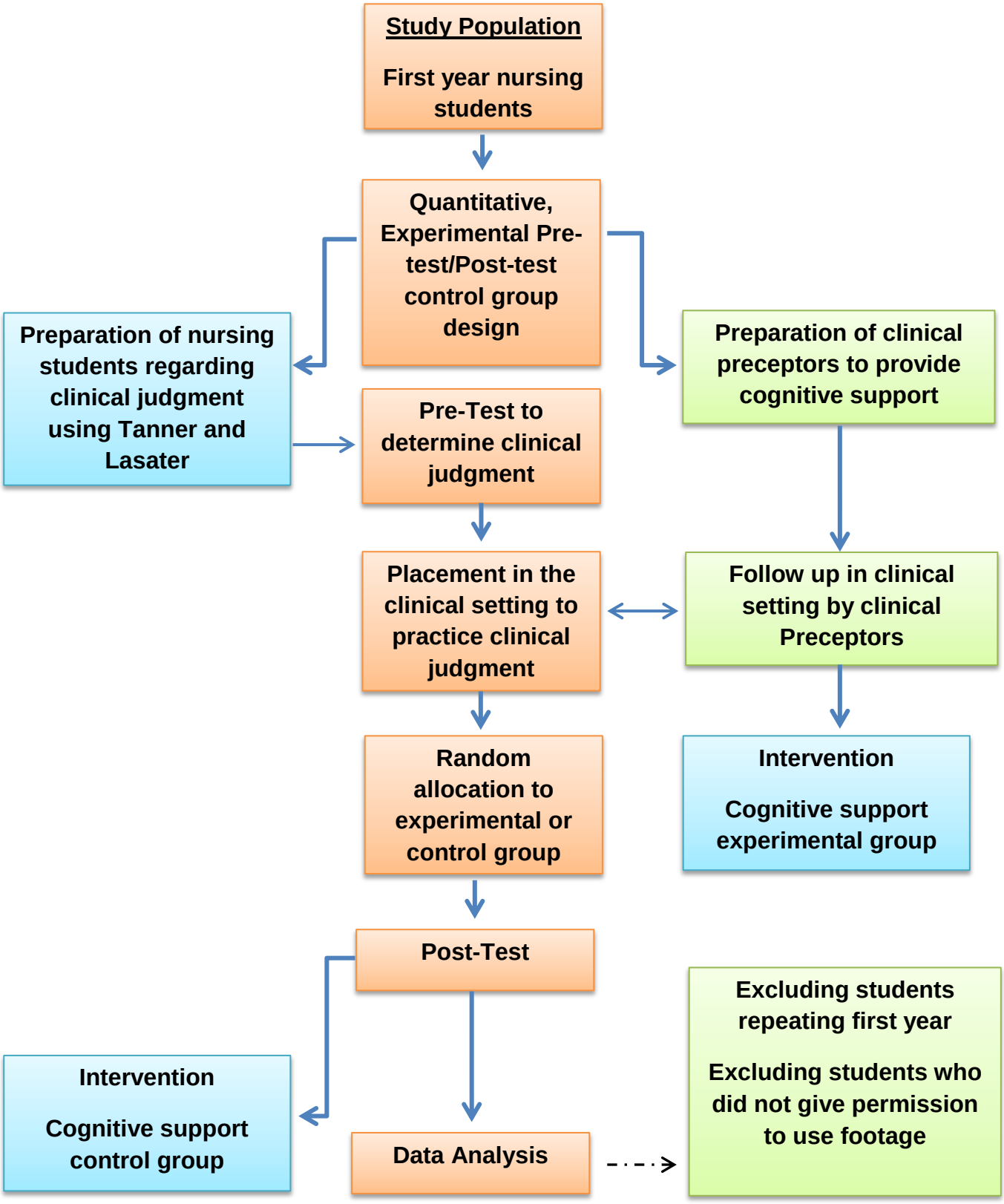


Diagram 2.1 Research process followed to assess clinical judgment in first year nursing students

2.7 SUMMARY

In this chapter the importance of clinical judgment in the nursing profession was highlighted as well as concepts closely related to clinical judgment. Factors that supports the development of clinical judgment, including preceptors, simulation and cognitive support, were also discussed.

In Chapter 3, the methodology used in this study will be described, including the research-design and technique. Planning of the study prior to data collection is described, followed by the collection of data for the pre-test and post-test. This is followed by the intervention with preparation of the students and the preceptors and the chapter is concluded with the ethical considerations relevant to this study.

CHAPTER 3
METHODOLOGY

3.1 INTRODUCTION

Methodology can be described as the plan (Basavanthappa, 2011:118) or approach that the researcher used to collect information (Polit & Beck, 2003:162). The research design, research technique, study population, reliability and validity, pilot study and data collection will be discussed in this chapter. A short summary of the data analysis will be given and will be discussed in more detail in the next chapter.

3.2 RESEARCH DESIGN

A quantitative experimental pre-test/post-test control group research design was used (Botma *et al.* 2010:121) for this study. Quantitative designs are usually relatively structured (Polit & Beck, 2003:164), focus on specific concepts and are set on a theoretical foundation. An instrument is used to collect information and collections are done under conditions of control (Taylor, Kermode & Roberts, 2011:10). A quantitative research design is divided into experimental or non-experimental designs (Bincy, 2013:132).

Non-experimental designs are mostly descriptive (Basavanthappa, 2011:150) and used when variables cannot be manipulated or when it would be unethical to do so (Polit & Beck, 2003:188) whereas experimental designs, in contrast, can be manipulated, controlled and randomised (Polit & Beck, 2003:169), therefore, considered by many as the most reliable form of research (Basavanthappa, 2011:122; Botma *et al.* 2010:120; Polit & Beck, 2003:169). In experimental designs the researcher is actively part of the study (Polit & Beck, 2012:202). Experimental designs are further divided into Quasi-experimental designs and True Experimental Designs.

The true experimental design has specific features that were applied in this study, including manipulation through an intervention, a control group to measure effects against the experimental group and randomisation of students to decrease bias. In selecting the research design, the researcher emphasised the aim of the study (Basavanthappa, 2011:120), namely to compare the clinical judgment of first year baccalaureate nursing

students with and without cognitive support from a clinical preceptor during immersive simulation. However, aspects such as ethical requirements, feasibility of the study, students, availability of simulation facilities and equipment, as well as costs involved, was also considered (Basavanthappa, 2011:120-121).

Initially, the researcher intended to use the post-test-only control group design. In this design, the control group would have received the prescribed first year nursing curriculum and the experimental group would have received the same as well as an additional intervention through the clinical preceptor (Polit & Beck, 2003:174). Results might have shown differences between the groups, but the disadvantage of this design is that no change in clinical judgment would have been measured (Botma *et al*. 2010:121). The post-test-only control group design could be useful where it is not possible to pre-test the students (Basavanthappa, 2011:130) although in this case, it was not relevant.

Eventually, the pre-test/post-test control group design was used. The pre-test/post-test control group design examines causation (Bhattacherjee, 2012:85) and change (Botma *et al*. 2010:121) and was believed to be suitable to compare the clinical judgment of first year baccalaureate nursing students, that received cognitive support from a clinical preceptor during immersive simulation, with those who were not supported.

To avoid the possibility that assumptions about the possible outcomes of the study by the researcher could decrease the effectiveness of the pre-test/post-test control group design, the checklist proposed by Campbell-Yeo *et al.* (2009:35-37) was used as a guideline to decrease bias. The guidelines were applied as follows:

- **Careful consideration of the study concept:**
  A literature review was conducted after the aim and the feasibility of the study were determined. The feasibility of the study was considered in terms of year group, resources available and the need of a pilot study. The first year student coordinator, facilitators and clinical preceptors were included in the development and planning of the study.

- **Making sure the intervention is properly defined:**

  Care was taken to describe the exact expectations of the intervention, including details of the intervention, information and duration on the implementation of the intervention, the venue that would be used, materials needed and educational background of key investigators (refer Chapter 3).

- **Selection of appropriate comparisons:**

  First year nursing students were chosen to participate in this study, due to the fact that they started with professional education and training on the same level of experience. Too many variables could have influenced the results if a group of senior students was selected. Care was taken that the comparison group were given the same opportunities to gain theoretical knowledge and clinical experience as the experimental group, except with regard to the intervention.

- **Randomisation and allocation:**

  To prevent selection bias, groups were randomly chosen and all students had an equal chance to be assigned to either the control group or the experimental group.

- **Integrity of Intervention:**

  To strengthen the stability of the intervention, careful and extensive training of students was done. The possibility that study results could be contaminated was addressed by asking students in the experimental group (although they were blinded to the fact that they were part of the experimental group) not to discuss the intervention with other students. These students signed a non-disclosure form.

- **Ascertainment of outcomes:**

  A single-blinded approach was used and the researcher and independent second assessor were blinded to randomisation of the groups to minimise researcher bias such as application of expected attributes when interpreting data. The Hawthorne effect was limited by giving both groups equal learning opportunities and not revealing that they were divided into two groups until the intervention took place.

3.3 RESEARCH TECHNIQUE

Direct observation (Botma *et al*. 2010:290) using Lasater's Clinical Judgment Rubric (2007:500-501) that is based on Tanner's Clinical Judgment Model (2006:208), had been used to analyse footage[2] taken of student's during immersive simulation to assess their clinical judgment. Lasater (2007) identified the need for an instrument that could evaluate clinical judgment and used Tanner's Clinical Judgment Model (2006:208) to describe a student's response to simulated scenarios.

Tanner's Clinical Judgment Model (2006:208) is widely used to teach and understand the application of clinical judgment in nursing. Tanner (2006) based this model on a comprehensive literature review of nearly 200 studies related to clinical judgment. The Clinical Judgment Model (Tanner, 2006:208) is used by the facilitators in the School of Nursing as part of the four year baccalaureate nursing curriculum and utilised in teaching nursing students from their first year of studies. The concept "clinical judgment" is associated with expert nurses according to Benner, Tanner and Chesla (2009:199), and the School of Nursing aim to educate and train competent nurses that have the potential to become expert nurses.

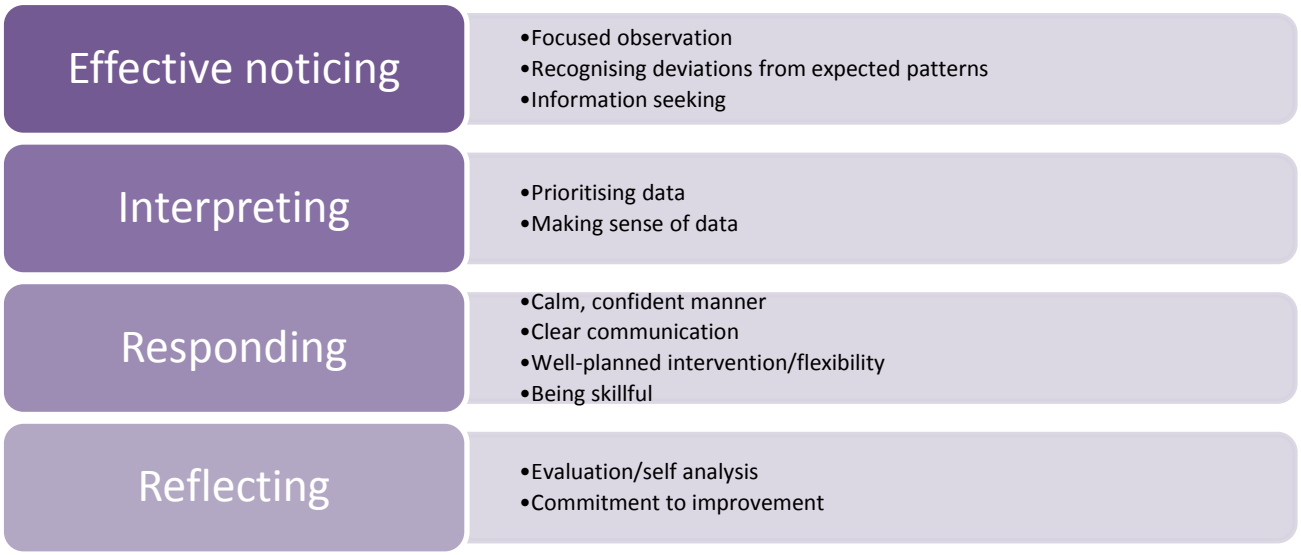
The Clinical Judgment Rubric (Lasater, 2007:500-501) is based on the four phases namely, noticing, interpreting, responding and reflecting, described in Tanner's Clinical Judgment Model (2006:208). In Lasater's Clinical Judgment Rubric (2007:500-501) each phase is further divided into eleven dimensions. The dimensions are the steps that are expected of students in each phase (refer Table 3.1).

The first phase, namely effective noticing, consists of three dimensions. It is required to make observations about their patients, to recognise any deviations from known disease patterns and to obtain additional information from resources such as patient records and laboratory results (Lasater, 2007:500).

The second phase, interpretation of data, is about organising data in order of importance and understanding what the data means, for example, to see patterns in the obtained information and developing interventions to resolve problems.

[2]Footage in this study refer to capturing of students' performance on digital video camera

Table 3.1 Phases and dimensions in Lasater's Clinical Judgment Rubric (2007:500-501)



The third phase, responding, assesses the student's approach towards the patient. The student needs to be assertive in their approach to the patient and give unambiguous direction to the team, patient and family. All interventions need to be specific to the patient's problems and adjustable for change. A fourth dimension assesses the student's proficiency in implementing the nursing actions.

The last phase, reflection, involves the ability of the student to perceive their mistakes and to determine areas of weakness and strength.

In the Clinical Judgment Rubric (Lasater, 2007:500-501) each dimension, as described above, is evaluated. A Likert scale, which includes four developmental levels – namely, beginning, developing, accomplished and exemplary – is used to indicate students' level of performance. In order to measure progress, a score was added to each level. One mark indicated that a student's performance is at beginners level, 2 marks for a student at a developing level, 3 marks on an accomplished level, and on an exemplary level 4 marks could be allocated (Table 3.2).

Table 3.2 Developmental levels in Lasater's Clinical Judgment Rubric (2007:500-501)

Dimension	Exemplary 4	Accomplished 3	Developing 2	Beginning 1
Effective Noticing				
Focused observation				
Recognising deviations from expected patterns				
Information seeking				

Considering the above, the highest mark a student can score on Lasater's Clinical Judgment Rubric (2007:500-501) is 44 points and the lowest score is 11 points where a higher score demonstrates a better understanding of clinical judgment. For purposes of this study, the fourth phase, reflection, was not measured – the reason being that the reflection included groups and not individual students. Despite the fact that reflection was not an objective of the study, it remained a requirement of simulation and was therefore done afterwards. Considering Lasater's Clinical Judgment Rubric (2007:500-501), the reflection phase includes two dimensions, therefore eight marks, thus the scale was adjusted to allow for a maximum of 36 points and a minimum of 9 points. A higher mark demonstrated a better performance on clinical judgment.

In order to make the scale more reliable Lasater's Clinical Judgment Rubric (2007:500-501) described the expectations in every developmental level of every dimension, as shown in Table 3.3.

The rubric has been developed in simulation with senior nursing students (Lasater, 2007:498) but had not been tested for application to other healthcare practitioners (Lasater, 2007:503). In this study, Lasater's Clinical Judgment Rubric (2007:500-501) was used to assess footage of students in an immersive simulation scenario using a simulated patient.

Table 3.3 Example of Lasater's Clinical Judgment Rubric (2007:500-501)

Dimension	Exemplary 4	Accomplished 3	Developing 2	Beginning 1
Effective Noticing				
Focused observation	Focuses observation appropriately; regularly observes and monitors a wide variety of objective and subjective data to uncover any useful information.	Regularly observes and monitors a variety of data, including both subjective and objective; most useful information is noticed; may miss the most subtle signs.	Attempts to monitor a variety of subjective and objective data but is overwhelmed by the array of data; focuses on the most obvious data, missing some important information.	Confused by the clinical situation and the amount and kind of data; observation is not organized and important data are missed, and/or assessment errors are made.
Recognising deviations from expected patterns	Recognises subtle patterns and deviations from expected patterns in data and uses these to guide the assessment.	Recognises most obvious patterns and deviations in data and uses these to continually assess.	Identifies obvious patterns and deviations, missing some important information; unsure how to continue the assessment.	Focuses on one thing at a time and misses most patterns and deviations from expectations; misses opportunities to refine the assessment.

3.4 POPULATION AND SAMPLE

The population is a whole group of people with common characteristics that are the focus or interest of the researcher (Bless, Higson-Smith & Sithole, 2013:162; Bincy, 2013:422; Botma *et al.* 2010:124). The subset of people selected from the whole group, meaning those who have the same characteristics, is called the sample (Bless, Higson-Smith & Sithole, 2013:162). The characteristics of the sample will eventually be generalised to the main or whole population (Bless, Higson-Smith & Sithole, 2013:162).

3.4.1 POPULATION

The population consisted of all 83 first year students registered at the School of Nursing at the time of the study. This population was selected to meet the objective of the study namely, to measure clinical judgment in first year baccalaureate nursing students. The first year nursing programme also requires all students to participate in an immersive simulation session to develop their clinical skills and clinical judgment skills.

3.4.2 SAMPLE

A purposive sample which included all first year nursing students registered for the first time at the School of Nursing, and therefore with no clinical background or nursing experience (as experience influence the development of clinical judgment) (Benner, Tanner & Chesla, 2009:199) and those who gave written consent to participate and that digital video footage taken of their performance on clinical judgment could be used for the purpose of research, were included.

Five students who repeated their first year of training, including 10 students who did not provide written consent that footage of their performance on clinical judgment could be utilised, were excluded from this study. One student discontinued her studies just before the pre-test was done and another before the post-test. On the day of the post-test, one student did not adhere to the requirements set for attending a simulation session and were not granted permission to participate. Out of the total of 83 students, the footage of only 65 students was finally available for the data analysis process.

Of the 65 students whose information was used for the study, six were male and 59 were female. All students indicated that they are proficient in English although only 7.5% (n=5) of students indicated that their first language is English. The majority of students were either Afrikaans speaking, 44.9% (n=29) or Sesotho 29.1% (n=19) (refer Chapter 4).

Generalisation of the results of this study should be possible if another study is conducted under the same circumstances.

3.5 PLANNING PRIOR TO DATA COLLECTION

The researcher, in collaboration with the first year coordinator, facilitators and clinical coordinator, addressed several aspects regarding the implementation of the study in order to ensure that the data collection process was not jeopardised. The planning included aspects such as allocation of dates suitable for data collection, the development of the pre-test and post-test scenarios and the preparation of both the students and the simulated patients.

In the year prior to the implementation of the main study, the above mentioned group was included in discussions regarding the proposed study and the involvement of the first year students. The researcher secured their cooperation and involvement for the duration of the intervention and data collection process.

With the start of the new study year, and just after first year nursing student intake, a second meeting was scheduled between the researcher and the mentioned group to decide on the dates planned for the pre-test and post-test, to develop the simulation scenarios and the necessary interventions (refer Interventions).

3.5.1 SCHEDULING OF THE PRE- AND POST-TEST

The pre- and post-test dates were scheduled not to interfere with the first year students' timetable and their progress regarding curriculum content and outcomes. It was decided that data collection for the pre-test should take place on the scheduled clinical day. An extra date for the post-test was scheduled after the semester break.

3.5.2 SIMULATION SCENARIOS

Both simulation scenarios were developed based on the first year nursing curriculum content and outcomes. The facilitators opted using simulated patients for the simulation scenario and that nursing students would perform vital signs (temperature, pulse and respiration). For application of clinical judgment, the Braden scale (Prevention Plus, 2009: Online) and a pain measuring scale that had been discussed during theoretical and clinical training, were included in the scenario. The scenario was formulated using an existing template currently used in the School of Nursing. The theme of the simulation scenario was about a patient who had been involved in a motor vehicle accident and scheduled for surgery to manage a lower back injury later that afternoon.

3.5.2.1 Information given to nursing students and simulated patients involved in the pre-test

Instructions given to the nursing students before they entered the simulation room, were to:

- assess the patient's risk to develop pressure sores according to the Braden Scale (Prevention Plus, 2009: Online);
- assess the patient's level of pain;
- obtain the patient's vital signs: pulse, respiration and temperature;
- document the findings on the available documentation form.

The scenario was developed to allow first year nursing students to identify any of several areas on which to apply clinical judgment, such as, to notice that the patient was in pain, to assess the pain level and to offer changing the patient's position or to request a registered nurse to administer pain medication, as well as to follow-up on the patient's response to treatment. Based on the scenario it was also possible to respond on the fact that the patient's bed was wet due to the loss of bladder function, to inform the patient on healthy eating habits and to assess neurological status of the leg that was numb after the accident.

The simulated patients' information was more complete in order to give them a background story. The following information was given:

- You were involved in a motor vehicle accident on your way to work this morning. You were brought to the hospital by ambulance. You hurt your back and, although several tests were done, you do not know what is wrong. The orthopaedic surgeon did inform you that you may need to have a back operation later that same day.
- You had involuntary loss of bladder control and the linen had to be changed. You could feel pain of 6-8 severity on a 10 point scale and experienced numbness in your one leg, while still able to move the leg.
- The doctor ordered you to stay in bed and although you found it difficult to move independently, you still succeeded in performing some position changes. You need assistance to move up in bed and can slide down the bed once per scenario.
- At present, you are nil per mouth. Usually, due to your heavy schedule, you do not eat properly. At breakfast you have oats, for lunch only popcorn or Provita® and a cooked meal of protein, starch and vegetables for dinner. You eat one fruit as a snack per day, but do not consume any milk products.
- Additional questions from students could be answered on your own.

3.5.2.2 Information given to nursing students and simulated patients involved in the post-test

The scenario for the post-test differed slightly from that of the pre-test, however, instructions for the first year nursing students remained the same (5.2.1). The nursing students' scenario described a patient who had been in a motor vehicle accident and, due to a patellar dislocation, scheduled for surgery later that afternoon.

Information for the simulated patients was discussed in more detail to give them a proper background history. The following additional information was given:

- You were involved in a motor vehicle accident this morning on your way to work. You were transported to the hospital by ambulance. Your knee (choose any side) was hurt. The patella is dislocated and after a failed attempt by the emergency room doctor to correct it, you are scheduled for theatre. You may complain of muscle pain due to the accident. The registered nurse gave you a pain injection and the pain is subsiding to 6 out of 10 on the pain scale, although it was 8 out of 10 after the doctor manipulated your knee.
- You are a diabetic, diagnosed as a child and currently inject yourself with insulin twice a day. The only complications you have as a result of diabetes, are numb feet.
- You were ordered to stay in bed and need some assistance to move. Keep your leg straight and do not move independently. You maintain your position in bed most of the time, but you may slide down in bed once per scenario and then ask for help.
- At present, you are nil per mouth. Usually, due to your heavy schedule, you do not eat properly. At breakfast you have oats, for lunch only popcorn or Provita® and a cooked meal of protein, starch and vegetables for dinner. You eat one fruit as a snack per day, but do not consume any milk products.

3.6 DATA COLLECTION

Data was collected using a pre-test/post-test research design. The pre-test was used as the baseline regarding the students' ability to apply clinical judgment during an immersive simulation scenario. Thirteen sessions that accommodated six students at a time, were scheduled. Sessions did not exceed 20 minutes per session.

Booking of the simulation facility of six rooms was done well in advance. The facilitators allocated to the first year group, prepared the facility, the students and the simulated patients for the pre-test simulation. Each of the six simulation rooms contained exactly the same equipment, such as paper towels for hand washing, a laminated pain scale at the bedside, a printed immersive simulation scenario and a thermometer for taking temperature. A copy of the Braden Scale (Prevention Plus, 2009: Online) and a patient progress report for documentation of findings, were also available for each student.

The simulated patients were organised for the pre-test and the post-test and were requested to report at the facility on time. For the pre-test, the simulated patients were impersonated by the trained clinical preceptors. One extra simulated patient was available to enable patients to relief one another for tea and lunch between simulation sessions.

During simulation the footage of every student were captured. The necessary equipment for capturing the performance of students digitally, were available in the control room. A facilitator from the simulation facility managed the control room and the capturing of footage. The allocated coordinator received the first year nursing students for preparation of the simulation session and was also available for queries or problems during the simulation. Another facilitator managed the reflection sessions after completion of the simulation sessions. Although reflection is important after every simulation session, this was not included in data collection.

3.6.1 PRE-TEST

Several requirements had to be met by the students to ensure that simulation took place in an authentic environment. All students were required to wear uniform during clinical simulation, including their name tags, pens and an analogue watch. Each student received a specific time to arrive at the simulation facility.

On arrival at the simulation facility, students received the necessary information regarding the clinical simulation. The students were then allocated to their separate simulation rooms where the simulated patients were already waiting. Only the student and simulated patient were present in a room and the footage of each student was recorded from the time they entered the room. Thirteen simulation sessions, to capture the footage of 78 (six students at a time), were scheduled throughout the day.

Students were allowed to ask questions or call if help was needed in the room, for example to move the patient up in bed. On completion of a session (simulated scenario), a student could either choose to stay in the room or wait on a bench outside the room until the time allocated for the session passed. Students were not allowed to talk to one another while they were waiting outside the room.

After completion of the simulated scenario, a facilitator took the students to another venue for reflection and debriefing. Students were asked to reflect on the simulated scenario, including their performance, experience and feelings. The discussion during the debriefing session was not recorded, because it was not an objective that needed to be achieved in this study. However, debriefing is considered as an important part of any simulation experience according to the principles followed by the School of Nursing

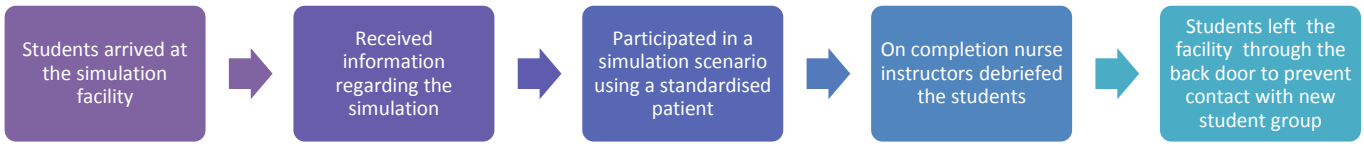


Figure 3.1 Simulation day (pre-test) process

3.6.2 POST-TEST

The requirements and preparation of the students, the preparation of the facility and the simulated patients for the post-test were exactly the same as for the pre-test. The process above was also followed to ensure that all the requirements for authenticity were adhered to (refer Figure 1).

For the post-test, the simulated patients were impersonated by fourth year nursing students from a private nursing college in the city. The nursing students volunteered to act as simulated patients and permission was sought from the private hospital and their nursing instructor who gave permission to participate in the research. The students (actor patients) were briefed about the study before the post-test and objectives of the study were discussed with them.

3.7 INTERVENTION

The intervention refers to the treatment that was given to the experimental group before the data collection for the post-test took place (Bincy, 2013:418). The interventions that were implemented before the pre-test, after the pre-test and before the post-test, were as follows:

3.7.1 STUDENTS

Tanner's Clinical Judgment Model (2006:208) and the application thereof in the clinical setting while rendering patient care, was used as a departure point in the first three months of the students' training. The facilitators allocated to the first year students used different teaching strategies, such as discussions and application of Tanner's Clinical Judgment Model (2006:208) to authentic patient cases, in order to ensure that the students already had the desired theoretical background in this regard. Due to the model and rubric being closely linked, the students were also orientated on how Lasater's Clinical Judgment Rubric (2007:500-501) would be used to assess their clinical judgment. It is a standard procedure in the School of Nursing to prepare students for entry into the clinical setting. In the case of first year students, preparation was done in the first semester through exposure to an immersive simulation scenario during which medium fidelity patient simulators were used to demonstrate and to develop students' clinical skills.

After completion of the pre-test scheduled data collection, all the students were allocated to different clinical areas such as medical, surgical, oncology and/or paediatric units for at least four sessions of twelve hours before the post-test was done. During the time that students spent in the clinical environment, the clinical preceptors rendered cognitive support only to those students that were randomly selected to be part of the experimental group. Tanner's Clinical Judgment Model (2006:208) and Lasater's Clinical Judgment Rubric (2007:500-501) were used to facilitate the cognitive support rendered to the experimental group.

Clinical preceptors had individual discussions with students regarding their performances in the pre-test during the immersive simulation scenarios. Students were given the opportunity to practice the simulation scenario and the clinical preceptor discussed and explained each step of the student's performance according to Tanner's Clinical Judgment

Model (2006:208) and Lasater's Clinical Judgment Rubric (2007:500-501). It is important to note that the students in the experimental group were requested to sign a non-disclosure form not to discuss their cognitive support session with students in the control group.

After completion of the minimum required hours in the clinical setting, the students completed the second simulation scenario, or the post-test, of the study. To ensure that all students eventually received the same treatment, the control group received cognitive support from their respective clinical preceptors after the post-test. This was also done on their performance through footage taken during the pre-test.

3.7.2 CLINICAL PRECEPTORS

Clinical preceptors used in this study were registered nurses enrolled at the University of the Free State for the Postgraduate Qualification in Nursing Education. All registered nurses were informed about the research study in the beginning of the academic year and were requested to participate voluntarily as clinical preceptors. Seven of these registered nurses accepted the invitation to participate. The clinical preceptors were assigned to a group of at least ten students at the beginning of the year and were responsible to render support in the clinical areas (Hughes & Quinn, 2013:201). The preceptors received an additional four hours of training, two weeks before the pre-test, in order to ensure that they were able to apply and facilitate Tanner's Clinical Judgment Model (2006:208) and Lasater's Clinical Judgment Rubric (2007:500-501) correctly.

The facilitator of the clinical preceptors, together with the researcher, viewed the footage of the pre-test in order to coach the clinical preceptors on how to give feedback and what expectations were set for the first year nursing students. Clinical preceptors had time to watch the footage and ask questions regarding the footage, feedback given to first year nursing students and the research study.

The researcher was not present at the feedback sessions for the experimental group as it was part of the intervention planned for the study. The researcher was blinded to which students were in the experimental group and which students were in the control group. The preceptors' facilitator supervised the feedback to the experimental group and supported the clinical preceptors.

3.7.3 MEASUREMENT

All footage that was captured during both pre- and post-tests were assessed according to Lasater's Clinical Judgment Rubric (2007:500-501). A password was needed to view footage and only the researcher and independent second assessor had access to the files.

A score for each dimension (excluding reflection) were calculated. The scores allocated by the researcher and independent second assessor, were calculated and interpreted separately. A mark of 33 – 36 (92 – 100 %) was considered as an indicator of excellent clinical judgment, a mark of 27 – 32 (75 – 89 %) as very good, 22 – 26 (61 – 72 %) as good, 18 – 21 (50 – 58 %) as poor and 21 and less as very poor clinical judgment.

3.8 RANDOMISATION

In the beginning of the academic year, first year baccalaureate nursing students are randomly divided into group A and group B. The group allocation is done to facilitate group activities and to manage clinical placement requirements throughout the year. The same two groups (A and B), were used in this study to represent the experimental and control group.

In order to select the experimental group, the first year nursing coordinator and the clinical coordinator placed an equal number of paper tags, numbered A or B, in a container and then randomly selected a paper tag – the chosen tag was then the experimental group. The other group automatically became the control group. As indicated in chapter 1, ten students (six that was part of the experimental group and four that was part of the control group) were excluded from the study. The experimental group eventually included 31 and the control group 34 students. Students were initially not informed whether they were in the experimental or in the control group. After the pre-test the students in the experimental group were requested to sign a non-disclosure form.

The researcher was blinded to randomisation and was only informed which group was selected as the experimental and which group as the control group after data collection and analysis of footage were completed.

3.9 PILOT STUDY

Existing footage of eight (10 %) third year baccalaureate nursing students, taken in 2014, were used to assess their application of clinical judgment during an immersive simulation session by means of Lasater's Clinical Judgment Rubric (2007:500-501). This group was chosen for the pilot study as it replicated the circumstances for the simulation that was planned for the first year nursing students. The third year nursing students also completed an immersive simulation session with a simulated patient in an authentic teaching and learning environment. It is a standard procedure at the School of Nursing to obtain informed consent to use footage for research purposes from all students who participate in immersive simulation sessions.

The researcher and an independent second assessor, with a master's degree in nursing and experience in immersive simulation, tested Lasater's Clinical Judgment Rubric (2007:500-501) on footage obtained from the third year nursing students.

Footage and documentation on the simulation scenario were provided by the facilitators for third year students. Certain actions were expected from third year students during the simulation sessions and a check-list was compiled by the researcher to indicate what students did or omitted. After watching the footage of one student, the researcher and independent second assessor discussed each dimension on Lasater's Clinical Judgment Rubric (2007:500-501) according to performance. This process were repeated for all eight students and both assessors agreed that Lasater's Clinical Judgment Rubric (2007:500-501) was suitable in data assessment of this study.

3.10 RELIABILITY AND VALIDITY

Reliability refers to the consistency with which an instrument measures what it is supposed to measure (Burns & Grove, 2007:552) and can be assessed in different ways. The three major components of reliability include, stability, internal consistency and equivalence (Polit & Beck, 2012:331). Due to time restraints and manpower, a test-retest evaluation could not be done to assess stability of the instrument used in this study. The researcher and independent second assessor alternatively applied the equivalence component in accord to the scoring of the instrument when observing footage of nursing students.

Validity is the degree to which an instrument measures what it is supposed to measure (Botma *et al.* 2010:117). If an instrument is reliable it does not follow that it will be valid as well, therefore proof of instrument validity is essential to make it more reliable (Polit & Beck, 2012:336). The different measures of supporting validity include, face validity, content validity, criterion-related validity and construct validity.

Lasater's Clinical Judgment Rubric (2007:500-501) was pilot tested in simulation after the development thereof. Although no detailed discussion of the pilot study is given, the use of Lasater's Rubric (2007:502) received positive feedback from faculty and students where it was developed. For this study, the rubric was tested for relevance of application when assessing clinical judgment through the use of footage. A biostatistician from the department of Biostatistics was consulted on the use and format of the rubric before the pilot study took place.

3.11 DATA ANALYSIS

Numerical variables were summarised by means, standard deviations or medians and percentiles. Categorical variables were summarised by frequencies and percentages. Differences between groups were evaluated using statistical tests and confidence intervals for unpaired data.

3.12 ETHICAL CONSIDERATIONS

Due to the ethical dilemmas related to research on humans, including, but not limited to, the Nazi medical experiments in the 1930's, codes of ethical research became mandatory and, as a result, had been developed. Codes of ethics, such as the Nuremberg Code and the Declaration of Helsinki were internationally adopted (Polit & Beck, 2003:143).

Care was taken to follow the ethical principles applicable to this study, for example, informed consent, the right to withdraw from the study at any time, freedom from harm, fair treatment and freedom from exploitation.

There were no risk to the students either in person or from an academic perspective and students were given the contact number of the researcher as well as a contact number of

the ethical committee. This is standard procedure for all research undertaken at the university.

In this study, anonymity were not possible due to the use of footage, however, confidentiality procedures were put in place and no participant's information was divulged in the findings of this study. Only the researcher had access to the participant's information. The independent second assessor worked with student numbers to analyse the footage and the facilitator, who recorded the footage, had no information about the students.

Permission to conduct this study was obtained from the Vice-Rector of Teaching and Learning, the Dean of Health Sciences and the Head of the School of Nursing. After submission, the study was approved by the Ethics Committee of the Faculty of Health Sciences and an ethics number was issued for all relevant correspondence.

3.13 VALUE OF THE STUDY

The value of the study, as described in Chapter 1, did not change. However, the coordinator for first year students was positive about the added simulation session decided on for these students. Several nursing students asked for a third simulation session after completion of the second session. Although not documented, verbal feedback from faculty and students was positive.

Clinical preceptors participating in this study found the integration with nursing students beneficial as their postgraduate qualification focused on nursing education. All preceptors verbalised that valuable experiences were obtained through contact with students in simulation as well as during the feedback sessions.

3.15 SUMMARY

Care was taken to conduct the study according to the process and methodology described in Chapter 1. All the students in the first year group were eventually given the same privileges. The control group received the same feedback from the preceptors as the experimental group. A session were organised for the control group, in the presence of the preceptors' facilitator, to make sure all students had equal opportunity to learn and benefit from this research study.

This study added knowledge and skills for the students participating because opportunities were not additional or unrelated to the curriculum. As such, the entire group of first year nursing students were included in every step of the study. However, data analysis included only those students who gave consent to take part in this study.

In Chapter 4, the researcher strived to provide a comprehensive overview of the results. Demographic data of the population, including gender, age, race and language is demonstrated. The results of the study were divided into the pre-test and post-test results, followed by a comparison between the pre- and post-test. Results of the researcher is discussed, followed by the results of the independent second assessor.

CHAPTER 4
RESULTS AND DATA ANALYSIS

4.1 INTRODUCTION

The aim of this study was to compare the clinical judgment of first year baccalaureate nursing students that received cognitive support from a clinical preceptor during immersive simulation with those who were not supported during immersive simulation. The description of results in Chapter 4 is to prove that the aim and the objectives (1) to describe first year students' application of clinical judgment during an immersive simulation session, and (2) to compare their application of clinical judgment, have been met in this study. Furthermore, to provide proof that the process described in Chapter 3 provided valid and reliable results

First year nursing students' applications of clinical judgment during immersive simulation sessions, as collected from a control group and experimental group during a pre-test/post-test design, are described.

4.2 LAYOUT

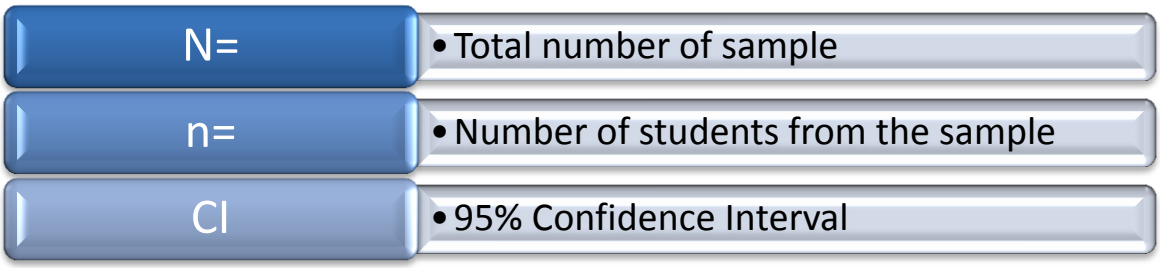
The statistical analysis and the characters (refer Table 4.1) used will be described and demographic data from the respondents will be highlighted. Thereafter, the data collected by the researcher and the independent second assessor will be described separately in the following sequence.

- Pre-test results
- Post-test results
- Comparison of pre-test/post-test results
- The Clinical Judgment Rubric results of students on the dimensions for the pre- test and post-test

4.3 DESCRIPTION OF THE STATISTICAL ANALYSIS USED TO INTERPRET THE RESULTS

Nominal measurement was used for demographic data and numerical variables were summarised by means, standard deviations and percentiles. Categorical variables were summarised by frequencies and percentages. Differences between the control group and the experimental group were assessed using a 95% Confidence Interval for median difference in the pre-test and post-test of both the control and the experimental group (Polit & Beck, 2012:407).

Table 4.1 Characters used during interpretation and description of results



4.4 DEMOGRAPHIC DATA

The demographic data of the study includes a description of the population with regard to gender, age, race and language of both the experimental group and the control group.

4.4.1 DESCRIPTION OF THE POPULATION

The first year nursing students consisted of 83 students. This study was complimentary to the first year nursing curriculum and excluding students would have deprived them of obtaining valuable information and clinical practice. Although all first year students participated in every step of the study, data analysis only included those students who signed consent to participate in the study. Ten students (six students in the experimental group and four students in the control group) did not give consent for data to be used and five students repeated their first year of study, thus a total of only 65 first year nursing students' data were included for data analysis. Data from thirty-one students from the experimental group and that of thirty-four students from the control group were used.

4.4.2 GENDER IN THE EXPERIMENTAL AND CONTROL GROUPS

Sixty-five students' data were included, of which 91% were female (n=59) and 9% (n=6) were male (refer Table 4.2). Several resources indicate that the small numbers of male nurses are probably due to the traditional perception of nursing being a female profession (McDonald, 2012:575; da Silva, 2012:183; Brown, 2009:126; Roth & Coleman, 2008:151).

Table 4.2 Demographic data of first year nursing students – gender

DEMOGRAPHICS	EXPERIMENTAL GROUP		CONTROL GROUP	
	Total (N=31)	%	Total (N=34)	%
Gender				
Male	1	3.2%	5	14.7%
Female	30	96.8%	29	85.3%

Demographic data from clinical judgment studies are not available, although the general percentage of men in the nursing profession is believed to be between 5 – 10% in the United Kingdom, United States of America and Canada (Mullan & Harrison, 2008:527).

No literature was found to indicate that differences in gender could influence results.

4.4.3 AGES OF STUDENTS IN EXPERIMENTAL AND CONTROL GROUPS

In South Africa, most tertiary education in South Africa is commenced directly after the completion of secondary school; therefore students' ages vary mostly between 18 – 19 years in their first year of study (refer Table 4.3).

Table 4.3 Demographic data of first year nursing students – age

DEMOGRAPHICS	EXPERIMENTAL GROUP		CONTROL GROUP	
	Total (N=31)	%	Total (N=34)	%
Age				
18	6	19.4	4	11.8
19	19	61.3	17	50
20	3	9.7	10	29.5
21	1	3.2	1	2.9
22	1	3.2	1	2.9
23	1	3.2	1	2.9

Almost 81% (80.7 %:n=25) of students in the experimental group was between 18 – 19 years old. In the control group 61.8% (n=21) of the students belonged to this age category. In total 71.3% (n=46) of students were between the ages of 18 and 19 years. Regarding the other age groups, 19.6% (n=13) of students were already 20 years old and a small percentage of 9.1% (n=6) were between the ages of 21 – 23 years.

Several studies indicated research on second- or third year undergraduate students (Mariani, Cantrell, Meakim, Prieto & Dreifuerst, 2013:150; Gerdeman, Lux & Jacko, 2013:13; Yang, Thompson & Bland, 2012:1507; Lasater, 2007a:271) but none indicate the age range of students who participated in clinical judgment studies.

4.4.4 RACE DISTRIBUTION EXPERIMENTAL AND CONTROL GROUP

The majority of students (refer Table 4.4) in the experimental group (51/6%:n=16) and in the control group (50%:n=17) were white. Black students, the second highest amount, were represented as follows; experimental group (48.4%:n=15) and control group (47.1%:n=16). Only 1 (2.9%) coloured student in the control group, but no Indian/Asian student, was included. In total, 33 (50.8%) of the students were white, and 31 (47.7%) black.

Table 4.4 Demographic data of first year nursing students – race

DEMOGRAPHICS	EXPERIMENTAL GROUP		CONTROL GROUP	
	Total (N=31)	%	Total (N=34)	%
Race				
Black	15	48.4	16	47.1
Coloured	0	0	1	2.9
White	16	51.6	17	50

South Africa is a multi-ethnical country represented by many different cultures, including black (79.2%), white ($^{+}/_{-}$9%), coloured ($^{+}/_{-}$9%) and Indian/Asian populations (2,5%) (Government of South Africa: Online). The 2012 strategic plan of the University (2012:6) indicated a student population of 63% black, 30% white, 5% coloured and 2% Indian.

Some population groups tend to accumulated in certain regions (Media Club South Africa: Online). The University is located in the Free State Province where the majority students (64.4%) speak Sesotho. This group was represented by three ethnic groups (refer Table 4.4) and seven different cultures (refer Table 4.5).

4.4.5 LANGUAGE DISTRIBUTION EXPERIMENTAL AND CONTROL GROUP

South Africa has 11 official languages, including Afrikaans (13.5%), English (9.6%), isiNdebele (2.1%), isiXhosa (16%), isiZulu (22.7%), Sesotho sa Leboa (9.1%), Sesotho (7.6%), Setswana (8%), siSwati (2.5%), Tsivenda (2,4%) and Xitsonga (4.5%). Unofficial languages (0.5%) acknowledged by the government includes Fanagalo, Khoe, Nama, Northern Ndebele, Phuthi, San, Khoi and South African Sign Language (Government of South Africa: Online).

Table 4.5 Demographic data of first year nursing students – language

DEMOGRAPHICS	EXPERIMENTAL GROUP		CONTROL GROUP	
	Total (N=31)	%	Total (N=34)	%
Language				
Afrikaans	16	51.6	13	38.2
English	1	3.2	4	11.8
Sesotho	8	25.8	11	32.3
Xhosa	0	0	2	5.9
Zulu	3	9.7	2	5.9
Sepedi	1	3.2	0	0
Setswana	2	6.5	2	5.9

The languages listed in Table 4.5 indicate the students' first language or preferred language. In both the experimental (51.6%:n=16) and control group (38.2%:n=13) the majority of students were Afrikaans speaking, in total 29 (44.6%). One student (3.2%) in the experimental group and four (11.8%) students in the control group, in total (7.6%:n=5), stated that English is their first language. Nineteen students (29.2%) preferred Sesotho – eight (25.8%) students in the experimental group and eleven (32.3%) in the control group. Two students (5.9%) in the control group spoke Xhosa, five (7.6%: three in the experimental and two in the control group) spoke Zulu. One student (3.2%) in the experimental group spoke Sepedi and a total of four (6.1%: two in the experimental- and two in the control group) spoke Setswana.

Currently the language policy of the University of the Free State supports parallel medium instruction in Afrikaans and in English. The University explore the possibilities of developing Sesotho as a tuition language in, for example, self-study assignments, tutorials and extracurricular engagements (UFS Strategic Plan, 2012:36-37).

The 2014 calendar/yearbook of the School of Nursing, where this study was conducted, states that students, who want to apply for the undergraduate nursing programme,

language skills (Afrikaans or English) must be at a level four (50-59%) (UFS SoN Calendar/Yearbook, 2014:5). Therefore, the 65 (100%) students who participated in this study, were believed to be proficient in English.

Prospective students, who want to study at the University of the Free State, have a choice of studying in Afrikaans or in English. The Afrikaans class consisted of 36.9% (n=24) students and the English class of 63.1% (n=41) students. From the Afrikaans group 50% (n=12) were in the experimental group and 50% (n=12) in the control group whereas 46.3% (n=19) of the English class were in the experimental group and 53.7% (n=22) in the control group.

In general 21.5% (n=14) students spoke only English, 58.5% (n=38) of students spoke English and another language, 13.8% (n=9) spoke three languages and 6.2% (n=4) could speak four languages.

4.5 RESULTS

The researcher and the independent second assessor evaluated the footage of 65 students in the control- and experimental groups, obtained during two immersive simulation sessions that lasted twenty minutes per student. Lasater's Clinical Judgment Rubric (2007:500-501) was used as the assessment instrument. A column, to enable the assessors to code the results of each student, was added to this rubric (Lasater, 2007:500).

4.5.1 RESULTS ACCORDING TO THE RESEARCHER

In this section the results of the researcher, as allocated and calculated according to the Clinical Judgment Rubric (Lasater, 2007:500-501) will be described. Firstly, the pre-test results of the control and experimental group will be described (refer Objective 1), followed by the post-test results and thereafter the pre-test/post-test comparison (refer Objective 2) and results per question according to Lasater's Clinical Judgment Rubric (2007:500-501).

Student scores were calculated from a total of 36, where a score of 20 and below is seen as very poor, 18 – 21 as poor, 22 – 26 is good, 27 – 32 is very good and 33 – 36 is excellent.

4.5.1.1 Pre-test

A scenario indicating that the patient was involved in a motor vehicle accident resulting in a back injury, was used to assess the students' clinical judgment in the pre-test.

None of the students in either the experimental or control group (refer Table 4.6) were rated excellent or very good in the pre-test. Six students (19.3%) in the experimental group were rated as good, two (6.5%) as poor and the majority (74.2%:n=23) as very poor. In total, 25 (80.7%) of the students' clinical judgment were considered as poor to very poor.

The results of the control group showed that four students (11.8%) scored a good mark on clinical judgment. Six students (17.6%) did poorly and even more students, 24 (70.6%), rated very poor. Thirty (88.2%) of the students in this group showed poor to very poor clinical judgment.

Table 4.6 Pre-test results of researcher

Developmental Category		EXPERIMENTAL GROUP		CONTROL GROUP	
		Total (N=31)	%	Total (N=34)	%
Excellent	**33-36**	0	0	0	0
Very good	**27-32**	0	0	0	0
Good	**22-26**	6	19.3	4	11.8
Poor	**18-21**	2	6.5	6	17.6
Very poor	**≤20**	23	74.2	24	70.6

4.5.1.2 Post-test

The scenario used in the post-test was also about a patient who was involved in a motor vehicle accident, but with a patellar dislocation.

Five categories, namely excellent, very good, good, poor and very poor were again used to indicate students' performance on clinical judgment. The results differed from that of the pre-test because in this test some students were also rated in the excellent or very good category (refer Table 4.7). In the experimental group seven (22.6%) students rated excellent, eleven (35.5%) very good, four (12.9%) good, six (19.3%) poor and three (9.7%) very poor. The majority (71%:n=22) showed good to excellent clinical judgement, as opposed to nine (29%) who were still rated poor to very poor. Most students' (35.5%:n=11) clinical judgment was considered to be very good.

The distribution of students in the control group did show an improvement. Five (14.7%) scored an excellent mark, nine (26.5%) a very good mark, and ten (29.4%) a good mark. Some students' (20.6%:n=7) performance was poor and three (8.8%) very poor. Twenty-four (70.6%) students were rated in the upper categories, namely good, very good and excellent. Less students (29.4%:n=10) fell in the poor and very poor category.

Results were more evenly spread over the five categories in the post-test. In the experimental group 87.1 % (n=27) students improved their scores by one or more mark, whereas in the control group 82.3% (n=28) students improved their scores by one or more marks. In the experimental group eighteen (58.1%) students performed above the median point. Less students (41.1%:n=14) performed above the median point in the control group.

Table 4.7 Post-test results of researcher

Developmental Category		EXPERIMENTAL GROUP		CONTROL GROUP	
		Total (N=31)	%	Total (N=34)	%
Excellent	**33-36**	7	22.6	5	14.7
Very good	**27-32**	11	35.5	9	26.5
Good	**22-26**	4	12.9	10	29.4
Poor	**18-21**	6	19.3	7	20.6
Very poor	**≤20**	3	9.7	3	8.8

4.5.1.3 Pre/Post-test comparison

Both the experimental group and the control group improved in the post-test (refer Table 4.8). In the experimental group six (19.3%) students were rated as good during the pre-test and four (11.8%) in the control group as opposed to none in the higher categories. However, in the post-test twenty-two (71%) students of the experimental group and twenty-two (70.6%) students in the control group were rated good to excellent. Even though students in both groups rated above 70% in the good to excellent categories, students in the experimental group had a higher rating in the very good and excellent categories of the post test. Eleven (35.5%) students in the experimental group rated in the very good category against the nine (26.5%) students in the control group. Seven (22.6%) students from the experimental group scored in the excellent category and five (14.7%) in the control group. Therefore, in the experimental group 58.1% (n=18) students scored between very good and excellent against the 41.2% (n=14) of the control group, in the post-test.

Table 4.8 Pre/Post-test comparison of researcher

Developmental Category		Experimental Group				Control Group			
		Pre-test		Post-test		Pre-test		Post-test	
		N=31	%	N=31	%	N=34	%	N=34	%
Excellent	**33-36**	0	0	7	22.6	0	0	5	14.7
Very good	**27-32**	0	0	11	35.5	0	0	9	26.5
Good	**22-26**	6	19.3	4	12.9	4	11.8	10	29.4
Poor	**18-21**	2	6.5	6	19.3	6	17.6	7	20.6
Very poor	**≤20**	23	74.2	3	9.7	24	70.6	3	8.8

The 95% Confidence Interval for median difference shows statistical significant difference between the pre-test and post-test of both the experimental group [7;17] and the control group [6;12].

4.5.1.4 Results per question from the researcher

Application of clinical judgment according to Lasater's Clinical Judgment Rubric (2007:500-501) was observed in the allocation of marks per dimension in each phase. Scoring was done on a Likert scale with four developmental levels, including exemplary (4 marks), accomplished (3 marks), developing (2 marks) and beginning (1 mark). Each dimension is divided into the marks allocated per developmental level, followed by the number of students that obtained a mark in that level.

4.5.1.4.1 Pre-test

In the first two dimensions of effective noticing (refer Table 4.9), no student in either the experimental group or the control group achieved an exemplary mark. Only in the last dimension of information seeking, one (3.2%) student in the experimental group and one (3%) student in the control group was rated as exemplary.

In the experimental group the majority of students scored either in the developing or beginning level. For the focused observation dimension, nineteen (61.3%) students were rated as developing and ten (32.3%) as beginning, giving a total of 93.6% (n=29) scoring on the lower half of the scale. Two (6.4%) students were scored as being accomplished. Almost all students (96.8%:n=30) scored in the lower categories of the second dimension, recognising deviations from expected patterns. Eight (25.8%) students were rated as developing and twenty-two (71%) students as beginning, with only one (3.2%) student being found accomplished. Students performed better in the dimension of information seeking. Eight (25.8%) students were scored accomplished and one (3.2%) as exemplary, a total of 29% in the upper levels. Twenty-two point six percent (n=7) were rated on the beginning level and 48.4% (n=15) as being developing.

The scores of the control group (refer Table 4.9) were similar to the experimental group with the majority of students scoring in the lower levels. Thirty (88.2%) students were rated as developing in the first dimension of focused observation. In the second dimension, recognising deviations from expected patterns, 58.5% (n=20) were rated as beginning and 41.2% (n=14) as developing, with no student rated on the accomplished or exemplary level. In the dimension of information seeking, all four developmental levels

were included, namely beginning (8.8%:n=3), developing (50%:n=17), accomplished (38.2%:n=13) and exemplary (3%:n=1).

Table 4.9 Pre-test: Application of clinical judgment according to Lasater's Clinical Judgment Rubric (2007:500-501) – effective noticing phase

Dimensions		EXPERIMENTAL GROUP N=31		CONTROL GROUP N=34		CI for median difference between groups
Topic	**Level**	**Total**	**%**	**Total**	**%**	**CI**
Effective noticing						
Focused observation	**1**	10	32.3	3	8.8	[0;0]
	2	19	61.3	30	88.2	
	3	2	6.4	1	3	
	4	0	0	0	0	
Recognising deviations from expected patterns	**1**	22	71	20	58.8	[0;0]
	2	8	25.8	14	41.2	
	3	1	3.2	0	0	
	4	0	0	0	0	
Information seeking	**1**	7	22.6	3	8.8	[0;-1]
	2	15	48.4	17	50	
	3	8	25.8	13	38.2	
	4	1	3.2	1	3	

In the next phase (refer Table 4.10), effective interpreting, similar scoring were achieved as in the first phase of effective noticing. Students from the experimental group and control group mostly scored in the lower half of the developmental levels, namely developing and beginning. In the experimental group, twenty-nine (93.5%) students in the first dimension and thirty (96.8%) in the second dimension, were rated as beginning to developing and in the control group thirty-one (91.2%) in the first dimension and thirty-three (97%) in the second dimension.

With the prioritisation of data in the pre-test, 77.4% (n=24) students in the experimental group were rated on the beginning level and 16.1% (n=5) as developing. Two (6.5%) were found to be accomplished. In the dimension, making sense of data, students scored 74.2% (n=23) as beginning and 22.6% (n=7) as developing. Only one (3.2%) student was rated in the upper level of development as accomplished.

In the control group the majority of students – in the phase of effective interpreting – were rated as beginning, with 55.9% (n=19) in the first dimension, prioritising data, and 88.2% (n=30) in the second dimension, making sense of data. Three (8.8%) students were found to be accomplished in the first dimension and only one (3%) student in the second dimension, giving a total of four (11.8%) students in the upper developmental levels.

Table 4.10 Pre-test: Application of clinical judgment according to Lasater's Clinical Judgment Rubric (2007:500-501) – effective interpreting phase

Dimensions		EXPERIMENTAL GROUP N=31		CONTROL GROUP N=34		CI for median difference between groups
Topic	**Level**	**Total**	**%**	**Total**	**%**	**CI**
Effective interpreting						
Prioritising data	**1**	24	77.4	19	55.9	[0;0]
	2	5	16.1	12	35.3	
	3	2	6.5	3	8.8	
	4	0	0	0	0	
Making sense of data	**1**	23	74.2	30	88.2	[0;0]
	2	7	22.6	3	8.8	
	3	1	3.2	1	3	
	4	0	0	0	0	

In the last phase, effective responding (refer Table 4.11), slightly more students were rated in the upper levels of development as opposed to the lower levels. In the first dimension of the experimental group, four (12.9%) students were rated as beginning, nineteen (61.3%) as developing, seven (22.6%) as accomplished and one (3.2%) student as exemplary. In the dimension for clear communication, three (9.7%) students were rated as beginning, eighteen (58.1%) as developing, eight (25.8%) as accomplished and two (6.4%) students as exemplary. However, in dimension three, well-planned intervention/flexibility, all students were scored as either beginning or developing and no student was found accomplished or exemplary The majority of students (83.9%:n=26) were rated as beginning and the remainder of the group (16.1%:n=5) as developing. In the last dimension – being skilful – only three (9.7%) students were rated as beginning, with the majority in the developing (64.5%:n=20) and accomplished (25.8%:n=8) developmental levels.

In the control group of the effective responding phase (refer Table 4.11) the majority of students were rated in the lower levels of development. In the dimension of calm, confident manner, two (5.9%) students were on the beginning level, twenty two (64.7%) were rated as developing, eight (23.5%) as accomplished and two (5.9%) as exemplary. Similar scores followed in the next dimension, clear communication, with one (3%) student as a beginner, twenty-one (61.7%) as developing, eleven (32.3%) as accomplished and one (3%) student rated as exemplary. The third dimension, well-planned intervention, again shows the largest group of students on the beginning level (85.3%:n=29) and the remaining three (8.8%) as developing and two (5.9%) as accomplished. However, in the last dimension – being skilful – no student was rated as beginning but rather as developing (55.8%:n=19) and accomplished (41.2%:14), with one (3%) student rated as exemplary.

Table 4.11 Pre-test: Application of clinical judgment according to Lasater's Clinical Judgment Rubric (2007:500-501) – effective responding phase

Dimensions		EXPERIMENTAL GROUP N=31		CONTROL GROUP N=34		CI for median difference between groups
Topic	**Level**	**Total**	**%**	**Total**	**%**	**CI**
Effective responding						
Calm, confident manner	**1**	4	12.9	2	5.9	[0;0]
	2	19	61.3	22	64.7	
	3	7	22.6	8	23.5	
	4	1	3.2	2	5.9	
Clear communication	**1**	3	9.7	1	3	[0;0]
	2	18	58.1	21	61.7	
	3	8	25.8	11	32.3	
	4	2	6.4	1	3	
Well-planned intervention / flexibility	**1**	26	83.9	29	85.3	[0;0]
	2	5	16.1	3	8.8	
	3	0	0	2	5.9	
	4	0	0	0	0	
Being skilful	**1**	3	9.7	0	0	[0;-1]
	2	20	64.5	19	55.8	
	3	8	25.8	14	41.2	
	4	0	0	1	3	

Student's developmental levels according to Lasater (2007:500), can be compared with the first four acquisition and developmental levels described by Benner (1982:402) – based on the Dreyfus Model of skill acquisition (Dreyfus & Dreyfus, 1980:15) – namely novice (beginning), advanced beginner (developing), competent (accomplished) and proficient (exemplary). Benner's (2004:189) research of more than 21 years state that

good clinical judgment lies in experiential learning which can be accomplished through the developmental levels of the Dreyfus model of skil acquisition (1980:15).

The total 95% Confidence Interval for median difference between unpaired groups were [0;-3] for the total CI of all dimensions in the pre-test. There is no statistical significant differences between the pre-tests of the experiimental group and the control group. Both groups started on the same level of knowlege

4.5.1.4.2 Post-test

In the post-test students almost reversed their scores, with the majority of students rating in the upper developmental levels of accomplished to exemplary. In the experimental group (refer Table 4.12) fourteen (45.2%) were rated as accomplished and nine (29%) as exemplary, a total of 74.2% (n=23) in the dimension for focused observation. Only one (3.2%) was rated as beginning and seven (22.6%) as developing. In the second dimension, fourteen (45.2%) students were rated as accomplished and seven (22.5%) as exemplary, giving a total of 67.7% (n=21) in the upper developmental levels. Two (6.5%) were rated as beginning and eight (25.8%) as developing. In the dimension of information seeking, fourteen (45.2%) were rated accomplished and fourteen (45.2%) as exemplary, giving a total of 90.4% (n=28). Only three (9.6%) students were rated in the lower developmental levels with one (3.2%) as beginning and two (6.4%) as developing.

Similarly, scores in the control group (refer Table 4.12) were mostly in the upper levels of accomplished to exemplary. In the first dimension, focused observation, no student was rated as beginning. Nine (26.5%) were rated as developing, sixteen (47%) as accomplished and nine (26.5%) as exemplary, giving a total of 73.5% (n=25) in the upper developmental levels. In the second dimension, the group was almost divided in half with three (8.8%) students as beginning and fifteen (44.1%) as developing, giving a total of 52.9% (n=18) in the lower developmental levels. The rest of the group were rated as accomplished (35.3%:n=12) and exemplary (11.8%:n=4), bringing the total of students in the upper developmental levels to 47.1% (n=16). In the third dimension, information seeking, again no student was rated as beginning and only five (14.7%) students were rated developing and therefore the total of students in the lower developmental levels. The majority of students were rated in the upper developmental levels of the third

dimension, including 47% (n=16) rated as accomplished and 38.3% (n=13) as exemplary – a total of 85.3% (n=29).

Table 4.12 Post-test: Application of clinical judgment according to Lasater's Clinical Judgment Rubric (2007:500-501) – effective noticing phase

Dimensions		EXPERIMENTAL GROUP N=31		CONTROL GROUP N=34		CI for median difference between groups
Topic	**Level**	**Total**	**%**	**Total**	**%**	**CI**
Effective noticing						
Focused observation	**1**	1	3.2	0	0	[0;0]
	2	7	22.6	9	26.5	
	3	14	45.2	16	47	
	4	9	29	9	26.5	
Recognising deviations from expected patterns	**1**	2	6.5	3	8.8	[1;0]
	2	8	25.8	15	44.1	
	3	14	45.2	12	35.3	
	4	7	22.5	4	11.8	
Information seeking	**1**	1	3.2	0	0	[0;0]
	2	2	6.4	5	14.7	
	3	14	45.2	16	47	
	4	14	45.2	13	38.3	

In the next phase, effective interpreting (refer Table 4.13), scores were more evenly distributed between the developmental levels in both the experimental and control groups. In dimension of prioritising data, four (12.9%) students were rated as beginning, and the remainder of the group were more or less evenly rated in the other three developmental levels; developing (25.8%:n=8), accomplished (32.3%:n=10) and exemplary (29%:n=9). In the next dimension, making sense of data, similar results were obtained in the first three developmental levels with eight (25.8%) students rated as beginning, seven (22.6%) as

developing and eleven (35.5%) as accomplished. The smallest amount of students were rated as exemplary (16.1%:n=5) in this dimension.

In the control group similar results were found where five (14.7%) students were rated as beginning in the first dimension of prioritising data and the remainder of students were rated as developing (29.4%:n=10), accomplished (35.3%:n=12) and exemplary (20.6%:n=7). Again, as in the experimental group, most students were rated on the first three developmental levels of the second dimension, making sense of data. Eight (23.5%) students were rated as beginning, eleven (32.4%) as developing and twelve (35.3%) as accomplished. Only three (8.8%) students were rated as being exemplary.

Table 4.13 Post-test: Application of clinical judgment according to Lasater's Clinical Judgment Rubric (2007:500-501) – effective interpreting phase

Dimensions		EXPERIMENTAL GROUP N=31		CONTROL GROUP N=34		CI for median difference between groups
Topic	**Level**	**Total**	**%**	**Total**	**%**	**CI**
Effective interpreting						
Prioritising data	**1**	4	12.9	5	14.7	[1;0]
	2	8	25.8	10	29.4	
	3	10	32.3	12	35.3	
	4	9	29	7	20.6	
Making sense of data	**1**	8	25.8	8	23.5	[1;0]
	2	7	22.6	11	32.4	
	3	11	35.5	12	35.3	
	4	5	16.1	3	8.8	

In the phase of effective responding (refer Table 4.14) a total of twenty-seven (87.1%) students of the experimental group were rated on the upper developmental levels of the first dimension, with thirteen (41.9%) as accomplished and fourteen (45.2%) as exemplary. Only four (12.9%) students were rated as developing and none as beginning. In the

dimension for clear communication, results were very similar where, students were rated as exemplary (41.9%:n=13), accomplished (48.4%:n=15) or developing (9.7%:n=3). Again, no student was rated as beginning. In the third dimension – well-planned intervention – students seemed to struggle most, where 35.5% (n=11) students were rated as beginning, 16.1% (n=5) as developing, 29% (n=9) as accomplished and 19.4% (n=6) as exemplary. This counted up to a total of 51.6 % (n=16) students on the lower developmental levels. In the last dimension, being skilful, students again scored as they did in the first two dimensions. No student was rated as beginning and only four (12.9%) as developing. The majority of students (87.1%:n=27) were rated on the upper developmental levels, being twenty-one (67.7%) as accomplished and six (19.4%) as exemplary. In the first three dimensions of the effective responding phase, more students from the experimental group than in the control group were rated as exemplary.

In the first dimension – calm, confident manner – the control group had no student rated as beginning and only three (8.8%) as developing. The majority (91.2%:n=31) students were rated as accomplished (52.9%:n=18) and exemplary (38.3%:n=13). Similarly, in the next dimension – clear communication – only four (11.8%) students were rated as developing and none as beginning. Twenty (58.8%) were found accomplished and ten (29.4%) as exemplary, giving a total of 88.2% (n=30) rated on the upper developmental levels. However, students in the control group also struggled in the dimension of well-planned intervention. The majority (70.6%:n=24) of students were rated on the lower developmental levels with half of the amount of students (35.3%:n=12) as beginning and half (35.3%:n=12) as developing. Ten (29.4%) students were rated in the upper developmental levels with six (17.6%) as accomplished and four (11.8%) as exemplary. In the last dimension – being skilful – students performed the same as in the first two dimensions with no student rated as beginning and only five (14.7%) as developing. The majority of students (64.7%:n=22) were rated as accomplished and 20.6% (n=7) as exemplary.

Table 4.14 Post-test: Application of clinical judgment according to Lasater's Clinical Judgment Rubric (2007:500-501) – effective responding phase

Dimensions		EXPERIMENTAL GROUP N=31		CONTROL GROUP N=34		CI for median difference between groups
Topic	**Level**	**Total**	**%**	**Total**	**%**	**CI**
Effective responding						
Calm, confident manner	**1**	0	0	0	0	[0;0]
	2	4	12.9	3	8.8	
	3	13	41.9	18	52.9	
	4	14	45.2	13	38.3	
Clear communication	**1**	0	0	0	0	[0;0]
	2	3	9.7	4	11.8	
	3	15	48.4	20	58.8	
	4	13	41.9	10	29.4	
Well-planned intervention / flexibility	**1**	11	35.5	12	35.3	[1;0]
	2	5	16.1	12	35.3	
	3	9	29	6	17.6	
	4	6	19.4	4	11.8	
Being skilful	**1**	0	0	0	0	[0;0]
	2	4	12.9	5	14.7	
	3	21	67.7	22	64.7	
	4	6	19.4	7	20.6	

The total 95% Confidence Interval for median difference between unpaired groups were [5;-2] for the total CI of all dimensions in the post-test. The Confidence Interval shows no statistical significant difference between the two groups in the post-test.

4.5.2 RESULTS FROM THE INDEPENDENT SECOND ASSESSOR

In this section the results of the independent second assessor, as allocated and calculated according to the Clinical Judgment Rubric (Lasater, 2007:500-501), will be described. Firstly, the pre-test results of the control- and experimental group will be described (refer Objective 1), followed by the post-test results and thereafter the pre-test/post-test comparison (refer Objective 2) and results per question according to Lasater's Clinical Judgment Rubric (2007:500-501).

4.5.2.1 Pre-test

A scenario about a motorvehicle accident in which a patient attained a back injury, was used in the pre-test to assess students' clinical judgment.

In the experimental group (refer Table 4.15) only one (3.2%) student was rated as excellent, three (9.7%) as good and three (9.7%) as poor in the pre-test. The majority of students (77.4%:n=24) in the experimental group was rated as very poor in the pre-test. In total 87.1% (n=27) students' clinical judgment was considered as poor to very poor.

The results of the control group in the pre-test (refer Table 4.15) showed no marks in either the very good or excellent categories. Four (11.8%) students were rated as good and eight (23.5%) as poor. Most students in the control group (64.7%:n=22) were rated as very poor in the pre-test. In total, 88.2% (n=30) students showed poor to very poor clinical judgment.

Table 4.15 Pre-test results of independent second assessor

Developmental Category		EXPERIMENTAL GROUP		CONTROL GROUP	
		Total (N=31)	%	Total (N=34)	%
Excellent	**33-36**	1	3.2	0	0
Very good	**27-32**	0	0	0	0
Good	**22-26**	3	9.7	4	11.8
Poor	**18-21**	3	9.7	8	23.5
Very poor	**≤20**	24	77.4	22	64.7

4.5.2.2 Post-test

In the post-test a scenario was again formulated for a patient in a motor vehicle accident, but this time the patient attained a patellar dislocation.

In the experimental (refer Table 4.16) group 71% (n=22) students were rated as good to excellent in the post-test. Two (6.5%) students were rated as excellent, eleven (34.9%) as very good and nine (29.6%) as good. Seven (22.6%) students were rated poor and two (6.4%) students as very poor. In total, 29% (n=9) of students in the experimental group, were rated poor to very poor. These results were different from those in the pre-test of which the majority of students (34.9%:n=11) were rated as good in the post-test as opposed to no students in the pre-test. Also, in the post-test twenty nine (93.6%) students improved their mark from the pre-test to the post-test.

In the control group (refer Table 4.16) no student was rated as excellent. Four (11.8%) students were rated as very good and twelve (35.3%) students as good, giving a total of 47.1% (n=16) students being rating as good to very good. A total of eighteen (52.9%) students were rated in the poor to very poor categories of which the performance of six (17.6%) students' were poor and that of twelve (35.3%) students' were rated very poor.

Table 4.16 Post-test results of independent second assessor

Developmental Category		EXPERIMENTAL GROUP		CONTROL GROUP	
		Total (N=31)	%	Total (N=34)	%
Excellent	**33-36**	2	6.5	0	0
Very good	**27-32**	11	34.9	4	11.8
Good	**22-26**	9	29.6	12	35.3
Poor	**18-21**	7	22.6	6	17.6
Very poor	**≤20**	2	6.4	12	35.3

4.5.2.3 Pre/Post-test comparison

The major difference in the pre/post-test (refer Table 4.17) of the experimental group, was in the very poor category, where students were rated 77.4% (n=24) in the pre-test and 6.4% (n=2) in the same category of the post-test. Seven (22.6%) students were rated as poor in the post-test as opposed to the three (9.7%) students in the pre-test. In the pre-test, four (12.9%) students were rated between good to excellent against the 71% (n=22) students in the post-test – of which nine (29.6%) students were rated as good, eleven (34.9%) as very good and two (6.5%) as excellent.

In the control group, 88.2% (n=30) students were rated between poor and very poor in the pre-test. In the post-test the total of students' rating between poor and very poor, was 52.9% (n=18). Students' rating in the category "good" during the pre-test were 11.8% (n=4) and in the post-test 35.3% (n=12). There were four (11.8%) students rated as very good in the post-test, against nil students in the pre-test. No student in the control group was rated as excellent in either the pre-test or post-test.

Table 4.17 Pre/Post-test comparison of the independent second assessor

Developmental Category		Experimental Group				Control Group			
		Pre-test		Post-test		Pre-test		Post-test	
		N=31	%	N=31	%	N=34	%	N=34	%
Excellent	**33-36**	1	3.2	2	6.5	0	0	0	0
Very good	**27-32**	0	0	11	34.9	0	0	4	11.8
Good	**22-26**	3	9.7	9	29.6	4	11.8	12	35.3
Poor	**18-21**	3	9.7	7	22.6	8	23.5	6	17.6
Very poor	**≤20**	24	77.4	2	6.4	22	64.7	12	35.3

The 95% Confidence Interval for median difference shows statistical significant difference between the pre-test and post-test of both the experimental group [6;11] and the control group [2;8].

4.5.2.4 Results per question from the independent second assessor

As in the case of the researcher, application of clinical judgment was assessed according to Lasater's Clinical Judgment Rubric (2007:500-501) and scoring done on a Likert scale, measured on four developmental levels, namely exemplary (4 marks), accomplished (3 marks), developing (2 marks) and beginning (1 mark). Three phases will be described and pre- and post-test results will be indicated for each dimension.

4.5.2.4.1 Pre-test

In the pre-test students were mainly rated as beginning, developing or accomplished – with the majority of students falling in the beginning to developing group.

In the experimental group (refer Table 4.18) the majority (77.4%:n=24) of students were found developing in the dimension of focused observation, 71% (n=22) as beginning in the dimension of recognising deviations from expected patterns and 54.8% (n=17) as developing in the dimension of information seeking.

In the control group the percentages differed slightly where the majority of students were rated as developing (85.3%:n=29) in the focused observation dimension, beginning (67.7%:n=23) in the second dimension and as developing (41.2%:n=14) in the information seeking dimension.

Table 4.18 Pre-test: Application of clinical judgment according to Lasater's Clinical Judgment Rubric (2007:500-501) – effective noticing phase

Dimensions		EXPERIMENTAL GROUP N=31		CONTROL GROUP N=34		CI for median difference between groups
Topic		**Total**	**%**	**Total**	**%**	**CI**
Effective noticing						
Focused observation	**1**	4	12.9	2	5.9	[0;0]
	2	24	77.4	29	85.3	
	3	3	9.7	3	8.8	
	4	0	0	0	0	

Recognising deviations from expected patterns	**1**	22	71	23	67.7	[0;0]
	2	7	22.6	11	32.3	
	3	1	3.2	0	0	
	4	1	3.2	0	0	
Information seeking	**1**	7	22.5	8	23.5	[0;-1]
	2	17	54.8	14	41.2	
	3	6	19.5	12	35.3	
	4	1	3.2	0	0	

In the effective interpreting phase (refer Table 4.19), more than 60% of all students in the experimental group were rated as beginners (67.7%:n=21) and 22.6% (n=7) as developing in the dimension of prioritising data. Three (9.7%) students were rated in the upper developmental levels with two (6.5%) students being rated as accomplished and one (3.2%) as exemplary. In the second dimension, making sense of data, 77.4% (n=24) of students were rated as beginners, 12.9% (n=4) as developing and 9.7% (n=3) as accomplished. No student was found exemplary in this dimension of the pre-test.

In the control group there were more than 60% of students rated as beginners (61.8%:n=21) and thirteen (38.2%) as developing in the first dimension. In the dimension, making sense of data, 64.7% (n=22) were rated as beginners and 35.3% (n=12) as developing. No student in the control group were rated as either accomplished or exemplary either dimensions of the “effective interpreting” phase of the pre-test.

Table 4.19 Pre-test: Application of clinical judgment according to Lasater's Clinical Judgment Rubric (2007:500-501) – effective interpreting phase

Dimensions		EXPERIMENTAL GROUP N=31		CONTROL GROUP N=34		CI for median difference between groups
Topic		**Total**	**%**	**Total**	**%**	**CI**
Effective interpreting						
Prioritising data	**1**	21	67.7	21	61.8	[0;0]
	2	7	22.6	13	38.2	
	3	2	6.5	0	0	
	4	1	3.2	0	0	
Making sense of data	**1**	24	77.4	22	64.7	[0;0]
	2	4	12.9	12	35.3	
	3	3	9.7	0	0	
	4	0	0	0	0	

In the phase of effective responding (refer Table 4.20), few students were rated as exemplary in any of the four dimensions.

In the experimental group, most students were rated on the lowest developmental level of beginning to developing in the pre-test. The total in the first dimension was 83.9% (n=26), in the second dimension 77.5% (n=24), in the third dimension 90.3% (n=28) and in the fourth dimension 74.2% (n=23). The largest group of students scored in the developing category in three of the four dimensions with 61.3% (n=19) in the first dimension, 58.1% (n=18) in the second dimension and 71% (n=22) in the fourth dimension. Students seemed to struggle with the third dimension, planning and intervention, as 64.5% (n=20) students scored on the lowest level, namely beginning, in this dimension.

In the control group, most students were rated on the lower developmental levels in all four dimensions. The total of students rated as beginning to developing in the first dimension was 76.5% (n=26), in the second dimension 73.6% (n=25), in the third dimension 94.1%

(n=32) and in the fourth dimension 97.1% (n=33). In the first two dimensions, most students were rated as developing (53%:n=18) in the first dimension and (53%:n=18) in the second dimension, however, in the last two dimensions, the majority of students were rated as beginning, with 70.6% (n=24) in the third dimension and 67.7% (n=23) in the fourth dimension. No student in the control group were rated as exemplary in any of the four dimensions of the "effective responding" phase.

Table 4.20 Pre-test: Application of clinical judgment according to Lasater's Clinical Judgment Rubric (2007:500-501) – effective responding phase

Dimensions		EXPERIMENTAL GROUP N=31		CONTROL GROUP N=34		CI for median difference between groups
Topic		**Total**	**%**	**Total**	**%**	**CI**
Effective responding						
Calm, confident manner	**1**	7	22.6	8	23.5	[0;0]
	2	19	61.3	18	53	
	3	4	12.9	8	23.5	
	4	1	3.2	0	0	
Clear communication	**1**	6	19.4	7	20.6	[0;0]
	2	18	58.1	18	53	
	3	6	19.3	9	26.4	
	4	1	3.2	0	0	
Well-planned intervention / flexibility	**1**	20	64.5	24	70.6	[0;0]
	2	8	25.8	8	23.5	
	3	2	6.5	2	5.9	
	4	1	3.2	0	0	
Being skilful	**1**	1	3.2	23	67.7	[0;0]
	2	22	71	10	29.4	
	3	7	22.6	1	2.9	
	4	1	3.2	0	0	

The total 95% Confidence Interval for median difference between unpaired groups were [1;-2] for the total CI of all dimensions in the pre-test and shows no stasistical significant difference between the pre-test of the experimental and control groups. Both groups started on the same level of knowledge.

4.5.2.4.2 Post-test

Post-test results demonstrated a greater variety in the allocation of marks and indicated differences between the experimental- and control groups.

In the phase of effective noticing, students from the experimental group (refer Table 4.21) were mostly rated as developing (45.2%:n=14) to accomplished (51.6%:n=16), with a total of 96.8% (n=30) in the focused observation dimension. One (3.2%) student was rated as exemplary. In the second dimension, four (12.9%) students were rated as beginners, ten (32.3%) as developing and the majority of students as accomplished (51.6%:n=16). One (3.2%) student was rated as exemplary. In the third dimension, no student was rated as a beginner. Nine (29%) students were rated as developing and again, the majority of students were rated as accomplished (58.1%:n=18). Four (12.9%) students were rated as exemplary.

In the control group, most students (79.4%:n=27) were rated as developing in the first dimension of focused observation. Two (5.9%) students were rated as beginners and five (14.7%) as accomplished. In the second dimension, recognising deviations from expected patterns, 35.3% (n=12) students were rated on the beginners level, 41.2% (n=14) as developing and 23.5% (n=8) as accomplished. No student in the control group were rated as exemplary in the first or second dimension of the “effective noticing” phase. In the third dimension, information seeking, four (11.9%) students were rated as beginners, fourteen (41.1%) as developing, fourteen (41.1%) as accomplished and two (5.9%) as exemplary.

Table 4.21 Post-test: Application of clinical judgment according to Lasater's Clinical Judgment Rubric (2007:500-501) – effective noticing phase

Dimensions		EXPERIMENTAL GROUP N=31		CONTROL GROUP N=34		CI for median difference between groups
Topic		**Total**	**%**	**Total**	**%**	**CI**
Effective noticing						
Focused observation	**1**	0	0	2	5.9	[1;0]
	2	14	45.2	27	79.4	
	3	16	51.6	5	14.7	
	4	1	3.2	0	0	
Recognising deviations from expected patterns	**1**	4	12.9	12	35.3	[1;0]
	2	10	32.3	14	41.2	
	3	16	51.6	8	23.5	
	4	1	3.2	0	0	
Information seeking	**1**	0	0	4	11.8	[1;0]
	2	9	29	14	41.1	
	3	18	58.1	14	41.1	
	4	4	12.9	2	5.9	

In the phase of effective interpreting (refer Table 4.22), similar results were obtained as in the phase of noticing with the majority of students scored as developing and accomplished.

In the experimental group, four (12.9%) students were rated as beginning and three (9.7%) as exemplary in the first dimension, prioritising data. A total of 77.4% (n=24) scored between developing and accomplished with 35.5% (n=11) as developing and 41.9% (n=13) as accomplished. In the second dimension, making sense of data, two (6.4%) students were rated as beginners and a total of 93.6% (n=29) as developing (22.6%:n=7) to accomplished (71%:n=22). No students were rated as exemplary in this dimension.

In the control group a larger number of students (32.4%:n=11) were rated as beginners in the first dimension, prioritising data. Fourteen (41.2%) students were rated as developing and eight (23.5%) as accomplished. Only one (2.9%) student was rated as exemplary. In the second dimension, making sense of data, nine (26.5%) students were rated as beginning and nine (26.5%) as developing. The majority of students (47%:n=16) were rated as accomplished. No students in the control group were rated as exemplary in this dimension.

Table 4.22 Post-test: Application of clinical judgment according to Lasater's Clinical Judgment Rubric (2007:500-501) – effective interpreting phase

Dimensions		EXPERIMENTAL GROUP N=31		CONTROL GROUP N=34		CI for median difference between groups
Topic		**Total**	**%**	**Total**	**%**	**CI**
Effective interpreting						
Prioritising data	**1**	4	12.9	11	32.4	[1;0]
	2	11	35.5	14	41.2	
	3	13	41.9	8	23.5	
	4	3	9.7	1	2.9	
Making sense of data	**1**	2	6.4	9	26.5	[1;0]
	2	7	22.6	9	26.5	
	3	22	71	16	47	
	4	0	0	0	0	

In the phase of effective responding (refer Table 4.23), the majority of students, in the experimental group, were rated as accomplished in all four dimensions. In the first dimension – calm, confident manner – seven (22.6%) students were rated as developing and four (12.9%) as exemplary. The majority of students (64.5%:n=20) were rated as accomplished and no student was rated as a beginner in the first dimension. In the second dimension, only one (3.2%) student was rated as a beginner and seven (22.6%) as developing. The majority students, again, were rated as accomplished (58.1%:n=18) and five (16.1%) as exemplary. In the third dimension – well-planned intervention – three (9.6%) students were rated as beginners, eight (25.8%) as developing, fourteen (45.2%) as accomplished and six (19.4%) as exemplary. In the dimension of "being skilful" students were rated as developing (19.4%:n=6), accomplished (64.5%:n=20) and exemplary (16.1%:n=5). Again, no student was rated as a beginner.

In the control group, the majority of students were rated on the developing level in the first three dimensions. Only in the last dimension were the majority of students rated on the accomplished level. In the first dimension – calm, confident manner – one (2.9%) student was rated as a beginner and one (2.9%) student as exemplary. The remainder of the students were rated either as developing (55.9%:n=19) or accomplished (38.3%:n=13). In the dimension of clear communication, two (5.9%) students were rated as beginners, nineteen (55.9%) as developing, nine (26.4%) as accomplished and four (11.8%) as exemplary. In the third dimension, well-planned intervention, ten (29.4%) students were rated as beginners, twelve (35.3%) as developing and eight (23.5%) as accomplished. Four (11.8%) students were rated as exemplary in this dimension. In the last dimension, being skilful, the majority of students were rated as accomplished (52.9%:n=18), then developing (41.2%:n=14) and only then exemplary (5.9%:n=2). No student was rated as beginner in this dimension.

Table 4.23 Post-test: Application of clinical judgment according to Lasater's Clinical Judgment Rubric (2007:500-501) – effective responding phase

Dimensions		EXPERIMENTAL GROUP N=31		CONTROL GROUP N=34		CI for median difference between groups
Topic		**Total**	**%**	**Total**	**%**	**CI**
Effective responding						
Calm, confident manner	**1**	0	0	1	2.9	[1;0]
	2	7	22.6	19	55.9	
	3	20	64.5	13	38.3	
	4	4	12.9	1	2.9	
Clear communication	**1**	1	3.2	2	5.9	[1;0]
	2	7	22.6	19	55.9	
	3	18	58.1	9	26.4	
	4	5	16.1	4	11.8	
Well-planned intervention / flexibility	**1**	3	9.6	10	29.4	[1;0]
	2	8	25.8	12	35.3	
	3	14	45.2	8	23.5	
	4	6	19.4	4	11.8	
Being skilful	**1**	0	0	0	0	[10;0]
	2	6	19.4	14	41.2	
	3	20	64.5	18	52.9	
	4	5	16.1	2	5.9	

The total 95% Confidence Interval for median difference between unpaired groups were [7;2] for the total CI of all dimensions in the post-test and shows statistical difference in the post-test of the experimental group and the control group.

4.6 CONFIDENCE INTERVALS CALCULATED FOR CLINICAL JUDGMENT

The Confidence Interval (refer Table 4.24) for the pre-test compared with the post-test, was [7;17] for the experimental group and [6;12] for the control group according to the results obtained from the researcher. The independent second assessor's results for the pre-test and post-test was [6;11] in the experimental group and [2;8] for the control group.

When measuring each question, the Confidence Interval in the pre-test was [0;-3] between unpaired groups and [5;-2] in the post-test for the experimental group and the control group according to the results from the researcher. For the same measurements between unpaired groups, the independent second assessor's Confidence Interval was [1;-2] in the pre-test and [7;2] in the post-test.

Table 4.24 Confidence Intervals

No	Confidence intervals (CIs)	Researcher	Second Assessor
		Experimental and Control Group	Experimental and Control Group
1	**Pre-/Post-test comparison**	The 95% Confidence Interval for median difference shows a significant statistical difference between the pre-test and post-test of both the experimental group [7;17] and the control group [6;12].	The 95% Confidence Interval for median difference shows a significant statistical difference between the pre-test and post-test of both the experimental group [6;11] and the control group [2;8].
2	**Pre-test: Dimensions**	The total 95% Confidence Interval for median difference between unpaired groups were [0;-3] for the total CI of all dimensions in the pre-test. There is no statistical significant differences between the pre-tests of the experimental group and the control group. Both groups started on the same level of knowlege	The total 95% Confidence Interval for median difference between unpaired groups were [1;-2] for the total CI of all dimensions in the pre-test and shows no stasistical significant difference betwen the pre-test of the experimental and control groups. Both groups were starting on the same level of knowledge
3	**Post-test: Dimensions**	The total 95% Confidence Interval for median difference between unpaired groups were [5;-2] for the total CI of all dimensions in the post-test. The Confidence Interval shows no statistical significant difference between the two groups in the post-test.	The total 95% Confidence Interval for median difference between unpaired groups were [7;2] for the total CI of all dimensions in the post-test and shows statistical difference in the post-test of the experimental group and the control group.

4.7 SUMMARY

Tanner (2006:204) emphasises the importance of clinical judgment in nursing and presents a model that will assist the educator in teaching this important skill to nursing students. However, when teaching a skill, it should be possible to measure the effect of teaching and whether learning has taken place. To assist the educator in this, Lasater (2007:500-501) developed a rubric to assess the clinical judgment in nursing students.

Application of the rubric were tested in this study through an experimental pre-test/post-test control study and the results were described in chapter four. The results from the researcher were discussed in a sequence of pre-test results, post-test results, comparison of pre-test/post-test results and results of each dimension on the rubric. The same description was given for the results from the independent second assessor.

In the last chapter, the researcher will discuss the recommendations regarding this study, recommendations for further research and the limitations of the study that was observed.

CHAPTER 5
RECOMMENDATIONS, LIMITATIONS AND CONCLUSIONS

5.1 INTRODUCTION

In the previous chapter the data analysis and results were discussed with regard to objective (1) to describe first year students' application of clinical judgment during an immersive simulation session, and (2) to compare the clinical judgment of first year baccalaureate nursing students with and without cognitive support from a clinical preceptor during immersive simulation. The research recommendations, limitations suggestions for future research and conclusions will be presented in chapter 5.

5.2 RECOMMENDATIONS

Recommendations are made with regard to cognitive support rendered by clinical preceptors, the use of Tanner's Clinical Judgment Model (2006:208) and Lasater's Clinical Judgment Rubric (2007:500-501).

5.2.1 THE CLINICAL JUDGMENT MODEL AND THE CLINICAL JUDGMENT RUBRIC

The development of clinical judgment is a complex process (Tanner, 2006:205, 208). However, based on the results of this study, namely that students in the experimental group were rated in the upper developmental levels of very good to excellent, the researcher recommended that Tanner's Clinical Judgment Model (2006:208), consisting of four aspects, namely "noticing", "interpreting", "responding" and "reflecting" (Tanner, 2006:208) be introduced to undergraduate students, especially first year nursing students, as an introduction to the development of clinical judgment. Other models could be introduced during the period of four years of training to enable students establishing their own process of clinical judgment.

It is also recommended that educators (facilitators) familiarise students with the content of Lasater's Clinical Judgment Rubric (2007:208) and its use to assess clinical judgment early in the curriculum and on more than one occasion, for example in both the clinical environment and during immersive simulation sessions.

Although Lasater's Clinical Judgment Rubric (2007:208) could be used to assess the footage taken of students during an immersive simulation session, assessors should be given the opportunity to gain more experience in scoring students according to this rubric.

5.2.2 OPPORTUNITIES TO PRACTICE CLINICAL JUDGMENT

First year students should be given the opportunity to practice the process of clinical judgment over a longer period of time, with the support of the clinical preceptors and should also be exposed to different scenarios in the clinical environment

5.2.3 INCLUDING REFLECTION TO OBTAIN A VALID AND RELIABLE MEASUREMENT OF CLINICAL JUDGMENT

Debriefing or reflection after an immersive simulation session is a critical aspect of simulation (Tanner, 2006:208) but was unfortunately not part of the objectives of this study. However, it is suggested that within one or two weeks after the students had participated in the first post-test reflection session, a second post-test be assessed. This strategy would reveal a more objective or valid and reliable measurement of students' clinical judgment.

5.2.4 THE USE OF NURSING EDUCATION STUDENTS TO PROVIDE COGNITIVE SUPPORT TO FIRST YEAR NURSING STUDENTS

Involving students, registered for a qualification in nursing education, to provide cognitive support to first year nursing students, should be maintained as part of the teaching and learning approach of the School of Nursing. If possible, this approach should be refined in order to ensure that quality support is rendered and that the Clinical Judgment Model (Tanner, 2006:208) and Clinical Judgment Rubric (Lasater, 2007:500-501) are well understood and practiced by students.

5.2.5 EXTENDING THE BATTERY OF MEASUREMENTS TO DETERMINE CLINICAL JUDGMENT

To obtain a better picture of students' performance on clinical judgment, it is recommended that nursing students should complete self-evaluations (Lasater, 2011:90) on their clinical judgment abilities. This approach, in conjunction with a post-test after reflection, could provide interesting results.

5.3 RECOMMENDATIONS FOR FURTHER RESEACH

It is recommended that Lasater's Clinical Judgment Rubric (2007:208) be tested on the footage of second-, third- and fourth year students, not only when using simulated patients, but also in high fidelity immersive simulation sessions. The rubric could then be refined to suit this type of assessment.

5.4 LIMITATIONS OF THE STUDY

The performances of first year nursing students on clinical judgment were measured three months after they had registered at the School of Nursing. This happened due to time limits set by the researcher in order to complete the study and to submit the research report for formal assessment. If the data was obtained in the fourth quarter of their studies, a more accurate measurement of clinical judgment could have been obtained.

Another limitation was the use of Lasater's Clinical Judgment Rubric (2007:500-501) between two assessors. Although the validity and reliability of the instrument were tested, and although care was taken to discuss the scenarios and expectations of the students per scenario, the assessors still differed with regard to the allocation of marks. An example of a difference of opinion was that one assessor believed that during the simulation session, the student should leave the room in order to find a registered nurse that could administer pain medication, whereas the second assessor thought it was adequate if the student only verbalised that he/she would, at this point, ask the registered nurse to administer the pain medication. If the study is replicated, it is suggested that the two assessors take down the assessment of a student between them during which such idiosyncrasies can be discussed and agreed upon.

The statement by Lasater (2011:90) that the Clinical Judgment Rubric does not account for the numerous factors that could influence students' attentiveness and their clinical judgment is acknowledged by the research. A comprehensive approach, using more than one type of measurement, could have resulted in more valid and reliable findings.

5.5 CONCLUSIONS

The aim of the study was to compare clinical judgment of first year baccalaureate nursing students which receive or do not receive cognitive support from a clinical preceptor during immersive simulation. The researcher was able to complete the study as described in the methodology. It was found that Tanner's Clinical Judgment Rubric (2006:208) was suitable to teach clinical judgment. Lasater's Clinical Judgment Rubric (2007:500-501) was appropriate to assess clinical judgment from footage, although clear communication between assessors is needed as described in the limitations of the study.

Cognitive support rendered by clinical preceptors, did seem to have an effect on the clinical judgment of students and it is recommended that this kind of support be extended over a longer period of time.

Although this study did address an important gap between research focussed on clinical judgment of expert nurses (Lasater, 2011:90), as opposed to less focussed on nursing students, more research on utilising Lasater's Clinical Judgment Rubric (2007:500-501) on footage obtained during immersive simulation, is needed.

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ADDENDUM A

Ethical Approval and approval form with signatures

UNIVERSITY OF THE FREE STATE
UNIVERSITEIT VAN DIE VRYSTAAT
YUNIVESITHI YA FREISTATA
UFS UV

Research Division
Internal Post Box G40
☎(051) 4052812
Fax (051) 4444359

E-mail address: StraussHS@ufs.ac.za

Ms H Strauss/hv

2013-12-02

REC Reference nr 230408-011
IRB nr 00006240

MS M BEKKER
C/O PROF A JOUBERT
SCHOOL OF NURSING
IDAHLIA LOOTS BUILDING
UFS

Dear Ms Bekker

ECUFS NR 196/2013
MS M BEKKER **SCHOOL OF NURSING**
PROJECT TITLE: EVALUATION OF CLINICAL JUDGMENT OF FIRST YEAR BACCALAUREATE NURSING STUDENTS WITH AND WITHOUT COGNITIVE SUPPORT FROM A CLINICAL PRECEPTOR DURING IMMERSIVE SIMULATION.

- You are hereby kindly informed that at the meeting on 26 November 2013 the Ethics Committee approved the study after all conditions have been met when the following was submitted:
    - *The following signed permission letters were received:*
        - *Head of the School of Nursing*
        - *Dean of the Faculty of Health Sciences*
        - *Vice-Rector: Academic*

- Committee guidance documents: Declaration of Helsinki, ICH, GCP and MRC Guidelines on Bio Medical Research. Clinical Trial Guidelines 2000 Department of Health RSA; Ethics in Health Research: Principles Structure and Processes Department of Health RSA 2004; Guidelines for Good Practice in the Conduct of Clinical Trials with Human Participants in South Africa, Second Edition (2006); the Constitution of the Ethics Committee of the Faculty of Health Sciences and the Guidelines of the SA Medicines Control Council as well as Laws and Regulations with regard to the Control of Medicines.

- Any amendment, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval.

- The Committee must be informed of any serious adverse event and/or termination of the study.

- All relevant documents e.g. signed permission letters from the authorities, institutions, changes to the protocol, questionnaires etc. have to be submitted to the Ethics Committee before the study may be conducted (if applicable).

- A progress report should be submitted within one year of approval of long term studies and a final report at completion of both short term and long term studies.

- Kindly refer to the ETOVS/ECUFS reference number in correspondence to the Ethics Committee secretariat.

Heg asseblief die protokol vir die studie hierby aan, asook die Etiekkomitee aansoekvorm.

Neem asb kennis dat dit die verantwoordelikheid van die navorser(s) is om te verseker dat alle toepaslike handtekeninge verkry word voor hierdie getekende vorm terugbesorg word aan die Etiekkomitee Administratiewe kantoor (D115) Francois Retief-gebou, Fakulteit Gesondheidswetenskappe, UV. Die protokol mag intussen ingehandig word vir Etiekkomitee goedkeuring terwyl handtekeninge bekom word.

A.

Approved / Goedgekeur	Rejected / Afgekeur

HEAD OF SCHOOL / HOOF VAN DIE SKOOL

SIGNATURE / HANDTEKENING

12/11/13
DATE / DATUM

COMMENTS / KOMMENTAAR:

B.

Approved / Goedgekeur	Rejected / Afgekeur
X	

DEAN OF THE FACULTY / DEKAAN VAN DIE FAKULTEIT

SIGNATURE / HANDTEKENING

12/11/13
DATE / DATUM

COMMENTS / KOMMENTAAR:

C.

Approved / Goedgekeur	Rejected / Afgekeur

PROF. NR MAY
VICE-RECTOR: ACADEMIC
TEL: 051 401 3773

VICE-RECTOR: ACADEMIC
VISE-REKTOR: AKADEMIES /

SIGNATURE / HANDTEKENING

13/11/2013
DATE / DATUM/

COMMENTS / KOMMENTAAR:

D.

If research will include students on campus and if questionnaires will be distributed in hostels on campus the Dean: Student Affairs has to be notified. /
Wanneer studente op kampus by navorsing ingesluit gaan word en wanneer vraelyste versprei gaan word by koshuise moet die Dekaan: Studente Aangeleenthede in kennis gestel word.

ADDENDUM B

Lasater's Clinical Judgment Rubric

COMPARISON OF CLINICAL JUDGMENT OF FIRST YEAR BACALAUREATE NURSING STUDENTS WITH AND WITHOUT COGNITIVE SUPPORT FROM A CLINICAL PRECEPTOR DURING IMMERSIVE SIMULATION

Dear Student

Please complete the questions below as part of this study. Information will be used for research purposes only.

Please write your answer on the line provided

Section A

Demographic data

FOR OFFICE USE

1. Student number _____ | | | | | | | | | | | 1-10

2. Gender | | 11-12

Male	1
Female	2

3. Age _____ | | 13-14

4. Home language _____ | 15

5. Ethnic group _____ | 16

Lasater's Clinical Judgment Rubric					
Dimension	**Exemplary 4**	**Accomplished 3**	**Developing 2**	**Beginning 1**	
Effective noticing involves:					
Focused observation	Focuses observation appropriately; regularly observe and monitors a wide variety of objective and subjective data to uncover any useful information	Regularly observes and monitors a variety of data, including both subjective and objective; most useful information is noticed; may miss the most subtle signs	Attempts to monitor a variety of subjective and objective data but is overwhelmed by the array of data; focuses on the most obvious data, missing some important information	Confused by the clinical situation and the amount and kind of data; observation is not organized and important data are missed, and/or assessment errors are made	☐ 17
Recognising deviations from expected patterns	Recognises subtle patterns and deviations from expected patterns in data and uses these to guide the assessment	Recognises most obvious patterns and deviations in data and uses these to continually assess	Identifies obvious patterns and deviations, missing some important information; unsure how to continue the assessment	Focuses on one thing at a time and misses most patterns and deviations from expectations; misses opportunities to refine the assessment	☐ 18
Information seeking	Assertively seeks information to plan intervention: carefully collects useful subjective data from observing and interacting with the patient and family	Actively seeks subjective information about the patient's situation from the patient and family to support planning interventions; occasionally does not pursue important leads	Makes limited efforts to seek additional information from the patient and family; often seems not to know what information to seek and/or pursues unrelated information	Is ineffective in seeking information; relies mostly on objective data; has difficulty interacting with the patient and family and fails to collect important subjective data	☐ 19
Effective interpreting involves:					
Prioritising data	Focuses on the most relevant and important data useful for explaining the patient's condition	Generally focuses on the most important data and seeks further relevant information but also may try to attend to less pertinent data	Makes an effort to prioritise data and focus on the most important, but also attends to less relevant or useful data	Has difficulty focusing and appears not to know which data are most important to the diagnosis; attempts to attend to all available data	☐ 20
Making sense of data	Even when facing complex, conflicting, or confusing data, is able to (a) note and make sense of patterns in the patient's data, (b) compare these with known patterns (from the nursing knowledge base, research, personal experience, and intuition), and (c) develop plans for interventions that can be justified in terms of their likelihood of success	In most situations, interprets the patient's data patterns and compares with known patterns to develop an intervention plan and accompanying rationale; the exceptions are rare or in complicated cases where it is appropriate to seek the guidance of a specialist or a more experienced nurse	In simple, common, or familiar situation, is able to compare the patient's data patterns with those known and to develop or explain intervention plans; has difficulty, however, with even moderately difficult data or situations that are within the expectations of students; inappropriately requires advice or assistance	Even in simple, common, or familiar situations, has difficulty interpreting or making sense of data; has trouble distinguishing among competing explanations and appropriate interventions, requiring assistance both in diagnosing the problem and developing an intervention	☐ 21

Dimension	Exemplary 4	Accomplished 3	Developing 2	Beginning 1	
Effective responding involves:					
Calm, confident manner	Assumes responsibility; delegates team assignments; assesses patients and reassures them and their families	Generally displays leadership and confidence and is able to control or calm most situations; may show stress in particularly difficult or complex situations	Is tentative in the leader role; reassures patients and families in routine and relatively simple situations, but becomes stressed and disorganized easily	Except in simple and routine situations, is stressed and disorganized, lacks control, makes patients and families anxious or less able to cooperate	22
Clear communication	Communicates effectively; explains interventions; calms and reassures patients and families; directs and involves team members, explaining and giving directions; checks for understanding	Generally communicates well; explains carefully to patients; gives clear directions to team; could be more effective in establishing rapport	Shows some communication ability (e.g. giving directions); communication with patients, families, and team members is only partly successful; displays caring but not competence	Has difficulty communicating; explanations are confusing; directions are unclear or contradictory; patients and families are made confused or anxious and are not reassured	23
Well-planned intervention/flexibility	Interventions are tailored for the individual patient; monitors patient progress closely and is able to adjust treatment as indicated by patient response	Develops interventions on the basis of relevant patient data; monitors progress regularly but does not expect to have to change treatments	Develops interventions on the basis of the most obvious data; monitors progress but is unable to make adjustments as indicated by the patient's response	Focuses on developing a single intervention, addressing a likely solution, but it may be vague, confusing, and/or incomplete; some monitoring may occur	24
Being skillful	Shows mastery of necessary nursing skills	Displays proficiency in the use of most nursing skills; could improve speed or accuracy	Is hesitant or ineffective in using nursing skills	Is unable to select and/or perform nursing skills	25
Effective reflecting involves:					
Evaluation/self-analysis	Independently evaluates and analyzes personal clinical performance, noting decision points, elaborating alternative, and accurately evaluating choices against alternative	Evaluates and analyzes personal clinical performance with minimal prompting, primarily about major events or decisions; key decision points are identified, and alternatives are considered	Even when prompted, briefly verbalizes the most obvious evaluations; has difficulty imagining alternative choices; is self-protective in evaluating personal choices	Even prompted evaluations are brief, cursory, and not used to improve performance; justifies personal decisions and choices without evaluating them	
Commitment to improvement	Demonstrates commitment to ongoing improvement; reflects on and critically evaluates nursing experiences; accurately identifies strengths and weaknesses and develops specific plans to eliminate weaknesses	Demonstrates a desire to improve nursing performance; reflects on and evaluates experience; identifies strengths and weaknesses; could be more systematic in evaluating weaknesses	Demonstrates awareness of the need for ongoing improvement and makes some effort to learn from experience and improve performance but tends to state the obvious and needs external evaluation	Appears uninterested in improving performance or is unable to do so; rarely reflects; is uncritical of himself or herself or overly critical (given level of development); is unable to see flaws or need for improvement	

ADDENDUM C

Informed Consent and Information Document

Consent to participate in Research

Project title: Comparison of clinical judgment of first year baccalaureate nursing students with and without cognitive support from a clinical preceptor during immersive simulation

You are being invited to take part in the research project mentioned above.

This study has been approved by the Ethics committee of the Department of Health Sciences at the University of the Free State (UFS) and you may contact the Secretariat of the Ethics Committee of the Faculty of Health Sciences, UFS at telephone number (051) 4052812 if you have questions about your rights as a research subject.

Your participation is entirely voluntary and you are free to decline participation. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part.

There are no obvious risks to you as participant in this study. You will have no financial obligations nor will you be remunerated for participation in this study.

Anonymity will not be possible due to the fact that footage will be used for purposes of this study. However, no personal information will be made available on the assessment of the rubric or in the dissemination of results.

If you agree to participate, you will be given a signed copy of this document as well as the participant information sheet, which is a written summary of the research.

You may contact the researcher, Marilize Bekker at 0829240766 (uxollo@gmail.com) any time if you have questions related to this research study.

The research study, including the above information has been verbally described to me. I understand what my involvement in the study means and I voluntarily agree to participate.

Signature of Participant	Date
Signature of Witness	Date

Information Document

RESEARCHER:

Marilize Bekker

uxollo@gmail.com

(051) 5055317 or 0829240766

What is this research study all about?

This study will be conducted at the University of the Free state (UFS) and aims to compare the clinical judgment of first year baccalaureate nursing students with and without cognitive support from a clinical preceptor during immersive simulation.

Why have you been invited to participate?

Clinical judgment is a difficult skill to teach or master and therefore needs to be incorporated into studies as early as possible, starting in the first year of study.

What will your responsibilities be?

You will be asked to participate in an immersive simulation session. The study will take on one day and the duration of your participation will only last a maximum of 20 minutes.

Will you benefit from taking part in this research?

You will benefit by receiving additional support from a clinical preceptor to better understand your actions during immersive simulation which will help you to improve your clinical practice abilities.

Are there any risks involved in your taking part in this research?

There are no physical or study-related risks involved in your participation as a person. Anonymity will not be possible due to the fact that footage will be used, however, no personal information will be made available or refer to an individual through publishing, meetings or conferences.

Do you have any further questions?

For any further questions or explanations, please contact the researcher at the phone numbers or email address as indicated above.

Toestemming om deel te neem aan Navorsing

Projektitel: Vergelyking van kliniese oordeel van eerstejaar baccalaureaat verpleegstudente met en sonder kognitiewe ondersteuning van ‘n kliniese leermeester tydens simulasie

U word uitgenooi om deel te neem aan die navorsingsprojek soos hierbo genoem.

Hierdie studie is goedgekeur deur die Etiekkomitee van die Departement van Gesondheidswetenskappe aan die Universiteit van die Vrystaat (UV) en u kan die Sekretariaat van die Etiese Komitee van die Fakulteit vir Gesondheidswetenskappe, UV, kontak by telefoonnommer (051) 4052812 indien u enige vrae het rakende u regte as ‘n deelnemer in navorsing.

U deelname is vrywillig en u mag deelnameweier. Indien u nie wil deelneem nie, sal dit u geensins negatief beïnvloed nie. U mag ook enige tyd onttrek van die studie selfs al het u ingestem om deel te neem.

Daar is geen voor-die-hand-liggende risiko’s vir u as deelnemer in hierdie studie nie. Daar is geen finansiële verpligtinge nie maar u sal ook nie finansieel vergoed word vir deelname aan die studie nie.

Anonimiteit sal nie moontlik wees nie as gevolg van beeldmateriaal wat gebruik word vir studiedoeleindes. Daar sal egter geen persoonlike inligting bekend gemaak word van enige individu wat deelneem aan hierdie studie nie.

Indien u instem om deel te neem sal u ‘n getekende afskrif van hierdie dokument ontvang sowel as die inligtingstuk wat ‘n opsomming is van die navorsingstudie.

U kan die navorser, Marilize Bekker, enige tyd kontak by 0829240766 (uxollo@gmail.com) indien u vrae het oor die navorsingsprojek.

Die navorsingstudie, insluitende bogenoemde inligting, is mondelings aan my verduidelik. Ek verstaan wat my deelname in die studie behels en ek stem vrywilliglik in om deel te neem daaraan.

Handtekening van deelnemer	Datum
Handtekening van getuie	Datum

Inligtingstuk

NAVORSER:

Marilize Bekker

uxollo@gmail.com

(051) 5055317 of 0829240766

Waaroor gaan hierdie studie?

Hierdie studie sal gedoen word by die Universiteit van die Vrystaat (UV) en beoog om die kliniese oordeel van die eerstejaar baccalaureaat verpleegstudente te vergelyk met en sonder kognitiewe ondersteuning van ‘n kliniese leermeester tydens simulasie.

Hoekom is jy genooi om deel te neem?

Kliniese oordeel is ‘n baie moeilike vaardigheid om aan te leer of te bemeesterenmoet so vroeg as moontlik in studies geïnkorporeer word, reeds vanaf die eerste jaar van studie.

Wat sal jou verantwoordelikhede wees?

U sal gevra word om deel te neem aan ‘n simulasie sessie. Die studie sal op een dag gedoen word en elke deelnemer sal maksimum 20 minute besig wees.

Sal jy enige voordeel hê as gevolg van deelname in die navorsing?

U sal die voordeel hê van bykomende kliniese ondersteuning deur ‘n kliniese leermeester wat gaan help om u optrede beter te verstaan tydens simulasie wat dan verder sal help om u kliniese praktyk te verbeter.

Is daar enige risiko’s betrokke om deel te neem in hierdie studie?

Daar is geen fisieke of studieverwante risiko’s betrokke vir jou as persoon nie. Anonimiteit sal nie moontlik wees nie as gevolg van die beeldmateriaal wat gebruik sal word. Daar sal egter geen persoonlike inligting beskikbaar gestel word of na ‘n individu verwys word gedurende publikasie, vergaderings of konferensies nie.

Het jy nog enige vrae?

Vir enige verdere vrae of onduidelikhede, bel asseblief die navorser by een van die kontaknommers of kontak via e-posadres soos hierbo aangedui.

ADDENDUM D

Simulation Development Tool

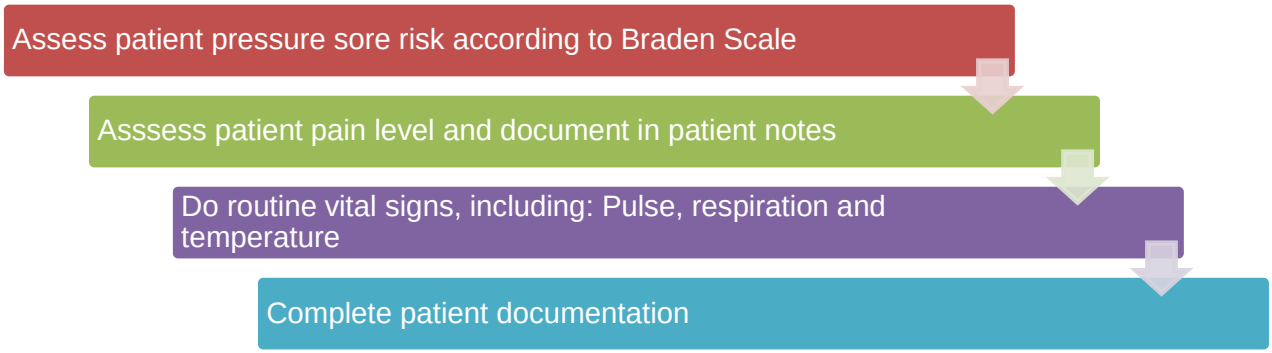
Scenario 1 and 2

BRADEN- AND PAIN SCALE & VITAL SIGNS

Scenario 1 – Pre-test

Programme:	First year nursing group
Module name:	NUR
Coordinator:	Dr. M. Wilke
Estimated Time:	Simulation – 20 minutes Debriefing – 20 minutes

Authentic problems



Outcomes:

Assesses the patient at risk of developing pressure sores according to information obtained from the patient and complete the Braden scale correctly.

Assess patient's pain level and accurately record your findings in the patient's notes.

Measure vital signs correctly, counting a full minute when assessing respiration and pulse rate and take the patient's temperature.

Document findings in the patient's report.

Take proper notes of all the findings.

Planning

Context/situation

Orthopaedic ward.

A 30 year old fe/male patient was involved in a motor vehicle accident. S/he complains of lower back pain and loss of sensation in her left leg. Patient has loss of bladder function and experience severe pain – must stay put and not allowed to sit up. Scheduled for theatre later in the afternoon.

Pre-requisite knowledge:

Anatomy and physiology

Neurological functions

Normal values of vital signs for an adult

Nursing process for patient documentation

	Pressure score development
	Assessment for pressure score risk
	Pain assessment
	Nutrition knowledge
	Knowledge regarding formation of bed ulcers, including friction & shear and effect of moisture on skin of bedridden patient
	Tanner's Clinical Judgment Model (2006:208) and Lasater's Clinical Judgment Rubric (2007:500-501)
Pre-requisite practical skills:	Physical assessment
	Patient assessment for pressure sore risk
	Completion of Braden Scale
	Completion of pain scale
	Taking of vital signs
	Writing report
	Interpersonal communication and empathy with patient

Equipment and consumables

Equipment	Consumables
Bed with rails down	Box Unsterile gloves
Bed linen	One bottle hand rub
Over bed trolley	Two linen savers
Pillows	Box hand towels
Dustbin	

Documents:	Written outcomes for simulation
	Braden scale
	Pain scale
	Patient recording documents
Role of simulated patient:	Complains of severe pain after bed linen has been changed. Contracted lower back injury in a motor vehicle accident and experiences paraesthesia in leg. When asked, patient usually has breakfast and dinner at lodgings – no lunch.

Instruction to participating students regarding outcomes

Correct assessment and completion of Braden scale

Completion of pain scale

Interpersonal communication

Allocate attention wisely

Vital signs performed correctly

Following of orders

Patient assessment

Empathy with patient's condition

Utilise all available information

Maintain professional behaviour

Completion of activities within given time range

Proper documentation of findings

Students must receive written instructions

Implementation

Clinical preceptor's key notes:

Six students will be in separate simulation rooms with simulated patient at a time

Greet patient and wash hands

Involve patient, do not look at documentation all the time, ignoring the patient

Give feedback to patient on findings

Clinical progression of patient	Findings of patient assessment	Noticing and clinical reasoning	Provide information/ laboratory results (if requested)	Prompts, questions and teaching points
Authentic problem: Pressure sore risk Braden scale assessment	Sensory perception limited – due to sensory loss in affected leg Moisture: Score 1 or 2 for urine incontinence Activity: Score 1 – patient on bed rest until condition change Mobility: Score 3 – can move but has severe pain Nutrition: Score 3 Friction and Shear: Score 2 – needs help to move up in bed Total must be between 12 - 14	Patient is awake and able to communicate but there is sensory loss in the left foot after the motor vehicle accident Neurological connection between leg and bladder ? impaired Experiencing pain and not able to change position by him/herself Healthy patient and immobility due to accident – not age Miss one meal a day Can move but needs assistance – some friction will occur Patient is		Explain to patient reason for lying on back Ask patient to move feet when possible Advise patient to relief pressure from back when not in pain Give nutritional information

		moderate risk for pressure sores		
Clinical progression of patient	**Findings of patient assessment**	**Noticing and clinical reasoning**	**Provide information/ laboratory results (if requested)**	**Prompts, questions and teaching points**
Authentic problem: Pain as a result of motor vehicle accident as well as position changing after linen replacement	Ask patient to explain pain s/he is experiencing and record correctly according to the supplied pain scale	Must take into consideration that patient was in motor vehicle accident and that pain is worse due to recent position change after soiled linen was removed	Give some comfort by either asking for pain medication or ask is someone is aware that it is needed and that person will bring medication, etc.	Ask patient regarding the characteristics of the pain
Authentic problem: Vital signs	Temperature Pulse rate Respiration	Within normal limits	Give feedback to patient regarding values	

Vertical strands	
Safety:	Identification Infection control standard/universal and aseptic techniques Ged rails Bedside bell
Communication:	Appropriate verbal and non-verbal patient communication Polite and caring Provide patient and family with information Culturally sensitive
Nursing care / Clinical judgment process:	Observe change in condition (assessment history, physical assessment, management) Exhibit clinical judgment/prioritises care Take appropriate action Effective reflection Comprehensive care
Professional behaviour:	Adhere to patient's rights Introduce self Ensure privacy Adhere to ethical, legal issues, professional responsibilities Record keeping

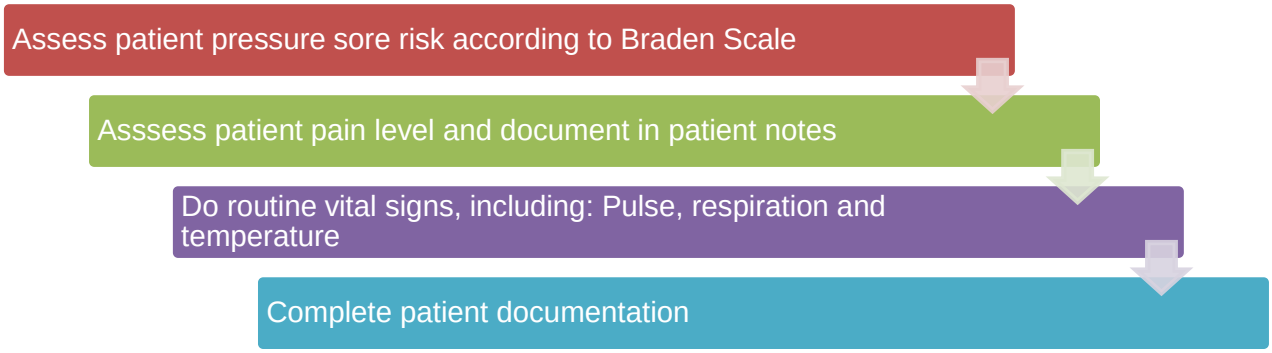
Notes for reflection

Essential knowledge:	Pathophysiology of pressure sore development
	Connection between loss of bladder function, loss of sensation in leg and motor vehicle accident
	Assessment of pressure sore risks according to the Braden scale
	Correct completion and interpretation of Braden scale
	Correct assessment of pain on a scale
	Interpersonal communication with patient – reacting on information and treating patient with empathy
	Correct response on patient in pain
	Monitoring and interpretation of vital signs
	Feedback to patient on vital signs
	Appropriate verbal and non-verbal communication with patient
	Inclusion of patient in actions
	Explaining actions and obtaining relevant permission from the patient
	Infection control principles
	Documentation of findings in patient notes
Essential skills / correct action:	Completion of Braden scale
	Completion of Pain scale
	Monitoring and interpretation of vital signs
	Observing infection control principles
	Neurovascular assessment of limb
Scenario development	
Compiled by:	Dr. M. Wilke
	Ms. M. Bekker
	Ms. K. Venter
Date compiled:	05 May 2014

Scenario 2 – Post-test

Programme:	First year nursing group
Module name:	NUR
Coordinator:	Dr. M. Wilke
Estimated Time:	Simulation – 20 minutes Debriefing – 20 minutes

Authentic problems



Outcomes:

Assesses the patient at risk of developing pressure sores according to information obtained from the patient and complete the Braden scale correctly.

Assess patient's pain level and accurately record your findings in the patient's notes.

Measure vital signs correctly, counting a full minute when assessing respiration and pulse rate and take the patient's temperature.

Document findings in the patient's report.

Take proper notes of all the findings.

Planning

Context/situation

Orthopaedic ward.

A fe/male patient was involved in a motor vehicle accident and present with a patellar dislocation. S/he complains of severe pain in the leg and cannot move independently. Patient is on bed rest and scheduled for theatre later in the afternoon.

Pre-requisite knowledge:

Anatomy and physiology

Neurological functions

Normal values of vital signs for an adult

Nursing process for patient documentation

Pressure score development

Assessment for pressure score risk

	Pain assessment
	Nutrition knowledge
	Knowledge regarding formation of bed ulcers, including friction & shear and effect of moisture on skin of bedridden patient
	Tanner's Clinical Judgment Model (2006:208) and Lasater's Clinical Judgment Rubric (2007:500-501)
Pre-requisite practical skills:	Physical assessment
	Patient assessment for pressure sore risk
	Completion of Braden Scale
	Completion of pain scale
	Taking of vital signs
	Writing report
	Interpersonal communication and empathy with patient

Equipment and consumables

Equipment	Consumables
Bed with rails down	Box Unsterile gloves
Bed linen	One bottle hand rub
Over bed trolley	Two linen savers
Pillows	Box hand towels
Dustbin	

Documents:	Written outcomes for simulation
	Braden scale
	Pain scale
	Patient recording documents

Moulage

Two packs of gauze and bandages	Put gauze on side of knee and wrap bandages around knee to look like dislocated and displaced patella.
Role of simulated patient:	Had been in a motor vehicle accident and must complain of severe pain in leg, especially after the doctor tried to manipulate it in the emergency room. Received pain medication and pain is a little better but still present. Should not move independently. When asked, have breakfast and dinner at lodgings – not lunch. Diabetic since childhood and injects him/herself. Sensation loss in feet.

Instruction to participating students regarding outcomes

Correct assessment and completion of Braden scale

Completion of pain scale

Interpersonal communication

Allocate attention wisely

Vital signs performed correctly

Following of orders

Patient assessment

Empathy with patient's condition

Utilise all available information

Maintain professional behaviour

Completion of activities within given time range

Proper documentation of findings

Students must receive written instructions

Implementation

Clinical preceptor's key notes:

Six students will be in separate simulation rooms with simulated patient at a time

Greet patient and wash hands

Involve patient, do not look at documentation all the time, ignoring the patient

Give feedback to patient on findings

Clinical progression of patient	Findings of patient assessment	Noticing and clinical reasoning	Provide information/ laboratory results (if requested)	Prompts, questions and teaching points
Authentic problem: Pressure sore risk Braden scale assessment	Sensory perception slightly limited as a result of diabetes. Moisture: Score 4 Activity: Score 1 – patient on bed rest until condition change Mobility: Score 3 – can move but still in pain Nutrition: Score 3 Friction and Shear: Score 2 – needs help to move up in bed Total must be between 13 - 14	Patient is awake and able to communicate Experience sensory loss due to diabetes. Neurological connection between feet and medication condition Patient still experience a lot of pain after the accident – pain not stabilised. Cannot change position by him/herself Healthy patient and immobility due to accident – not	Feel pulse on feet	Ask patient to stay in bed but to try and move feet and arms, if possible, for circulation Patient can change to a position that is comfortable for the leg

		age Miss one meal a day Can move but needs assistance – some friction will occur Patient is moderate risk for pressure sores		
Clinical progression of patient	**Findings of patient assessment**	**Noticing and clinical reasoning**	**Provide information/ laboratory results (if requested)**	**Prompts, questions and teaching points**
Authentic problem: Pain as a result of motor vehicle accident as well as position changing after linen replacement	Ask patient to explain pain s/he is experiencing and record correctly according to the supplied pain scale	Must take into consideration that patient was in motor vehicle accident and that pain is worse due to manipulation	Give some comfort of either asking if pain medication is effective or offer to change position If needed, call registered nurse for medication administration	Ask patient regarding the characteristics of the pain
Authentic problem: Vital signs	Temperature Pulse rate Respiration	Within normal limits	Give feedback to patient regarding values	

Vertical strands	
Safety:	Identification Infection control standard/universal and aseptic techniques Ged rails Bedside bell
Communication:	Appropriate verbal and non-verbal patient communication Polite and caring Provide patient and family with information Culturally sensitive
Nursing care / Clinical judgment process:	Observe change in condition (assessment history, physical assessment, management) Exhibit clinical judgment/prioritises care Take appropriate action Effective reflection Comprehensive care

Professional behaviour:	Adhere to patient's rights Introduce self Ensure privacy Adhere to ethical, legal issues, professional responsibilities Record keeping
Notes for reflection	
Essential knowledge:	Pathophysiology of pressure sore development Make connection between sensation loss in feet and diabetes Assessment of pressure sore risks according to the Braden scale Correct completion and interpretation of Braden scale Correct assessment of pain on a scale Interpersonal communication with patient – reacting on information and treating patient with empathy Correct response on patient in pain Monitoring and interpretation of vital signs Feedback to patient on vital signs Appropriate verbal and non-verbal communication with patient Inclusion of patient in actions Explaining actions and obtaining relevant permission from the patient Infection control principles Documentation of findings in patient notes
Essential skills / correct action:	Completion of Braden scale Completion of Pain scale Monitoring and interpretation of vital signs Observing infection control principles Neurovascular assessment of limb
Scenario development	
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