THE LEARNING EXPERIENCE OF THIRD-YEAR BACCALAUREATE NURSING STUDENTS ON HIGH FIDELITY SIMULATION

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DECLARATION

I hereby declare that the dissertation submitted for the degree Magister Societatis Scientiae in Nursing at the University of the Free State is my own independent work and has not previously been submitted by me for a degree at another university or faculty. I further waive my copyright of the dissertation in favour of the University of the Free State.

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A. Welman

This study is dedicated to my husband who stayed awake with me and did not allow my studies to come between us.

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- Ella Belcher, my language editor: I have enjoyed our electronic mail conversations and the feedback received meant that I could tick off another chapter on my 'to do list'. Thank you!

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ABSTRACT

High fidelity simulation is an innovative learning strategy that supports students in developing their critical thinking and clinical judgement abilities. This strategy is used in the School of Nursing at the University of the Free State (UFS) to enhance the acquisition of basic and advanced competencies of students. It was implemented for use in 2009 and is thus regarded as a new practice at the School. It was essential to determine the effectiveness of this strategy. A qualitative, descriptive and exploratory design was used to explore the learning experience of third-year Baccalaureate nursing students on high fidelity simulation (HFS).

After the students were exposed to the HFS, they were invited to participate in focus group interviews. Fourteen of the 35 third-year students chose to participate. The inclusion criteria specified that the students should be registered for both their third-year nursing theory and their clinical modules and should have been exposed to the two high fidelity simulation sessions that had been presented. The focus group interviews were audio-recorded and transcribed. For triangulation purposes, data collected by means of the module evaluation questionnaire completed at the end of the semester was also used. Tesch's method was used to code the data and NVivo software implemented to simplify the process.

The students described their learning experience as positive and highlighted the advantage and value of HFS as a learning strategy. They entered the learning environment anticipating that they would learn new things. Several emotions were experienced during all the phases of the simulation. They experienced fear before commencing the simulation scenario. This emotion developed into astonishment, alertness and anxiety during the simulation, but changed into self-confidence. The complexity of the simulated situation caused anxiety within the students since they were unsure of how to care for the patient. The students felt excited and stimulated after participating in the facilitated reflection session.

The high-technological features of the human patient simulator, the convincing nature of the environment and the interaction within the team led the students to experience the simulation as real. Although authentic, the high fidelity simulation posed less risk than real patient care since students were permitted to make mistakes and learn from these.

The students felt that they were able to integrate their theoretical knowledge with nursing practice. This integration occurred during the facilitated reflection session. The self- and peer assessment strategies to which they were exposed assisted the students in identifying gaps in their knowledge. An improvement in critical thinking and clinical judgement abilities was the result of the effective theory and practice integration that occurred. This led to an increase in self-confidence and the belief that the skills acquired during the high fidelity simulation session were transferrable to real instances of patient care.

It was evident that proper preparation before the simulation is essential to ensure an optimal learning experience. The students also realised that they should have been better prepared on the subject matter, since this would have enabled them to meet the needs of the human patient simulator more effectively.

It can be concluded that the HFS experiential learning opportunity that the third-year students were exposed to assisted them in integrating their nursing theory with practice. Repeated exposure to HFS learning experiences, commencing during their first year of study, might enable nursing students to develop their critical thinking and clinical reasoning skills and, together with patient contact instances, develop their clinical judgement abilities. This will prepare them, as registered nurses, to render safe and effective care to their patients.

(**Key terms**: Critical thinking; clinical judgement; facilitated reflection (debriefing); high fidelity simulation; human patient simulator; integration of theory and practice).

OPSOMMING

Hoëgetrouheidsimulasie is 'n innoverende leerstrategie wat studente ondersteun om hul kritiese denke en kliniese oordeelsvermoë te ontwikkel. Die strategie word by die Skool vir Verpleegkunde aan die Universiteit van die Vrystaat gebruik om die bemeestering van basiese en gevorderde bevoegdhede by studente te bevorder. Dit is 'n nuwe praktyk by die Skool, aangesien dit in 2009 vir die eerste keer geïmplementeer is. Dit was om hierdie rede noodsaaklik om die effektiwiteit daarvan te bepaal. 'n Kwalitatiewe, beskrywende en verkennende ontwerp is gebruik om die leerervaring van Baccalaureus- verpleegkunde studente in hul derde jaar met betrekking tot hoëgetrouheidsimulasie vas te stel.

Die studente is aan twee hoëgetrouheidsimulasie-sessies blootgestel. Daarna is hulle uitgenooi om aan fokusgroep-onderhoude deel te neem. Uit die 35 studente in die klas het 14 besluit om deel te neem. Die insluitings kriteria het bepaal dat die studente aan albei simulasie sessies blootgestel moes wees en vir beide hul derdejaar- verpleegkunde teorie en praktiese modules geregistreer moes wees. Die fokusgroeponderhoude is op oudioband opgeneem en getranskribeer. Data van die module evalueringsvraelys wat aan die einde van die semester deur die studente voltooi is, is vir triangulasiedoeleindes ook ingesluit. Tesch se metode is gebruik om die data te kodeer en NVivo sagteware is gebruik om die proses te vergemaklik.

Die studente het hulle ervarings as positief beskryf en het die voordele en waarde van hoëgetrouheidsimulasie as leerstrategie beklemtoon. Hulle het die leeromgewing binnegegaan met die verwagting dat hulle iets nuuts sal leer. Hulle het verskeie emosies gedurende al die fases van die ondervinding beleef. Hulle het reeds voor die simulasiescenario 'n aanvang geneem het, vrees ervaar. Hierdie emosie het gedurende die simulasie in verwondering, waaksaamheid en angstigheid ontwikkel, maar namate die studente deur die scenario gevorder het, het dit in selfvertroue uitgekristalliseer. Die angstigheid is veroorsaak deur die feit dat studente onseker was oor hoe om die pasiënt te versorg. Die studente het egter na die gefasiliteerde refleksiesessie opgewonde en gestimuleer gevoel.

Die hoë-tegnologiese eienskappe van die menslike pasiëntsimulator, die oortuigende aard van die omgewing en die spaninteraksie het daartoe gelei dat die studente die simulasie as die werklik ervaar het.

Alhoewel die hoëgetrouheidsimulasie outentiek was, het dit 'n laer risiko as werklike pasiëntesorg gehad, aangesien studente toegelaat is om foute te maak en hulle daaruit kon leer.

Die studente was van mening dat hulle daartoe in staat was om hul teoretiese kennis met die verpleegpraktyk te integreer. Hierdie integrasie het tydens die gefasiliteerde refleksiesessie plaasgevind. Die self- en eweknie-assesseringstrategieë waaraan studente blootgestel was, het hulle gehelp om leemtes in hul kennis en areas wat meer aandag moet kry, te identifiseer.

'n Verbetering in hulle kritiese denke en kliniese beredenerings vermoë was die gevolg van die effektiewe integrasie van teorie en praktyk wat plaasgevind het. Dit het tot 'n toename in selfvertroue gelei en die verwagting by studente geskep dat die vaardighede wat gedurende hoëgetrouheidsimulasie bekom is na werklike pasiëntesorg oorgedra kan word.

Dit het duidelik geword dat deeglike voorbereiding voor die simulasie is essensieel om 'n optimale leerervaring te verseker. Die studente het besef dat hulle beter en meer moet voorberei vir die tema om hulle sodoende in staat te stel om in die behoeftes van die menslike pasiëntsimulator te voorsien.

Die gevolgtrekking is dat die ondervindingsleergeleenthede wat die hoëgetrouheidsimulasie die derdejaar- voorgraadse studente gebied het, hulle gehelp het om verpleegkunde teorie met die praktiese komponente van die kursus te integreer. Herhalende blootstelling vanaf hul eerstejaar aan hoëgetrouheidsimulasie kan verpleegkundestudente moontlik in staat stel om kritiese denke en kliniese beredeneringsvaardighede te ontwikkel. Dit, tesame met pasiëntekontak, kan hulle help om hulle kliniese oordeelsvermoë te verbeter. Dit sal hulle beter voorberei om as professionele verpleegkundiges veilige en effektiewe pasiëntesorg te lewer.

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CHAPTER 1

OVERVIEW OF THE RESEARCH STUDY

1.1 INTRODUCTION

Clinical or medical simulation originated in the early 1960s with the development of Resusci Anne by Laerdal. This development presented an opportunity to improve the method by which resuscitation training was presented (Bradley, 2006:255; Laerdal 2010; Rosen, 2008:163).

In 1967 the first computer-controlled simulator was developed by a team led by Abrahamson and Denson at the University of Southern California (Rodgers, 2007). SimOne failed to achieve acceptance because of its high production costs. The value of its use was not identified at the time (Bradley, 2006:254). Even so, the stage was set for the development of patient simulation as it is being conducted today (Rodgers, 2007).

In Africa two of the eight simulation centres equipped with high fidelity human patient simulators are in Egypt (Jones, 2006).

In South Africa several universities have implemented high fidelity simulation training at their institutions. Some of these include the Universities of KwaZulu-Natal (School of Medicine), Witwatersrand (Department of Anaesthesia, Johannesburg Hospital), the North West University (Potchefstroom) and the Medunsa University of Southern Africa (Faculty of Medicine), as well as the Nelson Mandela Metropolitan University in Port Elizabeth (Jones, 2006).

The researcher of this study is employed at the School of Nursing at the University of the Free State (henceforth called the UFS School of Nursing). The University of the Free State (UFS) is one of the traditional South African universities, and the School of Nursing, together with the School of Medicine and School for Allied Health Sciences, forms part of the Faculty of Health Sciences.

The UFS School of Nursing implemented high fidelity simulation as an imperative to teach basic and advanced skills to nursing students. The acquisition of the high fidelity simulators was made possible with grant money allocated to the UFS School of Nursing by Atlantic Philanthropies. The mission of this foundation is to improve the health of South Africans by transforming nursing scholarship in university schools of nursing. The project is administrated by University Based Nursing Education South Africa (UNEDSA, 2009).

A dream to create an innovative teaching and learning environment that would empower students and professional nurses to become clinically excellent and function independently in the practical setting was identified (UFS SoN, 2008:1). A grant application followed after a need was identified to develop nurses that are able to adapt to and deal with the contrasts of nursing and health care practices, both in resource-rich and resource-poor environments in South Africa (UFS SoN, 2008:1).

Three interlinking objectives were identified: to transform the portfolio of programmes offered at the undergraduate, post-basic and postgraduate levels; to establish an electronically enabled learning facility with state-of-the art equipment and facilities for training students in a non-threatening environment; and to establish a unit for continuing professional and research development for both practising nurses and members of staff of the UFS School of Nursing (UFS SoN, 2008:16).

The electronically enabled facility was carefully designed and the UNEDSA grant money and R1 million contributed by the University of the Free State made it possible for the SPACE,[1] a state-of-the art classroom, to be opened in November 2009 (Coetzee, 2009). High fidelity patient simulators, which can be used during teaching to improve the clinical competency of students, are housed in this venue (Waldner & Olson, 2007:4). Simulation by means of the human patient simulator is

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1The SPACE – Seamless integration of theory and Practice with Academic depth and the Creative use of an Electronic enabled environment.

not taught in an authentic simulation environment that is as true to real life as possible, but rather in an interactive, high technology environment. Please refer to the compact disc (CD) at the back of this study for a video-recording that explains the features and specifications of the SPACE.

1.2 PROBLEM STATEMENT

A nurse-based health care system is used in South Africa (SA). Competent, expert nurses are required to effectively manage the quadruple burden of disease found in our country (South Africa, 2012:6). The increased burden is caused by the presence of the human immunodeficiency virus (HIV), tuberculosis (TB), high maternal and child mortality rates, non-communicable diseases, violence, injuries and trauma. The burden of disease in SA is four times larger than that of developed countries and twice as high as other developing countries. This places a larger burden on finances, facilities and human resources. More hospital beds and medical staff are needed to manage the burden of HIV, communicable diseases and injuries (Econex, 2009:4, 5).

The need for competent, self-actualised nurses has increased in SA. The ratio of nurses and midwives for every 10 000 of the population is 40.8 (WHO, 2011:122). In the Free State (one of the nine provinces in SA), a ratio of 15.4 professional nurses for every 10 000 of the population exists. It is necessary to train nurses that will be fully prepared for the task when they enter the profession as qualified individuals (SANC, 2009). With 51.6% vacant positions for professional nurses in the Free State in the public sector in 2008, it is clear that limited staff is available to treat patients or clients (Solidarity Research Institute, 2009). These shortages have an impact on the accompaniment of students while they are placed in the clinical setting and employers are asking educators to do a better job of preparing students for the real world of nursing (Jeffries, 2005:96).

Nursing, medical and public health schools are producing one million doctors, nurses, public health professionals and midwives annually. Even though these figures sound adequate, it is evident that there is a misdistribution of professionals, with 26 of the Sub-Saharan African countries having one or no medical schools

(Frenk, Chen, Bhutta, Cohen, Crisp, Evans, Fineberg, Garcia, Ke, Kelley, Kistnasamy, Meleis, Naylor, Pablos-Mendez, Reddy, Scrimshaw, Sepulveda, Serwadda & Zurayk, 2010:1923).

Frenk *et al.* (2010:1924) argue that it is necessary to train health care professionals that are able to mobilise knowledge and engage in critical reasoning activities that will allow them to render ethical, competent care. In order to achieve this, the focus in nursing education needs to change. Attention should be paid to the integration of theory and practice and the incorporation of technology into teaching. Garrison and Vaughan (2008:ix) contend that it is beyond time that higher education institutions recognise the untenable position of holding onto past practices that are incongruent with the needs and demands of a knowledge society.

Nurses are exposed to technology in their everyday practice when they diagnose and treat patients effectively. Urine tests are performed by pressing a button on a machine, a patient's blood pressure is measured electronically and patients are nursed on ventilators while monitors display their vital parameters.

The available monitors and technology, however, cannot replace the care provided by professional nurses and nursing students. Technology only assists the nurse in identifying and diagnosing patient needs and provides information on physiological problems (Williams, Schmollgruber & Alberto, 2006:395). The increasing need for technologically advanced nursing skills, coupled with the variety of sophisticated devices has made it necessary to prepare students to use the available technology appropriately. This can be done in class. Even the development of clinical reasoning skills and the interpretation of results can be practised during theory classes. Lasater (2007:269) argues that the integration of simulation into the curriculum of nursing students will help them to develop their critical thinking and clinical judgement abilities and to function more effectively in the clinical setting.

The advantages of implementing simulation-based teaching into the nursing curriculum have been extensively documented. Overstreet (2008:595) argues that simulation is hands-on training that it is rooted in Kolb's (1984) theory of experiential learning. This is of value for a nursing school, such as the UFS School of Nursing,

whose teaching strategies are based on this theory. Due to the active role that the student plays during simulation, psychomotor skills are developed.

The intake of students at the UFS School of Nursing showed an increase with approximately 100 first-year students being registered in 2012. With limited practicum placements available and the increased number, students are not necessarily exposed to patients that suffer from the conditions taught in theory. In a focus group discussion undertaken by Lasater (2007:273), students identified the breadth of learning experience gained during simulation as one of its strengths. Simulation can be used to expose students to conditions that are not seen during practicum placement or where learning opportunities are lacking.

Due to the high number of students placed in the clinical areas and the limited availability of clinical preceptors and staff, students are not adequately supervised during placements. Simulation allows for sufficient supervision during learning experiences as clinical staff and educators are present during the complete experience (Baillie & Curzio, 2009:303).

In the clinical setting, learning is a by-product of the care that is rendered to patients. The clinical needs of the patient are prioritised above the educational needs of the student. Simulation places the needs of the student at the centre of attention and creates a 'perfect' teaching opportunity (Kneebone, 2005:551).

It is difficult to practise medical emergencies in real life, for example cardio-pulmonary resuscitation (CPR) of a trauma victim. This situation can be simulated to place students in an unfamiliar setting and practise psychomotor and decision-making capabilities (Overstreet, 2008:594). Practising a real life situation in a simulated environment can present the student with the chance to master important, advanced skills such as intubation. The instant feedback ability of the human patient simulator allows students to see the outcome of their interventions (Lasater, 2007: 272; Baillie & Curzio, 2009:302).

Ethical dilemmas and ethical decision-making skills are unfamiliar grounds to some nurses and specifically to novice nursing students. Meyer, Naudé and Van Niekerk

(2004:123) argue that first-year students should not be placed in units where they will be exposed to terminally ill patients, as they are emotionally immature to cope with the emotions accompanying death. The students of the UFS School of Nursing are not necessarily exposed to these ethically charged situations prior to their third year, as the focus in their first year is on community involvement and in their second year on primary health care. During their third year placement, the focus shifts to nursing patients at a secondary and tertiary level. They are placed in the intensive care unit (ICU) setting where the prevalence of end of life decisions and care is relevant.

Simulation offers the opportunity to create the emotionally charged environment that a student will experience in dealing with ethical dilemmas and end-of-life decisions. This allows students to think about how they will respond. The student has the opportunity to practise words, actions and reactions (Overstreet, 2008:594).

Even though the advantages and possible benefits of high fidelity simulation learning is extensively document, its application within the South African context are not well defined and it is thus necessary to determine what it is that students learn during this experience.

1.3 THEORETICAL FRAMEWORK

With the implementation of high fidelity simulation as a learning strategy, it is necessary to develop an educational philosophy that can guide educators in the implementation of such a teaching tool. According to Parker and Myrick (2009:323), either constructivism or behaviourism can be used as pedagogy to assist with the integration of high fidelity human patient simulation into a curriculum. The School has chosen the construcivist learning theory for this purpose.

The constructivist learning theory, based on the work of Piaget and Vygotsky, argues that knowledge transmission is not passed from teacher to student, but is created by the student through interaction with his or her environment (Parker & Myrick, 2009:326). Learning equals development, and knowledge is gained through three learning processes: assimilation, accommodation and construction.

The construction of new knowledge starts with a process of disorientation after exposure to the new situation (assimilation). The student will then progress to self-examination and critical assessment by connecting the disorientation to similar learning experiences (accommodation). This results in the construction of new knowledge, built on existing knowledge (construction) through a personal interpretation of the learning experience (Billings & Halstead, 1998:220).

Vygotsky (1963), in his theory of interactional learning, argues that intellect is developed through conversation and during interaction with others. Central to his theory is the concept of the zone of development. This concept is defined as the gap between what is student is able to do now and what performance level he/she could achieve under guidance. It is reasoned, that with the right amount of structure and verbal prompts, a student would be able to solve problems and become more able to guide her/his own actions. The implications of this theory for education practice are that students should be placed in learning situations where they have to stretch their understanding capabilities and go beyond comfortable concepts. It is important though to ensure that students receive guidance and support while exposed to these learning situations (Bruce, Klopper & Mellish, 2011:91).

In terms of the constructivist theory, the learning environment is structured to promote opportunities that encourage and support the building of understanding (Kala, Isaramalai & Pohthong, 2010:63). At the UFS School of Nursing, a workbook with specified outcomes and activities to complete for each theme is provided. The students have to complete these as pass requirements for each module. Some activities are scheduled for completion as part of class preparation and others to enhance the integration of theory and practice, since they are completed while the student are placed in the clinical areas.

Constructivism focuses on what students have to do to construct knowledge, thus prompting a discussion on what learning activities teachers need to develop to lead students towards achieving the desired outcomes (Biggs & Tang, 2007:21). Through the SPACE the educators at the UFS School of Nursing are able to implement interactive activities such as showing an educational video on the internet or searching for a definition or an article. It is possible to adapt the high fidelity

simulation scenario to the actions taken or omitted by the students. The purpose is to allow students to change their conceptions and not only to acquire knowledge. By focusing on the task and not on assessment, and working collaboratively and engaging in dialogue with others, students connect more deeply with the task and deepen their understanding (Biggs & Tang, 2007:21). Teaching and learning based on the constructivist theory allows students to develop their clinical judgement abilities. Tanner's clinical judgement model strengthens this approach (Tanner, 2006:207).

In constructivism, the term 'constructive alignment' is used to describe how the assessment tasks and teaching/learning activities match the intended learning outcomes. Alignment ensures maximum consistency throughout the system so that broad curriculum topics are transformed into outcome statements reflecting the teaching and learning goals (Biggs & Tang, 2007:53).

According to Biggs and Tang (2007:54) the steps for ensuring constructive alignment are:

- Determine the content and describe the intended learning outcomes in the form of a verb. The context and a standard for performance should be included.
- Create a learning environment using teaching/learning activities that address the verb.
- Use assessment task that contains the identified verb.
- Transform these judgements into standard grading criteria.

The high fidelity simulation scenarios were integrated into the current curriculum, in line with the constructivist theory of teaching used by the UFS School of Nursing. Simulation is not implemented as an *'add on'* to the current curriculum activities. It forms part of the normal training schedule based on the intended outcomes (Issenberg & Scalese, 2007:75). The scenarios for simulation were structured in such a way that the development of critical thinking and clinical judgement abilities were enhanced.

The simulation scenarios are developed based on a pre-developed template (Addendum A). This template can be evaluated against the framework developed by Henneman and Cunningham (2005:174). In their framework, the simulation history, objectives and case scenario details are included. It is important to describe the facilitated reflection format and questions that should be asked. Criteria on how to programme the human patient simulator are also described.

At the UFS School of Nursing, this forms part of the responsibilities of the high fidelity simulation coordinator. The props necessary to ensure authenticity of the environment are included and planned for. These include patient documentation, intravenous pumps, and blood pressure measuring machine and oxygen lines.

A final check is performed by the high fidelity simulation coordinator to confirm that the props are in place and that the human patient simulator and video-recording equipment are functional. The references, including the books and articles used as sources for the content of the scenario should be included.

Tanner (2006:208) describes a model that can be implemented to enhance the clinical judgement of students. Four aspects of this model link to the process described in the constructivist theory. These aspects are: perceiving the current situation (noticing); developing an understanding of the situation (interpreting); deciding on action options appropriate for the situation based on the interpretation that was made (responding); and attending to patients' responses to the nursing action while they are implemented, thus evaluating the outcomes of the action and its appropriateness (reflecting) (Tanner, 2006:208). These steps are summarised in Figure 1.1.
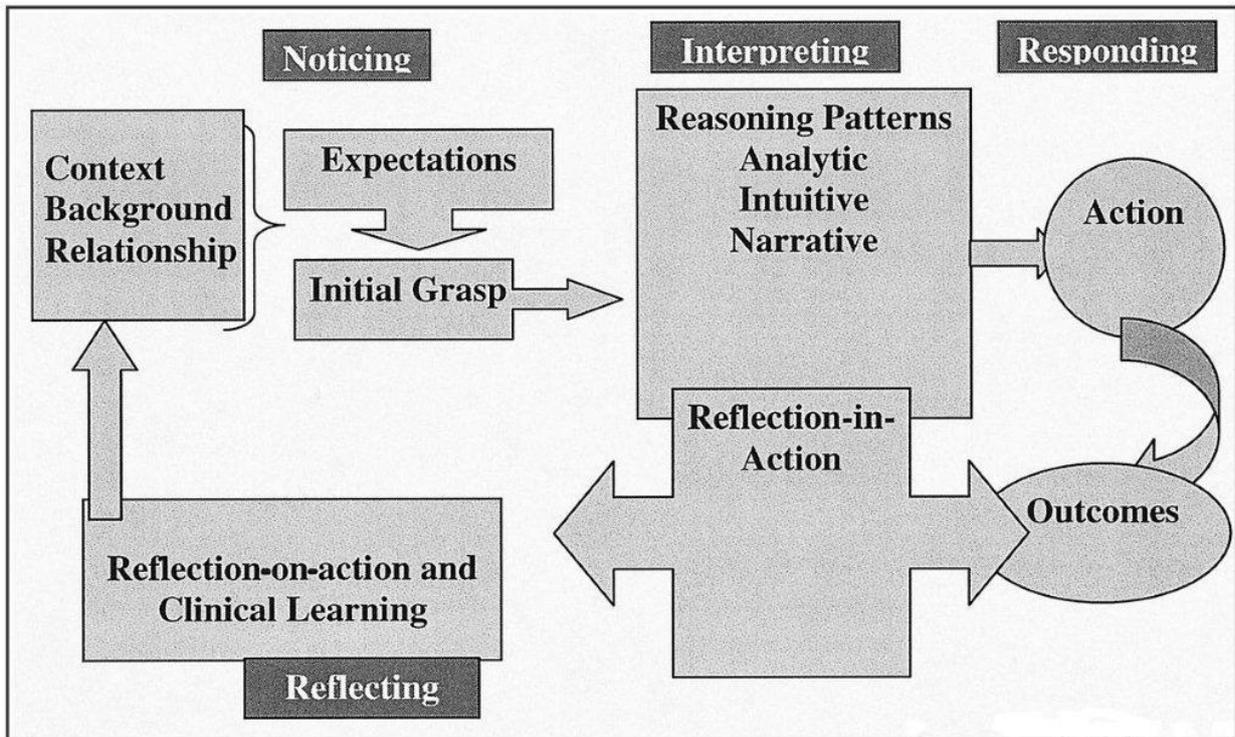
Figure 1.1 Steps in the clinical judgement model (Tanner, 2006:208)

In this study both constructivism and Tanner's clinical judgement model were used for the implementation of high fidelity patient simulation as a learning strategy in the UFS School of Nursing.

1.4 PURPOSE OF THE STUDY

The purpose of this study was to describe the learning experience of third-year Baccalaureate nursing students in a module using high fidelity simulation as a learning strategy.

1.5 CONCEPT CLARIFICATION

For the purpose of this study, relevant concepts are clarified in the subsections that follow.

1.5.1 LEARNING EXPERIENCE

A student enters a learning situation with some ideas on the topic of interest (Kolb, 1984:28). This suggests that learning is constructive because new knowledge is expanded by associating it with existing knowledge frameworks. Students enter new learning situations with existing assumptions, beliefs and motives, as well as the intention to learn, but also with previously acquired knowledge. These aspects influence current learning and it is important to utilise this knowledge through discourse and narrative experiences (Bruce *et al.,* 2011:94).

Knowledge is only remembered if it is internalised in an organised, cognitive structure. This implies that students are active constructors of their own knowledge and are responsible for their own learning. Since learning is described in terms of a process, the focus is not on the content of the subject or the outcomes, but on the development and transformation of the student.

Learning is not only a cognitive activity but involves the complete person, including his or her thoughts, feeling, perceptions and behaviours. This implies that holistic learning is a lifelong process with learning occurring in all life situations, both the classroom and real life, while the student interacts with his or her environment (Kolb, 1984:31, 33). Students learn by working collaboratively and in dialogue with others. Good dialogue shapes and enhances deeper understanding, and learning can be seen as a social process.

A high fidelity simulation scenario as a learning strategy does exactly this by allowing students to construct new knowledge and to learn, based on their preparation and existing theoretical knowledge on the topic. By communicating and working in a group, they change the storyline and application of their current knowledge in a new, dynamic situation. High fidelity simulation provides students with the opportunity to learn through making decisions, managing a crisis, developing leadership capabilities and practising clinical skills.

Traditional approaches to teaching and learning for nurses does not satisfy the needs of today's student. New and innovative learning strategies are required. High

fidelity simulation is such a strategy (Doyle & Leighton, 2010:391). It is possible, through simulation, to engage students in active learning, creative thinking and high level problem-solving activities (Bland, Topping & Wood, 2011:664).

A learning experience for this study is thus defined as the experiential learning that occurs while the students are exposed to a human patient simulator wihin a simulated environment.

1.5.2 LEARNING STRATEGY

Simulation is a common and increasingly important strategy that can be used to link multidimensional learning with practice and performance (Billings & Halstead, 1998:304). In defining simulation as a learning strategy, Bland *et al.* (2011:665, 667, 668) emphasise the following aspects: it entails the dynamic creation of something that is not real but realistic, and it exposes students to active learning activities that provide opportunities for repetition, feedback and reflection. Through simulation, students are able to work together, solve problems and apply their critical thinking abilities within a safe, practical environment.

The integration of theory and practice is possible and students as active learners do not only memorise facts but knowledge is applied within the simulation context (Billings, 2007:IX). This application occurs because students are allowed to make decisions within a patient-like environment and evaluate the outcome of the decisions that were made (Billings & Halstead, 1998:304).

1.5.3 MODULE EVALUATION QUESTIONNAIRE

An evaluation process determines the value, quality and importance of something. In applying this definition to education, it can be said that the value of processes and products of learning is judged (Bruce *et al.,* 2011:305). In the higher education context at the University of the Free State, quality assurance is performed by the student evaluating the educators and teaching material provided (UFS, 2006:4). This includes the evaluation of the learning experiences, content, activities, assessment and the overall teaching effectiveness.

A module is defined as the building block of a qualification and comprises core and elective modules with allocated credits. The module evaluation questionnaire referred to during this research are a written evaluation, completed by the student, of the nursing theory and practicum core modules for the first semester (six months) in the third year of study (Addendum B). An explanation of how these questionnaires were completed follows in Chapter 2.

1.5.4 SIMULATION

Medley and Horne (2005:31) define simulation as the reproduction of the essential features of a real life situation.

Alspach (1995:85), who defines simulation in health care, provides a more comprehensive definition:

> Simulation is an attempt to replicate some or nearly all of the essential aspects of a clinical situation so that the situation may be more readily understood and managed when it occurs for real in clinical practice settings. The more closely the processes and conditions of the simulation resemble the reality they are intended to represent, the greater the potential for transfer of learning to that situation.

Simulation is an educational strategy, not a technology (Decker, Sportsman, Puetz & Billings, 2008:75). Simulations are distinguished along a continuum based on the degree to which they represent reality (Hovancsek, 2007:3), namely low, moderate and high fidelity simulation.

1.5.4.1 LOW FIDELITY SIMULATION

Low fidelity simulators are static and lack the detail of a real situation. This type of simulation is useful in teaching basic psychomotor skills, such as the administration of an intramuscular injection, and is achieved by practising this on a foam intramuscular injection simulator. Because the context of realism is absent, it is difficult for students to translate the experience into real life (Seropian, Brown, Gavilanes & Driggers, 2004:165).

1.5.4.2 MODERATE FIDELITY SIMULATION

Moderate fidelity simulators allow for a more realistic context than low fidelity simulators; therefore they are generally used as task trainers. Examples include models with breath and heart sounds, without the chest movements seen in high fidelity simulators. These types of simulators are useful as instructional tools and for the development of deeper understanding of specific, increasingly complex subject matter and competencies (Seropian *et al.,* 2004:165).

They also provide an opportunity for hands-on experience in learning and mastering selected clinical and learning skills that require dexterity and coordination of complex, refined motor movements (Alspach, 1995:86).

1.5.4.3 HIGH FIDELITY SIMULATION

High fidelity is defined as the electronic reproduction of sound, especially from broadcasted or recorded sources, with minimal distortion. High fidelity human simulators are technologically advanced and include human patient simulators (HPS). The HPS can reproduce not only recorded sounds but also physiological functions and anatomical features of real patients. As the student interacts with this simulator, critical assessment information is gathered and the simulator's medical condition is identified. The student can then proceed with treatment options to correct the simulator's condition (Rodgers, 2007).

Medley and Horne (2005:32) describe high fidelity models as life-sized simulators with features such as palpable pulse, visible respiration, measurable blood pressure and pulse oximetry, vocal sounds, open orifices, and minimal movement, all programmed by computer.

During this study, high fidelity human patient simulators are used during clinical simulation learning experiences.

1.5.5 THIRD-YEAR BACCALAUREATE NURSING STUDENTS

The Nursing Act describes the conditions under which a learner nurse is registered. Learner nurses do not practise nursing (South Africa, 2005:6, 36). A learner nurse is receiving training to become a nurse and is registered as a learner nurse at the South African Nursing Council (SANC). For the purpose of this study, a third-year Baccalaureate nursing student is thus defined as a learner nurse registered for the four-year integrated Baccalaureate nursing programme at the University of the Free State, completing his or her third-year nursing theory and clinical modules.

1.6 THE RESEARCH PARADIGM

The philosophical influences that underpin research should be clarified and qualitative researchers tend to make sense of and intrepet these in their own way (Merriam, 2009:8). These intreprations are defined as paradigms. A research paradigm is defined as a world view or the general perspective that the researcher possesses regarding the complexities of the real world (Polit & Beck, 2008:13).

The first paradigm question that is asked refers to the nature of reality or the ontological perspective of the researcher (Merriam, 2009:8). The researcher in this study is committed to the naturalistic or constructivist paradigm and beliefs that reality is not fixed but are contained within a specific context. Reality is socially constructed by the individuals that participate in the research and their views are thus crucial to obtain in order to allow for a better understanding of the phenomenon that is investigated. This paradigm often directs researchers to select a qualitative research design, since the purpose of qualitative inquiry is to comprehensively investigate the phenomenon (Polit & Beck, 2008:15, 763).

The naturalistic/constructivist paradigm is a method of inquiry that attempts to deal with the issue of human complexity by exploring it directly. An emphasis is placed on the understanding of human learning experience as it occurs in a naturalistic setting, over a period of time (Polit & Beck, 2008:17). The followers of the constructivist paradigm belief that there are multiple interpretations of reality and the purpose of research are to determine how an individual constructs his/her reality

within a specific context (Polit & Beck, 2008:759). The learning experience on high fidelity simulation explored in this study was described by participants with first-hand experience and knowledge of the phenomenon. The researcher enters the world that the participant lives in as a guest.

The second paradigm question refers to the nature of knowledge or the epistemological nature of the research (Merriam, 2009:8). Qualitative researchers believe that knowledge are not obtained but constructed. The purpose of this study is to describe, understand and interpret the data that are obtained and thus construct new knowledge. The researchers is curios to find out how the students experienced the high fidelity simulation.

The researcher views the undergraduate students in this study as individuals who chose to study nursing and who as adult learners are responsible for their own learning and progress. Learning is an active process in which the student should be enabled to engage in the learning opportunity. Students learn by interacting with their environment. Learning is also a social activity in which students are allowed to learn from each other and to make mistakes since a safe, non-threatening environment is created during the high fidelity simulation session. This allows for pleasant learning opportunities and enhances critical thinking.

Students are novice practitioners and should be developed to function independently at a level applicable to their year of study. This implies that they need support and guidance during teaching and they should be enabled to learn. Learning allows them to develop their knowledge and skills and a deep approach to learning is preferred. With deep learning, students feel the need to engage in the task with which they are presented. They will try to use the most appropriate cognitive activity while engaged in the activity (Biggs & Tang, 2007:25). Since high fidelity simulation learning builds on what the student already knows a deeper approach to learning is enhanced.

As indicated, a qualitative research design supports the constructivist research paradigm. The qualitative research design chosen for this study is discussed in the following paragraphs.

1.7 RESEARCH DESIGN

For the purpose of observing, describing and documenting aspects of a situation as it occurs naturally, a qualitative, exploratory, descriptive and contextual design was chosen for this study.

The reasons for the chosen design as well as the selected research paradigm are discussed in the following subsections.

1.7.1 QUALITATIVE RESEARCH

Burns and Grove (2009:717) define qualitative research as a systematic, interactive, subjective approach used to describe life experiences and give them meaning. This design is used where the researcher is interested in understanding the meaning people have constructed, thus exploring their world and the experiences they have in it, as well as the meaning they attribute to the experience (Merriam, 2009:13). Through this approach a deeper understanding of the phenomenon is obtained. A quantitative approach will not assist the researcher in reaching this goal.

In describing the learning experience of third-year Baccalaureate nursing students of high fidelity simulation, the researcher in this study focused on the learning experience of the participants and no other experience outside of this frame. The purpose was to gain insight into the deeper meaning and complexity of their high fidelity simulation experience and to interpret the data.

1.7.2 DESCRIPTIVE DESIGN

Descriptive research attempts to systematically describe a situation, problem, phenomenon, service or programme or to provide information about a situation and the attitudes at play (Kumar, 2005:10).

In examining a situation in depth and from various perspectives, the researcher may select a small sample population and describe this sample's reaction in detail (Burns & Grove, 2009:359).

In this study, a descriptive design is applied to describe the experiences of third-year Baccalaureate nursing students of high fidelity simulation as a learning strategy.

1.7.3 EXPLORATORY DESIGN

Exploratory research is undertaken to explore an area where little is known. It can also be conducted to develop, refine and test measurement tools and procedures (Kumar, 2005:10).

High fidelity simulators and their use are regarded as a new practice at the UFS School of Nursing as these simulators were bought in 2009. The implementation of high fidelity simulation as a new learning strategy needs constant refinement.

1.7.4 CONTEXTUAL DESIGN

Qualitative researchers are interested in determining how people interpret their experiences. They explore how their worlds are constructed and what meaning is attributed to the experiences within this world (Merriam, 2009:5).

Data in qualitative studies is collected in the participants' setting. The analysis is then performed so that subsequent themes are identified (Creswell, 2009:4). In this study, data was collected within the students' teaching and learning environment. Observing their body language and behaviour during the focus group interviews enabled the researcher to see how these students behaved within their contextual environment (Creswell, 2009:175).

The students in the UFS School of Nursing are seen as adult learners. Their input is valuable for the development of high fidelity simulation scenarios within this school. Research on the effectiveness of the implementation of this strategy and the learning experience of students and nurse educators is essential, as the use of technology driven simulators is a new practice at the UFS School of Nursing (Tanner, 2006:204).

Since the human patient simulators are expensive and the initial setup and maintenance of the simulation laboratory and SPACE require significant input, return on investment is essential and this learning strategy cannot be applied in a haphazard fashion.

1.8 RESEARCH TECHNIQUES

Research techniques are the techniques used to structure a study and to gather and analyse information in a systematic manner (Polit & Beck, 2008:764). Two research techniques, namely focus group interviews and the documentary method were used to gather data during this study.

1.8.1 FOCUS GROUP INTERVIEWS

A focus group interview is defined as an interview with a group of individuals assembled to answer questions on a given topic (Polit & Beck, 2008:754).

The selection of focus group interviews as data collection technique in this study was indicated since the views of the participants on a specific issue were required. The third-year Baccalaureate nursing students had knowledge on the subject of high fidelity simulation, as they were exposed to this learning experience. A focus group interview is a poor choice when a sensitive topic, for example HIV, is the focus of research but in the case of this study, the learning experience of high fidelity simulation lent itself to be discussed in group format (Merriam, 2009:94).

The focus group interviews were facilitated by a skilled moderator with a PhD in nursing and experience in the facilitation of focus group interviews. The skilled moderator ensured that all inputs from participants were obtained (Brink, 2008:152).

During the focus group interview, the participants were required to respond to the following prompt:

> Describe your learning experience with the high fidelity simulations of a patient suffering from chest pain caused by a myocardial infarction (MI) as well as a patient with hypovolemic shock after major surgery.

As prescribed, focus groups should be held in a comfortable, non-threatening environment (Polit & Beck, 2008:395). The focus group interviews did not take place in the same venue where the high fidelity simulations occurred, but in a meeting venue within the Nursing School building. The students were kept within a familiar milieu. This allowed for the collection of richer data. The venue was spacious enough to accommodate 12-15 participants and made audio-recording possible.

1.8.2 DOCUMENTARY METHOD

To improve the quality of teaching at the UFS School of Nursing, an anonymous module evaluation questionnaire is completed by the students at the end of each semester. This includes both the nursing theory and clinical modules. The student responses obtained from the module evaluation questionnaire were included during data collection. This implies that two research collection techniques were used, both the focus group interviews and the documentary method.

Using two methods ensures triangulation of data. Triangulation is defined as a method of using multiple research approaches in the same study to answer research questions. This contributes to the validity of the study and confirms findings (Streubert Speziale & Carpenter, 2007:460, 389). Time triangulation was used, as data on one phenomenon was collected at different points in time (Streubert Speziale & Carpenter, 2007:381). The focus group interviews were held shortly after exposure to the high fidelity simulation. The programme evaluations completed at the end of the first semester were used with the permission of the students and their programme coordinator.

1.9 POPULATION AND UNIT OF ANALYSIS

The population of a study is defined as the total number of persons or objects that possess some common characteristics that are of interest to the researcher (Brink, 2008:206). For this study, the population was comprised of the 35 third-year nursing students that were registered for the four-year integrated Baccalaureate degree in nursing at the UFS. These students were undergraduate nursing students studying

towards a degree that forms part of the generic programmes offered at the UFS School of Nursing.

Polit and Beck (2008:768) define the unit of analysis as the study participants on which the researcher will focus. For this study, the unit of analysis were the third-year Baccalaureate nursing students who complied with the inclusion criteria and chose to participate in the focus group interviews and completed the module evaluation questionnaire. Participation in the focus group interviews was not compulsory and students could choose to take part after reading the information sheet.

1.10 EXPLORATIVE INTERVIEW

The questions for focus group interviews should be tested before the interviews take place (Berg, 2007:105). Pretesting research questions involves the critical examination of the question by peers familiar with the subject matter of the study. In this way poorly worded questions can be identified

In this study the questions were evaluated by expert nurse educators at the UFS School of Nursing who had visited high fidelity simulation laboratories in the UK, Ireland and the USA. The question was pre-tested by the unit of analysis, namely the third-year Baccalaureate nursing students.

The purpose was to clarify and determine their understanding of the question, assess the reliability and validity of the question and implement recommendations (Brink, 2008:153). The question could be revised based on the suggestions made. This was, however, not necessary.

1.11 DATA ANALYSIS

The purpose of qualitative data analysis is to organise and structure the data to elicit meaning from it (Polit & Beck, 2008:507). Analysis entails the categorisation, ordering and manipulation of data concluded by summative coding (Brink, 2008:170).

Categorising the data is the first step of the analysis process. This step is followed by a process of transcribing focus group interviews and ordering notes. The manipulation of qualitative data is an active and interactive process in which the researcher scrutinises the data carefully and deliberately, reading data over and over in search of meaning and deeper understanding (Polit & Beck, 2008:508).

The coding of data is the formal representation of the analytical thinking process (Marshall & Rossman, 2011:212). To confirm the codes identified by the researcher, a co-coder was used. The co-coder was provided with the raw data and a coded NVivo file.

A complete discussion of the data analysis process for the focus group interviews and the documents that were collected follows in Chapter 2.

1.12 MEASURES TO ENSURE TRUSTWORTHINESS OF THE RESULTS

The suggested criteria for developing trustworthiness in qualitative research, namely credibility, transferability, dependability and confirmability, were developed by Lincoln and Guba (1986:75).

These criteria and how they are applied are discussed in detail in Chapter 2.

1.13 ETHICAL ISSUES

The rights of humans as study participants should be protected. Three ethical principles prominent in maintaining these rights are beneficence; respect for human dignity and justice (Polit & Beck, 2008:167, 170).

As first ethical principle, beneficence imposes a duty on the researcher to minimise harm and to maximise benefit (Polit & Beck, 2008:170). Although qualitative research is considered to be non-invasive, the researcher is still entering the participant's lives (Brink, 2008:33). The interview poses the risk of upsetting the participants. Not everybody is comfortable with discussing their experiences or feelings in a group. To minimise harm, a skilled educator with experience in the

facilitation of focus group discussions acted as moderator during the focus group interviews. Her actions were guided by the reactions of the group members and any discomfort identified and managed.

Respect for human dignity entails that the participant's right to autonomy is maintained. Autonomy of participants implies that the individual has the right to self-determination and may decide whether he or she would like to participate (Brink, 2008:32). In the information pamphlets the participants were informed of this right, as well as of the right to withdraw at any time (Addendum C).

Voluntary consent needed to be obtained from all participants. Written consent was signed once the participant demonstrated a clear understanding of the essential information provided on the informed consent form. Brink (2008:37) explains that informed consent is a continuing process in qualitative research and should be considered constantly.

Deliberate withholding of information or providing false information is considered to be deceptive behaviour (Polit & Beck, 2008:172). The researcher consciously attempted to prevent deception of participants because telling the truth is regarded as a moral principle. Through maintaining an open mind, the researcher aimed to provide a true and complete version of the research findings.

The maintenance of justice implies that participants are treated fairly and that their right to privacy is protected. Coercion is defined as an implied or explicit threat of penalty directed to a person if he or she does not participate in the research. It might also include promising an excessive reward for agreeing to participate (Polit & Beck, 2008:172). By not paying participants bribing is prevented. However, participants in this study were remunerated for travelling costs incurred.

As nurse educator at the UFS School of Nursing, the researcher is known to the students, but is not directly involved in their programme. This implied that the students could distance themselves from the research or voltuntary chose not to participate without any negative consequence to them, thus minimising power

coercion. The educators that are directly involved in their programme were not informed of who participated and their confidentiality maintained.

The relationship of trust between the researcher and the participant should be protected. Maintaining confidentiality is a measure that can be implemented to protect this important relationship. In this study, confidentiality was maintained by not sharing the names of the participants during data gathering.

All the third-year nursing students were exposed to the high fidelity simulation sessions. The principle of justice was maintained in that all members of the population were invited to participate. Fair treatment of participants was achieved by scheduling the interviews at a time comfortable for them and not necessarily for the researcher.

Confidentiality refers to the researcher's responsibility to prevent all data gathered from being divulged or made available to outsiders (Brink, 2008:35). Audio-recordings of transcribed data will not be kept at the UFS School of Nursing. Participants were informed that confidentiality would be maintained because they would not be identified by name during any phase of the data gathering and analysis process. Each participant would be identified by a letter of the alphabet. What is said is considered to be important and not who said it. Staff assisting with the research was required to sign a confidentiality pledge, as they had access to data (Polit & Beck, 2008:180).

The ethical approval for the research is the last aspect to be discussed. This research was approved by the ethics committee of the Faculty of Health Sciences of the University of the Free State (Addendum D). The function of the ethics committee is to review the proposed research and determine whether ethical standards are met (Brink, 2008:41). Permission for the research and collection of data was also obtained from the following persons:
- Vice-rector: Academic planning (Addendum E).
- Dean: Faculty of Health Sciences (Addendum F).
- Head of the School of Nursing (Addendum F).

1.14 VALUE OF THE STUDY

This study will add to the body of knowledge in nursing education. The value of this study is that the learning experience of third-year Baccalaureate nursing students with high fidelity simulation is explored and described. The results of this study can be used to establish guidelines for further implementation of high fidelity simulation at the UFS School of Nursing and improve on how this learning strategy is used. Suggestions and recommendations from this study can be used to optimise the learning experience of students regarding high fidelity simulation.

In agreement with Halstead (2006:e5), it is argued that the simulated situation is repeatable, which allows the student to master his or her skill without the external variables that occur when a skill is practised on a real patient in the clinical environment, where interruptions are a constant factor. A further benefit for the student is that high fidelity simulation allows the experiential training of skills, knowledge and decision making in a safe environment. It is possible to transfer these to the real world (Solnick & Weiss, 2007:e41). All prospective South African professional nurses are required to perform remunerated community service for a period of one year (South Africa, 2005:40). By exposing the nursing students at the University of the Free State to high fidelity simulation, it is possible to equip them better with the skills necessary to work independently, thus improving the quality of service provided to South African health care users.

Simulation allows for the standardisation of learning experiences. It is not possible to control the type or conditions of learning experiences in the clinical setting. With simulation, control over the events is possible and all the students are exposed to the same learning event (Rauen, 2004:48; Gates, Parr & Hughen, 2012:9). With the high fidelity simulator it is possible to present a patient's progression from admission to discharge, or death, more quickly than in real life. This offers students an opportunity to see the complete picture of the nursing care involved in a specific disease process (Gates *et al.*, 2012:9).

The availability of human patient simulators (HPS) provides for controlled accessible standardised learning opportunities, seeing that the simulator is always ready for

use. With real patient contact in the clinical setting, the needs of the patient have priority, and external factors, such as patient discomfort or a change in his/her condition, can prevent students and preceptors from meeting scheduled appointments (Scalese, Obeso & Issenberg, 2007:47). Since practicum placements are limited, this allows for standardised learning opportunities.

Students practise the integration of theory and practice in an environment where they are not afraid to make mistakes as there is no risk of harm for the patient (Solnick & Weiss, 2007:e41). This reduces the anxiety associated with providing care to real patients (Halstead, 2006:e5).

1.15 DESIGN OF THE STUDY

Chapter 1: Statement of problem, aim and method

Chapter 2: Research design and methodology. An overview of the data collection process is presented in Figure 1.2.

Phase I	•Logistical arrangements
Phase II	•Explorative interview
Phase III	•Collection of data - Focus group interviews and module evaluation documents
Phase IV	•Transcription of data
Phase V	•Coding of data
Phase VI	•Co-coding and literature check/review
Phase VII	•Writing narrative report
Phase VIII	•Conclusions and recommendations
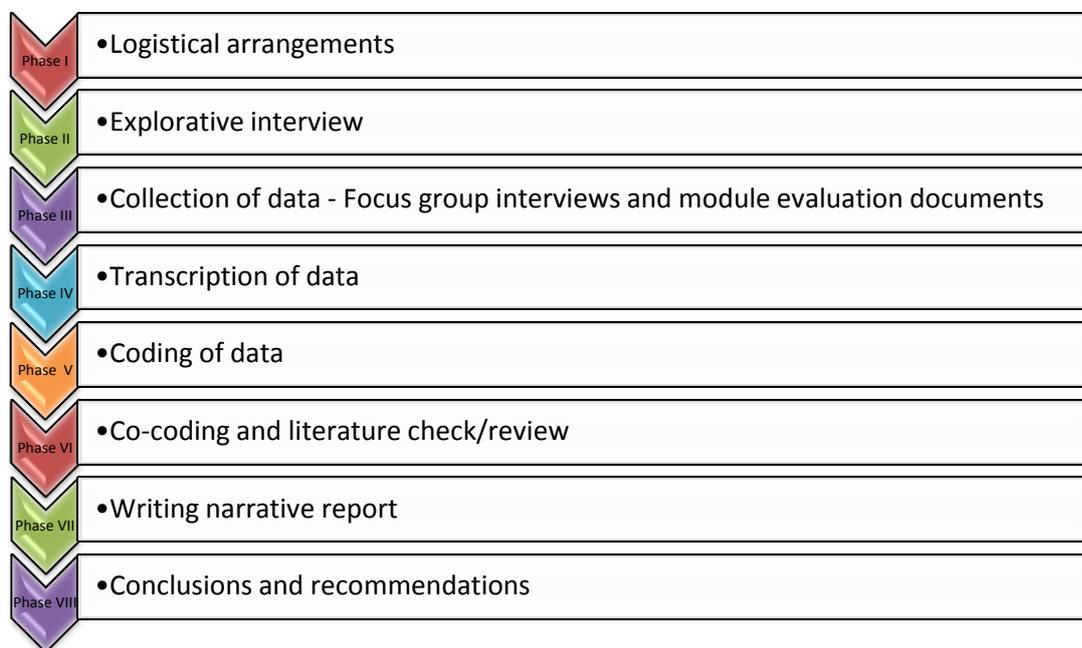
Figure 1.2 Overview of the data collection process

Chapter 3: Analysis and discussion of research findings

Chapter 4: Recommendations, summary and limitations of this study

1.16 CONCLUSION

Treating a patient with a serious condition can be a frightening experience for nurses; therefore, this study proposes that high fidelity simulation be used as a learning strategy to prepare student nurses better for the task of providing quality care to acutely ill patients. In this chapter high fidelity simulation as a learning strategy to assist in addressing some of the problems experienced in nursing in South Africa was discussed. The background to and the reasons for acquiring these simulators at the UFS School of Nursing were discussed. The aim of this study was to determine the learning experiences of third-year Baccalaureate nursing students in implementing high fidelity simulation as a learning strategy in their curriculum. Specific concepts related to simulation as well as this study was clarified and an overview of the research design was provided. In this qualitative study the researcher used focus group interviews and a module evaluation questionnaire as data collection methods to ensure triangulation of data. A hierarchical approach to the data analysis of focus group interviews was followed. Coding of data of both the focus group interviews and module evaluation questionnaire was described. The ethical consideration of this study and the value that it will add to the nursing field were discussed. The chapter concluded with an exposition of the layout of the chapters of this study.

CHAPTER 2

RESEARCH DESIGN AND METHODOLOGY

2.1 INTRODUCTION

In this chapter the research design, research population and the method of data collection are discussed. A description of the data analysis process follows. Measures to ensure trustworthiness of the study are explained. The limitations of this study are mentioned as conclusion to this chapter.

2.2 RESEARCH DESIGN

A research design is defined as the blueprint of a study. It assists the researcher in maximising control over factors that could interfere with the validity of a study's outcome and it directs the selection of the population, the sampling procedures, the measurement methods, data collection plans and the analysis (Burns & Grove, 2009:41, 218). A qualitative, descriptive, explorative and contextual design was used for this study.

2.2.1 QUALITATIVE RESEARCH

In quantitative research the focus is on the investigation of phenomena through rigorous and structured designs with the purpose of precision measurement and quantification (Polit & Beck, 2008:763). In contrast, qualitative research has a philosophical orientation. The purpose is to obtain holistic and in-depth data with rich narrative material by means of a flexible research design (Burns & Grove, 2009:8; Polit & Beck, 2008:763).

The quantitative researcher reduces the whole into smaller parts and then examines these. Objectivity is created by remaining detached from the procedures (Burns & Grove, 2009:23). Qualitative researchers have a holistic approach and intend to attach meaning to the whole: they act as key agents in data collection and analysis.

Data is collected through observation, examination of documents and by interviewing participants (Creswell, 2009:175).

It can be argued that qualitative research is subjective (Merriam, 2009:15). Qualitative researchers realise that their values and perceptions influence findings, but instead of denying these, the researcher identifies and remains sensitive towards them and is honest about how they shape the study (Marshall & Rossman, 2011:2).

In an effort to enhance objectivity in this study, the researcher did not take part in the high fidelity simulation and reflection sessions. Judgement was reserved until data analysis and theme identification had been concluded. To enhance objectivity, the researcher made a deliberate attempt to set aside own biases and ideas during the description and interpretation of data.

An additional characteristic of qualitative studies is that several sources of data are used to describe a phenomenon (Creswell, 2009:175). By obtaining data through focus group interviews and analysis of the module evaluation questionnaire two sources of data were used in this study.

2.2.2 DESCRIPTIVE DESIGN

The purpose of descriptive research is to render rich descriptions of complex circumstances (Marshall & Rossman, 2011:68). It allows the researchers to discover new meaning, describe what currently exists, and determine the frequency with which something occurs. It also allows for categorisation of information.

Descriptive research is critical for the acquisition of knowledge in an area where little is known. The in-depth probing aim of this design can be effective in answering questions (Burns & Grove, 2009:25, 238). Since the use of high fidelity simulation at the UFS School of Nursing is a new practice, it was deemed necessary to address the theoretical and practical challenges of this practice. The researcher therefore aimed at providing a detailed, accurate and clear description of the learning experience of the third-year nursing students with regard to high fidelity simulation.

Descriptive research seeks to portray the everyday experiences of people. An explanation of what is heard, seen, believed, felt and remembered is included. Qualitative study focuses on the participants' view on the issue under discussion. The researcher's personal views are not considered (Creswell, 2009:175).

To describe the experiences of the participants as truthfully as possible, the process of bracketing is implemented. Bracketing is to knowingly hold in abeyance preconceived ideas; preventing personal views to blur judgements (Polit & Beck, 2008:228). This implies that the researcher identifies what is expected to be discovered and then deliberately sets aside these ideas (Brink, 2008:113).

Intuiting allows the researcher to develop an awareness of the lived experiences of participants and to remain open to the meaning they attach to these experiences. By describing the reaction of the participants, the researcher becomes immersed in the phenomenon. Data is reviewed repeatedly until a common understanding is reached. Through analysis, comparison and identification of patterns, themes are identified and clear, perceptive descriptions obtained (Brink, 2008:114; Polit & Beck, 2008:228).

Descriptive studies, which are valuable in identifying problems with current practice or in justifying them, can be used to determine what others in similar situations are doing. No manipulation of variables should be present and the characteristics of a single sample should be examined and described (Burns & Grove, 2009:237). Even though multiple focus group interviews were held in this study, a single population, namely the third-year Baccalaureate nursing students, was used.

2.2.3 EXPLORATORY DESIGN

Exploration of a phenomenon goes further than just observing and describing. It aims to explain its nature, the manner in which it is manifested and other factors that relate to it (Polit & Beck, 2008:20). Qualitative studies are often undertaken because the theory is insufficient or existing knowledge fails to explain the problem adequately. Qualitative research, with an exploratory focus, may provide both

seeing that it is an inductive process where data is gathered to build concepts and theories (Merriam, 2009:16).

This study has an explorative design because the new high fidelity simulation field is entered and its effects within the South African context are unexplored.   The researcher aims to add new insights to the field, view the phenomenon in a new light and generate ideas for future research (Brink, 2008:113).

The purpose of an exploratory study is to increase the knowledge in a specific field of study. Findings are not intended for generalisation to large populations (Burns & Grove, 2009:360).   This study is population-specific with the third-year Baccalaureate nursing students and the nature of their learning experience with high fidelity simulation.

2.2.4 CONTEXTUAL DESIGN

A researchable problem does not exist in a vacuum, but is embedded in a specific context (Brink, 2008:64). This research focuses on the context in which learning at the UFS School of Nursing in South Africa occurs. The physical environment in which the high fidelity simulation learning experience occurred were discussed in Chapter 1 (please refer to 1.1) and is not the focus of this section.

The vision of the UFS School of Nursing is to excel in the development of professionals that are able to render quality health services to diverse communities through innovative education, research, community service, clinical programmes and practice (UFS, SoN, 2006:1).

High fidelity simulation is viewed as an innovative learning strategy and is a new practice for both the educators and the students at the UFS School of Nursing.

The learning experience of the third-year Baccalaureate nursing students and their involvement in high fidelity simulation as a learning strategy was thus the focus of this study. These students are adult learners with at least 1 000 practicum hours completed. They are novice practitioners within the ICU setting.

The content of the third-year nursing theory modules focuses on general acute nursing care. The purpose of practicum placements in the third year is also to expose the students to critical ill or unstable patients in acute care hospital settings. The students were given a choice whether or not to participate in the research, but all of them were exposed to high fidelity simulation as part of their nursing theory module.

High fidelity simulation at the UFS School of Nursing is implemented according to a theme and simulation plan (refer to Addendum A). Figure 2.1 explains how this method is implemented. The process commences with the formation of a workgroup of educators and clinical preceptors of the UFS School of Nursing that is responsible for the development of the scenario within a specific year group.

The development of the simulation scenarios is a team effort and the clinical preceptors are included since they are exposed to the clinical areas where students are placed and are able to link the content of the scenario to what is seen in real life. This practice correlates with suggestions made by Henneman and Cunningham (2005:173, 176) on the subject. This group meets to plan the outcomes and learning activities for the chosen theme.

As part of step four, a focus area (for example myocardial infarction or hypovolemic shock) is selected from the subject content. The simulation scenario is then developed based on this content as step five. The head of the Education and Quality Assurance portfolio of the UFS School of Nursing provides inputs during the development process since she is included in the simulation team.

Once the simulation scenario is available, the high fidelity simulation coordinator and her technical team prepare the simulation environment. The simulation preparation is completed as stipulated in the simulation scenario plan.

The simulator coordinator is responsible for the programming of the human patient simulator (HPS), the running of the scenario and the facilitated reflection session afterwards. She forms part of the workgroup that facilitates the development process. Both the students and the educators evaluate the effectiveness of the

simulated learning experience and it is possible to streamline the simulation scenario based on this feedback.

An example of the preparation process of students before simulation, as applied to acute coronary syndrome, is provided in Figure 2.2. It is expected that students complete specific workbook activities as part of their class preparation.

They are also theoretically equipped on the content included in the simulation. In preparing the students for the cardiovascular system scenario, 14 hours of theoretical activities were offered. A demonstration on cardio pulmonary resuscitation (CPR), defibrillator use and interpretation of an electrocardiogram (ECG) were included. For the hypovolemic shock scenario, 10 hours of theoretical teaching and a demonstration of measuring the central venous pressure (CVP) of a patient were presented. Some of the class events included group work based activities and case scenarios.

The students are exposed to the high fidelity simulation session after these blended learning activities is complete. They are orientated within the simulation environment before they take part in the simulation. This includes an orientation session on the high fidelity simulator and the simulated learning environment. It is necessary to ensure that the students know what to expect. For example, the presentation of cyanosis (blue discoloration of mouth and fingers due to a lack of oxygen) in the human patient simulator (HPS) is demonstrated.

All the students are exposed to high fidelity simulation; however their roles are different (see Figure 2.3). Only four to five students (depending on the complexity of the scenario) take part during the simulation. These students (actors) are the 'nurses' that interpret the information presented and take action. The rest of the group (observers) watch the simulation via direct video-streaming in a separate classroom. This implies that the observer group is not present in the same room as where the simulation is held.

Both groups are present during the facilitated reflection and reflect on the action phase and discuss what has been learnt. Kardong-Edgren, Starkweather and Ward

(2008:7) suggest that the allocation of roles to the actors be done through drawing a name card from a box. For this study, the actor group were randomly selected by means of coloured numbers.

A performing role, for example team leader, is allocated to each group member that takes part in the simulation. The members of group two review the actions of their classmates in general and against the vertical strands[2] that are included for each scenario (refer to Addendum G).

A reflection session follows once the simulation is completed. Limited teaching time makes it impossible to include all the conditions that the student might face in the clinical setting in the scenario. However, it is important to develop the knowledge, psychomotor and affective skills of students.

For the students, the purpose of the reflection that follows the high fidelity simulation includes to evaluate their actions and identify learning needs (gap in knowledge). For the educators, judging the effectiveness of simulation as a learning strategy becomes paramount. The feedback received from the students and the educators is used to refine the simulation scenario further (see Figure 2.1).

During the facilitated reflection session the group that took part in the simulation are briefed separately and given time to discuss their emotions. They then join group two and watch the video-recording of the simulation. The overall experience and vertical strands are discussed within the complete group (Henneman & Cunningham, 2005:175).

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[2] A curriculum strand is a repetitive idea or concept present throughout the curriculum. A vertical strand develops over the different levels of the curriculum, ensuring that cumulative learning becomes possible. Existing knowledge is inculcated and reinforced through repetition (Uys & Gwele, 2005:57).
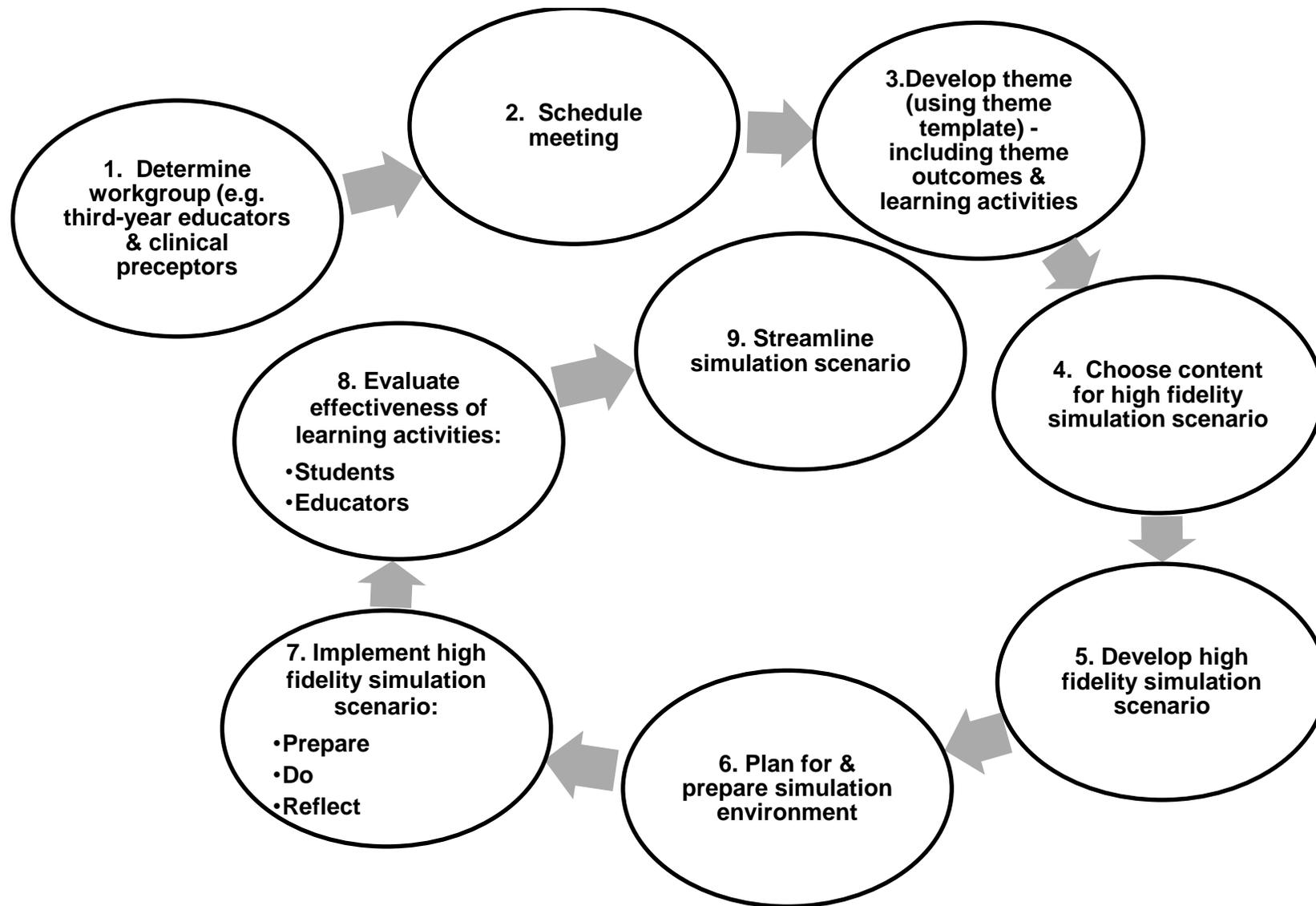
Figure 2.1 Cycle for theme and high fidelity simulation scenario development

Outcome

For example: The nurse should be able to care for a patient with chest pain and an abnormal ECG.

1. Completion of workbook activities

These activities allow for the revision of anatomy and physiology of the cardiovascular system, mastery of new concepts and application of knowledge.

2. Theory classes

These include lectures on the subject, class discussions and group activities.

3. Clinical activities

Presentation of applicable clinical demonstration for skills preparation in clinical skills laboratory. For example: defibrillation and measuring a central venous pressure. Students get the opportunity to practise these skills individually.

4. High fidelity simulation

Includes the preparation of students, presentation of the scenario and the reflection session afterwards.

Practicum placements

Figure 2.2 Implementation of teaching and learning activities
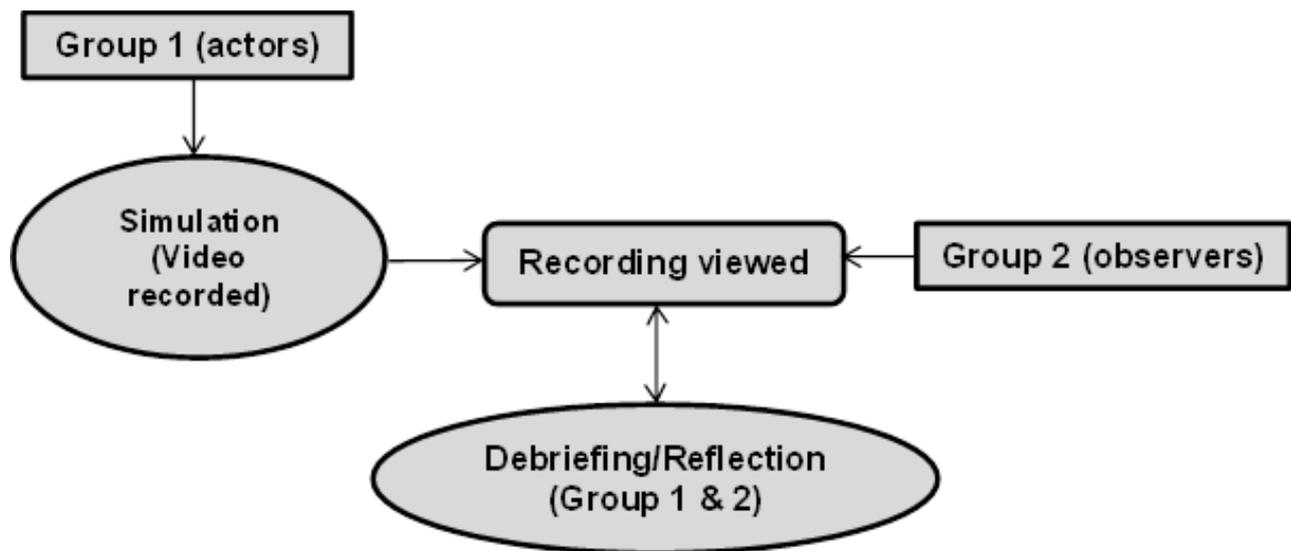
Figure 2.3 Student roles during high fidelity simulation scenario

Two hours were available for each simulation. The scenarios were run over 20-30 minutes and the rest of the time were used for preparation and facilitated reflection. This compares well with the time frame applied in a similar study at the State University of New York (Rhodes & Curran, 2005:258).

2.3   POPULATION, UNIT OF ANALYSIS AND INCLUSION CRITERIA

The population in a research study is the entire collection of cases in which the researcher is interested (Polit & Beck, 2008:337). Gray (2009:579) defines the research population as the totality of people, organisations or objects from which a sample is drawn.

Researchers usually do not have access to the entire population and the accessible population is thus defined as the aggregate of cases that comply with the inclusion criteria and are available to the researcher (Polit & Beck, 2008:338). Through sampling, a portion of the accessible population is selected and they represent the entire population (Polit & Beck, 2008:339).

The study population was the third-year Baccalaureate students (35) registered in 2011 at the UFS School of Nursing. For this study the unit of analysis or sample was the individual nursing students who complied with the inclusion criteria (32) and

chose to take part in the focus group interviews (14) and those that completed the module evaluation questionnaire (32). The following selection criteria were used:

- Students had to be registered for both nursing theory and clinical modules.
- Students should have been exposed to two high fidelity simulation sessions: myocardial infarction and hypovolemic shock.

2.3.1 STUDENTS

Voluntary participation during focus group interviews is based on informed consent. Informed consent entails that the participant has adequate information about the study (Brink, 2008:34). The information sheet (refer to Addendum C) contained an invitation to the students to participate and explained the benefits, risks, responsibilities and ethical issues applicable to the focus group interviews. Contact details of the researcher were provided and confidentiality measures explained. Written consent was obtained once the participants understood the information sheet and had ample opportunity to clarify misconceptions. Focus group interviews were held until no new data emerged and current themes were continuously repeated.

Homogeneity and comfort of focus group members are important as participants will spend less time at explaining themselves and more time at discussing the issue at hand when they perceive each other as being similar (Greeff, 2005:304).

Where colleagues or friends are included in a specific group, an advantage is that they can relate to each other's comments since they shared the same experience (Kitzinger, 1994:105; Kitzinger, 1995:300). This was true of the study in question, seeing that the participants as fellow students were exposed to the same situation. The researcher could thus tap into the familiarity shared between them. The added benefit was that, as a friend, a participant could disagree with the comments made by another person without causing him or her to feel threatened.

Homogeneity based on language preference was also guaranteed by conducting Afrikaans and English interviews separately and through ensuring that they were held after the participants had been exposed to both high fidelity simulation sessions.

Students at the University of the Free State may choose Afrikaans or English as preferred language of tuition for their modules. Therefore, Afrikaans and English focus group interviews were scheduled based on the needs of these participants. The size of the sample was determined by the saturation of data.

2.3.2 DOCUMENTS

During the process of research, qualitative documents may be collected. These range from public (e.g. newspapers, minutes of meetings) to private documents (e.g. letters, e-mails). It is an unobtrusive source of information and can be accessed at a convenient time. It represents data that was thoughtfully formulated (Creswell, 2009:180, 181).

In this study, a module evaluation questionnaire was completed by the third-year nursing students at the end of the first semester. They were considered to be private documents and these were individually analysed for relevant information.

All students (35) who were registered for the nursing theory and clinical modules completed the questionnaire at the end of the first semester. This implies that the evaluation documents were obtained after the focus group interviews were completed. The questions asked focused on the evaluation of the learning content of the entire module, the applicable learning activities and assessment.

An existing module evaluation questionnaire was already available and questions applicable to the simulation were added. This feedback is generally used by the educators to improve on and adapt their learning strategies.

Implied consent for the use of the data was provided by the students once they had decided to complete the module evaluation questionnaire. The module evaluation questionnaire was completed electronically. Completion was done anonymously. Although the module questionnaire was completed by all the students in the class, only those that commented on high fidelity simulation were included. In total, the answers from the module evaluation questionnaire of 32 students were included in this study.

2.4   RESEARCH TECHNIQUES

Research techniques involve the methods of data collection, analysis and interpretation (Creswell, 2009:15). Qualitative data is collected through discussions with participants, by making detailed notes about how participants behave in a natural setting or by obtaining narrative records (Polit & Beck, 2008:60).

For this study, the researcher chose to engage the participants in discussions by means of focus group interviews and the use of a module evaluation questionnaire.

2.4.1 FOCUS GROUP INTERVIEWS

Polit and Beck (2008:754) define a focus group interview as a dialogue with a group of individuals assembled to answer questions on a given topic. It is a useful method for exploring knowledge, attitudes and experiences. It can be used to examine what people think, but also how and why they think in a particular way (Kitzinger, 1995:299). According to Morgan's (1996:130) definition, a focus group interview contains three essential components: (1) it is a research method devoted to data collection, (2) the interaction during the group discussion is the source of the data and (3) the researcher (moderator) plays an active role during the group discussions.

The average time spent on one focus group interview is 90 minutes. The size of the group depends on the sensitivity of the subject (Morgan, 1996:145-146). A group can consist of four to twelve members, but Barbour and Kitzinger (2001:8) argue that this number is too large for focus group interviews in sociological studies. It is possible to gain descriptive data from a group consisting of only three members. The number of interviews with the selected population ranges from four to six, or until saturation of data is reached (Greeff, 2005:304; Kitzinger, 1995:301; Marshall & Rossman, 2011:149).

As proposed by Halcomb, Gholizadeh, DiGiacomo, Phillips and Davidson (2007:1006), two individuals were present during the focus group interviews of this study: the facilitator/moderator and the researcher. The researcher was known to the students, seeing that she was the clinical placement coordinator responsible for

the practicum placements of students. However, she was not directly involved during the learning activities of the third-year students. Inviting participants that are known to the researcher may compromise the ability to disclose information and difficult power issues might occur (Creswell, 2009:177).

Social desirability can influence the quality of the data obtained. Where participants want to please the researcher they will act in a way that they perceive as desirable but not necessarily truthful (Brink, 2008:158). Through not moderating the focus group interviews the desirability factor is removed. The presence of the researcher during the focus group interviews is preferable as she was directly involved in the design of the study and understood the purpose of the research (Moen, Antonov, Lars, Nilsson & Ring, 2010:610).

With the consent of the participants, audio voice recording equipment was used to record discussions. The researcher acted as a *complete observer* of participant activities and only took field notes. No interaction between the researcher and participants took place during the focus group interviews (Streubert Speziale & Carpenter, 2007:42). These field notes in the form of observer comments can be found in chapter four. It is used to highlight the running narrative and underline the comments that the participants made (Merriam, 2009:131).

The moderator responsible for the facilitation of the focus group interviews was also not directly involved during the learning activities of the students and this allowed for objectivity and neutrality on her part. She was unfamiliar with the high fidelity simulation practices implemented in the UFS School of Nursing and was not affiliated with the third-year nursing educators group (Vissandjée, Abdool & Dupérè, 2002:838).

2.4.1.1   THE MODERATOR

Berg's (2007:155) guide for moderators explains the tasks and functions of the moderator as applied in this study. The moderator needs to state the ground rules for the focus group interview at the beginning of the session. This was done by the moderator, who also emphasised the need for open, polite and orderly

communication. It was necessary for the participants to be reminded that only one person should speak at a time, seeing that the focus group interviews were audio-recorded. Consent for the recording of the focus group interviews was obtained and the purpose explained (McLafferty, 2004:191).

The purpose of a moderator is to facilitate a focus group interview and to collect in-depth data on the group's perceptions, attitudes and experiences on the selected topic (Nieuwenhuis, 2007:91). To be a moderator a specific set of characteristics is required and selection should be based on these characteristics as well as on the research aims. A moderator is expected to be friendly towards participants, possess good listening skills, be flexible and sensitive towards the needs of the participants and still obtain substantive information (Berg, 2007:158; Strickland, 1999:191). The moderator's role is to clarify, paraphrase and reflect on what participants have said (Burns & Grove, 2009:514). The facilitator should be able to encourage discussion beyond the stage where it might otherwise have ended and challenge participants to discuss their views, even if they are divergent (Kitzinger, 1994:106).

For this study, a skilled moderator was appointed and remunerated. She is an expert in the psychiatric field and has a PhD in child psychiatry with extensive knowledge and competence in the application of effective communication techniques and qualitative research data collection methods. She has 31 years of experience with nursing students and of teaching in higher education.

The moderator's approach is determined by the structure of the focus group interviews. Morgan (1996:144-145) distinguishes focus group interviews into more structured versus less structured, depending on the level of control exercised by the moderator. In a more structured situation, the moderator will ask questions (to focus attention on more important issues) and to manage the group dynamics by controlling the interaction of group members. This is also referred to as a directive or active approach (Frey & Fontana 1991:180). Lehoux, Poland and Daudelin (2006:2094) argue that the moderator may sometimes challenge the group and trigger strong reactions in an effort to enhance an open and detailed exchange between participants.

One introductory question was asked at the beginning of the focus group interviews:

> Describe your learning experience with the high fidelity simulations of a patient suffering from chest pain caused by a myocardial infarction (MI) as well as a patient with hypovolemic shock after major surgery.

Following the introductory question, the moderator acted as facilitator of the discussion, using limited probes, thus making it less structured or non-directive (Frey & Fontana, 1991:180). This approach correlates with the exploratory research design of this study (Frey & Fontana, 1991:176).

Qualitative inquiry is driven by the participants and not the researcher. By acting responsively to the flow and content of interactions, a commitment to participant-driven inquiry is honoured (Polit & Beck, 2008:552). This was true for the focus group interviews in the study in question, seeing that the moderator was led by the group and did not control the flow of the discussion. The interviews were terminated once saturation of data was reached.

2.4.1.2   STRENGTHS OF FOCUS GROUP INTERVIEWS

A major advantage of focus group interviews is that it is an efficient method (Polit & Beck, 2008:395). Since a rich set of data can be obtained in a relatively short period of time, the focus group interview is a fairly inexpensive data gathering technique. With more participants taking part in the discussion, a wider variety of data is available.

Unlike individual interviews, focus group interviews are useful where multiple viewpoints on a specific issue are required and recorded (Greeff, 2005:300, 301). Compared to surveys, focus group discussions produce more in-depth information on a topic (Morgan, 1996:137). Combined with the observation of participants' behaviour, this leads to an understanding of what everyday activities mean to participants (Marshall & Rossman, 2011:145).

Focus group interviews can be viewed as a communication model. It is a powerful tool in closing the gap between people. The interviews assist participants in self-

disclosing and sharing personal experiences in a group because they feel empowered and supported (Greeff, 2005:301).

The focus group interview is a socially oriented method. Participants partake in an atmosphere that is less artificial than the experimental environment and more relaxed than one-on-one interviews. The format allows for unanticipated issues to be discussed as they arise during the interview (Marshall & Rossman, 2011:149).

Group interviews allow the researcher to take advantage of group dynamics as a means to enrich information (Polit & Beck, 2008:395). Group dynamics is promoted by ensuring that the group is fairly homogeneous (Polit & Beck, 2008:395). The third-year Baccalaureate nursing students that were exposed to high fidelity simulation formed such a homogeneous group.

A by-product of group participation is that it is possible for the participants to become part of the analysis. A participant may even develop a new perspective by talking with other people who have had a similar experience (Kitzinger, 1995:300). This view links to an argument by Kitzinger (1994:113) who states that the focus group interview prevents the researcher from assuming that he or she alone understands the meaning attached to the stories that participants tell each other.

An added benefit is that collection of data on group norms becomes possible. A particular comment or phrase might trigger consensus or disagreement and this highlights the importance of a specific issue (Kitzinger, 1994:110). With group work it is possible to tap into the marginal aspects of communication and see jokes, anecdotes, teasing and arguing as a way of better understanding attitudes and knowledge. Much is said in these margins that are not necessarily clearly expressed in the overt sentences (Kitzinger, 1995:299).

In a study on AIDS, Kitzinger (1994:111) found that participation in focus group interviews helped participants to overcome embarrassment in expressing feelings that might be considered as taboo topics in general conversation.

A final positive aspect of focus group interviews is their oral nature. This means that participants who are not able to express themselves effectively in a written format, or cannot read or write, have the opportunity to participate (Kitzinger, 1995:300).

2.4.1.3   LIMITATIONS OF FOCUS GROUP INTERVIEWS

Limitations associated with focus group interviews are that the groups are generally small and not necessarily representative of the population. A focus group interview only provides a snapshot of what really happens. A practical limitation is that it is sometimes difficult for all the participants to congregate in the same place at the same time (Nieuwenhuis, 2007:91).

An important aspect of focus group interviews is the issue of power dynamics. This links to the fact that time can be wasted if irrelevant issues are discussed or one participant dominates the conversation (Marshall & Rossman, 2011:150). It is the function of the moderator to facilitate such situations and intervene when necessary.

Morgan (1996:139-140) identifies three weaknesses concerning focus group interviews: (1) the impact of the group on the discussion, (2) the impact of the group on its participants, and (3) the role of the moderator.

With regard to the impact of the group on the discussion, Morgan (1996:139) argues that the attitudes of individuals may change during and after the group interview occurred. This links to the second weakness, namely that an individual may find it difficult to disclose information in a group since it might be necessary to discuss information that might be inappropriate in this setting.

In some cases the behaviour of the moderator can have a negative effect on the flow of the group discussions. Nieuwenhuis (2007:91) emphasises that the quality of the information obtained during the focus group interviews depends on the skill of the moderator. Too much discussion control will lead to limited participation and expression of views by the participants, but too little control will cause participants to discuss irrelevant issues.

Even though the high volume of data obtained in a short period of time is seen as one of the strengths, analysis of the data is a time-consuming activity (Marshall & Rossman, 2011:145).

2.4.2 DOCUMENTS COLLECTED

Documentary evidence is an unobtrusive data collection measure, which implies that it does not require the researcher to be present during completion (Gray, 2009:424). Documents can be used as part of the in-depth gathering of data. It is possible for participants to produce documents and these can be analysed by the researcher to supplement other forms of data gathering (Marshall & Rossman, 2011:160).

Researcher-generated documents are official papers prepared by the researcher or for the researcher by the participants after the study has begun. The purpose of its generation is to learn more about the situation, person or event being investigated (Merriam, 2009:149). For this study, documents were produced by the participants in the form of a module evaluation questionnaire that was completed. The purpose was to evaluate the learning activities and serves as evidence for the lecturers at the UFS School of Nursing and assists them in adapting their learning strategies to fulfil the learning needs of the students.

In judging the value of a data source, the researcher determines whether the documents contain information relevant to the research question and whether it can be acquired in a reasonably practical, yet systematic manner. The answer to both of these questions was yes; therefore the documentary data source was included as data gathering method (Merriam, 2009:153). It is usually easier to gain access to documents than with other data gathering methods.

2.4.2.1 STRENGTHS AND LIMITATIONS OF QUALITATIVE DATA COLLECTION IN DOCUMENT FORMAT

According to Creswell (2009:180) the advantages of documents as qualitative data type are as follows:
- The exact words of participants are available to the researcher.

- As these are unobtrusive sources of information, they can be accessed at a time convenient for the researcher.

- Thoughtful data is represented, seeing that the participant had to think about what to write.

- Time, energy and expense are saved, seeing that no transcribing is necessary.

Creswell (2009:180) argues that the limitations of this data collection method are the following:

- Not all people are equally articulate and perceptive.

- Some documents may be protected and not be available to the researcher.

- The researcher might be required to search for specific information in hard to find places.

- Optical scanning or transcribing might be needed for computer accessibility.

- Materials may be incomplete and may not be authentic or accurate.

As discussed in the following paragraphs, some of these limitations were eliminated by designing the evaluation electronically and allowing students to complete it in their language of choice.

2.5   DATA COLLECTION PROCEDURES

Collection of data should be thoroughly planned to determine what type of evidence is required. A data collection plan includes the formal procedures followed to guide the researcher (Polit & Beck, 2008:751).

Certain requirements must be met before data collecting can occur. Permission to continue with the research is such a requirement. The Ethics Committee of the Faculty of Health Sciences at the University of the Free State granted permission for the execution of the research under ethics number ECUFS 14/2011 (refer to Addendum D).

On a request sent to the dean of the Faculty of Health Sciences by the head of the UFS School of Nursing, the dean gave permission to continue (refer to Addendum F). Permission was granted by the vice-rector of Teaching and Learning of the University of the Free State (refer to Addendum E).

Before the data collection by means of the focus group interviews could occur, certain logistical arrangement had to be made.

2.5.1 LOGISTICAL ARRANGEMENTS FOR FOCUS GROUP INTERVIEWS

Planning with respect to selecting the venue, the moderator, choosing the participants and formulating the questions is done during the preparation phase of the focus group interviews (Greeff, 2005:303).

In determining who the participants should be, the purpose of this study was considered. As indicated in Chapter 1, the purpose of the study was to describe the learning experience of third-year Baccalaureate nursing students in a module using high fidelity simulation. Thirty one third-year Baccalaureate nursing students, exposed to two high fidelity simulation sessions, qualified to participate.

Before final arrangements with regard to time and place could be made, the availability of the moderator had to be confirmed and the question discussed with her. An invitation to act as moderator during the interviews was extended to the specific nurse educator as proposed by the research supervisor. A face-to-face contact session was organised to invite the educator to act as moderator and to discuss the purpose of the study and the method. This was followed by electronic mail communication, confirming availability, the venue and the time for each focus group interview.

An audio-recorder was obtained. The recording of focus group interviews is an essential requirement since the analysis stage is made redundant if data was not collected in a careful manner. It also allows the interviewer to focus on listening to what is said, rather than being concerned about capturing all the data (Gray,

2009:385). Consent for the audio-recording of the focus group interviews was obtained from the research participants.

Refreshments were bought for each focus group interview. Serving refreshments to the participants of the focus group interviews helps to establish a relaxed atmosphere (Kitzinger, 1995:301).

With regard to selecting the venue, Halcomb *et al.* (2007:1004) point out that a socially accepted environment is important for successfully completing focus group interviews. Meeting in a familiar setting encourages the participants to express their views and feelings more freely (Frey & Fontana, 1991:178). The venue should be easily accessible and conveniently located and free parking should be available (Rea & Parker, 2005:77). The focus group interviews took place in one of the lecture rooms at the UFS School of Nursing.

The comfort of participants was the main concern and seating was arranged in a circular or U-shaped fashion. During the focus group interviews the participants sat next to each other with the moderator facing them. Figure 2.4 shows the seating arrangements of each group during the focus group interviews.

The venue for the focus group interviews was selected based on availability, but after the second interview, the researcher realised that the room was not acoustically suitable and the remaining interviews were held in a smaller room in the same building. The venue was booked for each session. To ensure privacy, the door to the venue was closed at the beginning of the interview.

The question and informed consent documents were compiled in both Afrikaans and English and enough copies were made to ensure that the information was available to each individual. Stationery was available for the completion of the relevant documents.

Separate group discussions took place to ensure that the group would be no bigger than 15 students (Brink, 2008:152). Sessions were conducted in either Afrikaans or English. The official language policy of the UFS is that students can choose to

receive teaching in either English or Afrikaans. Allowing the students to take part in their preferred language promoted comfort of expressing their views. Speaking the same language also meant that they share a similar background with other group members (Polit & Beck, 2008:395).

FOCUS GROUP INTERVIEW 1: ENGLISH GROUP
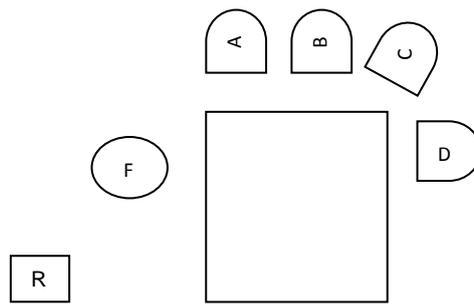
FOCUS GROUP INTERVIEW 2: AFRIKAANS GROUP
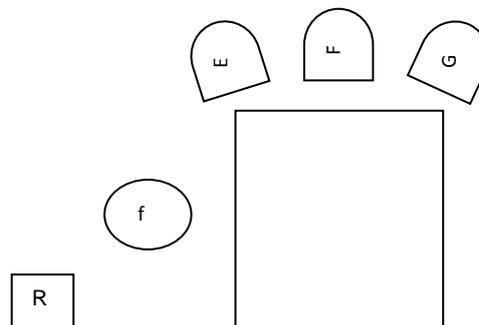
FOCUS GROUP INTERVIEW 3: ENGLISH GROUP
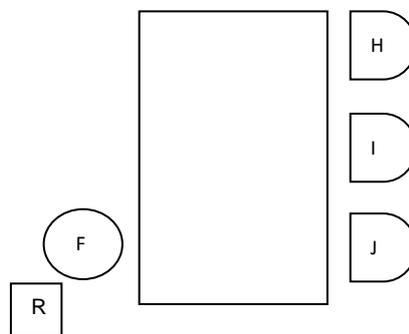
FOCUS GROUP INTERVIEW 4: AFRIKAANS GROUP
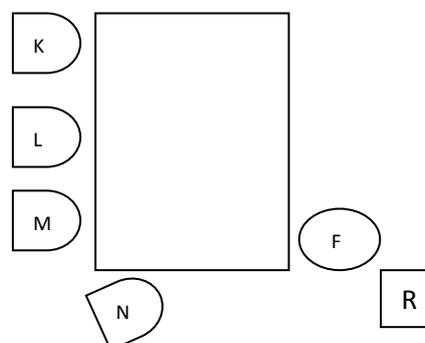
REFERENCE GUIDE:
A-N: Participants
F/f: Moderator
R: Researcher

Figure 2.4 Seating arrangments for focus group interviews

The researcher attended each focus group interview and it was her responsibility to make field notes. Polit and Beck (2008:405) define field notes as notes that represent the observer's effort to record information, and synthesise and understand the data. The notes made in this study included objective descriptions of observed events and conversations as well as information about actions, dialogue and context (Polit & Beck, 2008:406).

To enhance the credibility of the data, the formulated question that was used during the focus group interviews were subjected to testing during the exploratory interviews.

2.5.2 EXPLORATORY INTERVIEW

Pilot or exploratory interviews are crucial for testing pre-designed questions (Merriam, 2009:95). Pre-testing questions allows the researcher to determine the meaning attributed to them and prevent mistakes or wasting time and money by asking inappropriate questions (Bowden, Fox-Rushby, Nyandieka & Wanjau, 2002:323). Asking relevant questions is important for enhancing the quality of the data. Questions causing confusing can be eliminated and questions that were omitted but are important can be added (Merriam, 2009:95). Validity can thus be assessed (Burns & Grove, 2009:404).

In formulating interview questions, the research purpose is the main focus (Anfara, Brown & Mangione, 2002:31). The pre-testing of the interview question in a pilot group that will be included in the research pinpoints possible problems and rectifies glitches with recording procedures (Burns & Grove, 2009:404). It also provides an opportunity to expose the moderator to the context of the study.

The research question was tested in the exploratory phase. The researcher identified possible participants by visiting the Afrikaans and English groups separately during a class period. An open invitation was directed to the class and willingness to participate in the pilot study was determined after the purpose of the study was explained. A time that would suit the participants was chosen and communicated to them via text and verbal messaging. A venue was booked and

refreshments bought. Polit and Beck (2008:395) recommend that the venue chosen in which to conduct interviews should be comfortable, not intimidating, accessible and easy to find. A venue on campus met these criteria, seeing that the participants, as students, were in a familiar environment and knew where it was located.

The location of the venue has an influence on the discussion and for that purpose a venue known to the students was chosen (Barbour, 2005:747). The participants could focus on their learning experience, seeing that the exploratory interviews were held at the university where they attend classes each day. The interviews did not occur in the same venue each time but were all scheduled in a lecture room in the main building of the UFS School of Nursing.

The open-ended instruction presented in writing to each participant during the English focus group interviews was:

> Describe your learning experience of the high fidelity simulation with one patient who had had a myocardial infarction and the other from hypovolemic shock.

The question was translated for the Afrikaans group:

> Beskryf jou leerevaring van hoëgetrouheidsimulasie met 'n pasiënt wat 'n miokardiale infarksie gehad het, asook 'n pasiënt wat aan hipovolemiese skok ly.

During the exploratory interview with the Afrikaans group, both the researcher and the moderator felt that the participants did not understand the question, seeing that they discussed practical examples experienced in the clinical setting at length and not necessarily their learning experience with the high fidelity simulation scenarios. After discussing the results of the exploratory interview with the moderator, the researcher returned to the group to confirm their proper understanding of the question. The participants confirmed that they had interpreted the question correctly and the question thus remained unchanged. The moderator and researcher agreed that the data could be included as part of the data analysis process.

2.5.3 EXECUTION OF THE FOCUS GROUP INTERVIEWS

The population was homogeneous and 32 students complied with the inclusion criteria. Fourteen participants took part during the focus group interviews. Even though more students indicated that they would participate, some did not show up. As pointed out by Rea and Parker (2005:81) the problems experienced with attendance is not unusual, seeing that 20-35% of confirmed participants do not join the scheduled focus group interviews.

As a solution for this problem it is suggested that more participants than the required number be invited (Halcomb *et al.*, 2007:1004). As indicated by Kitzinger (1994:105), four to five focus group interviews with a population are needed for sufficient data to materialise. Saturation of data was confirmed before the number of focus group interviews was terminated.

Four focus group interviews (including the exploratory interviews) were held and three to four students participated in each interview. A limited number of students took part. This could be due to the fact that the focus group interviews occurred during a very busy time period of the semester, but the researcher tried to accommodate the students by scheduling the focus group interviews for other times than class time. The time that the sessions were held depended on the availability of the students and the moderator.

Refreshments were offered at the beginning of each focus group interview. This was done to enhance a relaxed atmosphere (Kitzinger, 1995:301). Refreshments were served in a separate room to where the focus group interviews were held. A few minutes were allowed before each interview for the group members to make conversation in a relaxed manner.

Money for transport (the amount agreed upon with each participant) was provided for the participants who lived off campus and needed transport to return home after the session. This is suggested as a compensatory measure where data collection procedures are burdensome to participants (Polit & Beck, 2008:379). The students that study nursing at the UFS School of Nursing do not receive a stipend or student

salary. Since the students participated in the focus group interviews outside of class time, which led to extra travel expenses, transport money was made available. Information on remuneration for travel costs was provided to the participants before the focus group interviews commenced.

Each focus group interview commenced with the researcher obtaining informed consent from the participants and introducing the moderator. Information was given on voluntary participation, confidentiality, safekeeping of audio-data as well as the time frame for the interview.

During the introductory phase of the focus group interview the moderator established rapport with the participants and explained the purpose of the project (Berg, 2007:156). After this was done the moderator proceeded to explain the basic rules for interaction. Since the focus group interviews were audio-recorded, the participants were asked to allow one person to speak at a time and not to interrupt each other. Confidentiality of the participant's identities was enhancend since they were not introduced by name.

The moderator commenced the discussion by referring to the research question and reading it to the participants. The atmosphere during the focus group interviews was relaxed and the participants soon began to discuss their experiences in a detailed and excited fashion. Where indicated, the moderator used probes and clarifying questions to stimulate further discussion. She confirmed if what was said was adequately understood by summarising and asking questions. She did not offer opinions or leading comments (Berg, 2007:159).

Each of the four focus group interviews lasted for 35 - 45 minutes and was concluded by the moderator once the participants indicated that they did not have anything more to add to the discussion. She then thanked the participants for attending and ended the interview by explaining the importance of taking part in research studies. Saturation of data was achieved during the fourth focus group interview. This correlates with the number proposed by Morgan (1996:144) of four to six focus groups, with data saturation assessed after the third interview.

2.5.4 DESIGN OF MODULE EVALUATION QUESTIONNAIRE

In an attempt to streamline the collection and analysis of the documentary data in this study, the module evaluation questionnaire was designed using Respondus 4.0 software and was presented to the students in both English and Afrikaans (refer to Addendum B). Respondus 4.0 is a powerful tool for the creation and management of examinations, tests and surveys. These documents can be printed or published directly on Blackboard Learn (Respondus Inc., 2011).

Blackboard Learn 9.1 is an innovative technology that adds efficiency to day-to-day tasks. It streamlines processes and empowers educators with tools to engage every learner (Blackboard Inc., 2011). The module evaluation questionnaire was available on a software program and completed electronically by the students who logged in on Blackboard using a student number and individually designed password. Anonymity was created by using the survey function of Respondus 4.0. This ensured that the program only checked if the survey was completed, but the details of the individual student were not available.

To manage any technological problems that may have arisen during the completion of the module evaluation, a technician from the Information Computer Technology (ICT) services of the university was present. He did not focus on the content of the document but only on assisting students during completion of the questionnaire. Because the information obtained from module evaluations was used to measure and improve the teaching programme, all the third-year students were asked to complete these evaluation forms.

An existing module evaluation questionnaire was already available since these evaluations are completed each semester. General questions with a focus on the learning content of the module, including the learning activities and assessment were asked. Questions with a specific focus on the high fidelity simulation and the learning experience of students regarding this innovative strategy were asked (Addendum B). Permission for the implementation and use of the data of the extended module evaluation questionnaire was obtained from the module coordinator and the students consented to participation by completing the module

evaluation. The students were informed that the data regarding the simulation experience would be used for research. All the data obtained from the questions asked specifically on simulation was included as data for this study.

2.6 ANALYSIS OF DATA

Analysis includes the systemisation of data in a constructive manner, as well as the presentation and interpretation of data. A deeper understanding is articulated, the data presented and an interpretation made (Creswell, 2009:183).

In qualitative studies, data collection and data analysis occur simultaneously (Polit & Beck, 2008:507). This implies that the identification of themes and concepts commenced during the focus group interviews. The transcription of the audio-recordings was completed as soon as possible after the data was gathered.

After identification of specific themes, open coding was used to analyse the data to find similarities and differences. By grouping similar actions and events, the researcher was able to create specific categories. The purpose of creating categories is to ensure that a complete description of the concept is clear (Polit & Beck, 2008:526). The researcher did not aim to test a grounded theory, but rather to describe the learning experience of students.

The qualitative data analysis for the focus group interviews and completed module evaluation questionnaires was performed by using Creswell's (2009:185) hierarchical approach. This included the steps for coding data as explained by Tesch (cited in Creswell, 2009:186).

The hierarchical approach as suggested by Creswell (2009:185) for data analysis includes:
   a) *Organise and prepare data for analysis.* This includes the transcribing of audio-data and the typing of field notes.
   b) *Read through all the data.* A general sense of the information and its meaning is reflected upon.
   c) *Begin detailed analysis with a coding process.*

Tesch (cited in Creswell, 2009:186) lists and explain the steps of the coding process as follows:

i. One document is chosen randomly. While reading, the researcher will ask the question, "What is it about?" Thus the underlying meaning of the information is identified.

ii. Repetition of this question with the documents of several participants will help the researcher in compiling a list of topics. All similar topics are clustered together.

iii. The list of topics is compiled and the researcher returns to the data. The topics are then abbreviated as codes. New categories and codes can be identified.

iv. Descriptive wording for the topics is formulated and categories developed. Topics can be grouped and interrelationships indicated.

v. A final decision on the abbreviations for each category is made and the codes placed in alphabetical order.

vi. The data belonging to each category is grouped and a preliminary analysis performed. If needed, recoding of existing data is done.

Continuing with the steps, Creswell (2009:186) adds the following:

d) *Description.* The completed coding process is used to describe the themes for analysis. These themes represent the perspectives of individuals and are supported by evidence from the study.

e) *Representation of the qualitative narrative.* A discussion of the themes conveys the findings of the analysis.

f) *Interpretation of the data.* This interpretation is a description of the lessons learned.

To assist the researcher in the coding of the data, computer-assisted qualitative data analysis software (NVivo8) was used. This software was developed by Qualitative Solutions and Research (QSR International, 2007). This program limits human error such as linking data incorrectly or analysing relationships wrongly. Coding of data is made easier by entering the data from the focus group interviews into the program. Each record is coded and corresponding text is linked to the relevant code (Polit &

Beck, 2008:513). The program was made available through the UFS School of Nursing.

Seeing that data analysis in qualitative research is not a separate process but commences simultaneously with data collection, themes emerged during the verbatim transcription of the audio-recorded focus group interviews (Brink, 2008:184). Separate field notes were organised and linked to the transcripts.

The data analysis of focus group interviews entails the identification of themes and an examination of how these relate to the variables within the sample population. It is important to take note of minority opinions and comment on them (Kitzinger, 1995:301). A thematic analysis of the data involves the identification of patterns, regularities and inconsistencies (Polit & Beck, 2008:132).

A co-coder was used to check and validate the data analysis process. This co-coder is not an educator at the UFS School of Nursing and is skilled in qualitative data analysis. The co-coder and researcher checked their agreement on the identified themes, categories and the classification of the data gathered.

2.6.1 DATA VERFICATION

Investigator triangulation, a method used to ensure reliability, refers to the use of two or more researchers to do data collection and coding and to make analytical decisions. Through this collaborative process it is possible to reduce the likelihood of biased decision making and idiosyncratic interpretations of the data (Polit & Beck, 2008:547).

For this study, an independent co-coder was appointed and remunerated. As previous head of the UFS School of Nursing, she understands the complexities of the UNEDSA project and was instrumental in establishing the SPACE and acquiring the high fidelity simulators. See Addendum H for the notes of the co-coder.

2.6.2 DATA REPRESENTATION

In quantifying and representing data that was collected, a researcher may use tables and figures when reporting on the data (Polit & Beck, 2008:374). For this study, data representation will follow in Chapter 3 (see Figure 3.1).

In reporting on the data that was collected in this qualitative study, it was necessary to explain the nature of the problem as well as the way in which the problem was investigated. The findings or results also needed to be included (Merriam, 2009:246).

2.7   TRUSTWORTHINESS OF THIS STUDY

Determining the quality and integrity of qualitative studies is complex and challenging (Polit & Beck, 2008:540). The validity of a study is questioned when the researcher does not take care to prevent interference during research and does not explain these actions (Polit & Beck, 2008:286). Validity as quality criterion refers to the degree to which deductions made are accurate and whether the data collection method measured what it was supposed to (Polit & Beck, 2008:768).

Lincoln and Guba (1986:77) developed criteria for the trustworthiness of data in qualitative studies. These criteria, namely: credibility, dependability, transferability, confirmability and authenticity, are discussed in the subsections that follow.

2.7.1 CREDIBILITY

Credibility is a criterion applied to evaluate the integrity and quality of a study, more specifically, the accuracy and confidence in the truth of the data gathered (Polit & Beck, 2008:751).

Credibility is established through prolonged engagement with the subject matter until saturation of data occurs (Streubert Speziale & Carpenter, 2007:49). In this study, focus group interviews with a single sample were conducted over a period of three months, allowing for multiple contact sessions. Data saturation was reached when

themes and categories become repetitive and redundant (Polit & Beck, 2008:71). Where participants are able to reflect on their experiences and communicate these effectively, data saturation with a small sample is possible (Polit & Beck, 2008:357). In this study, saturation of data occurred after four interviews were held.

For enhancement of the objectivity of results, a co-checker (intercoder/co-coder) is used to check agreement of codes and text allocation to these (Creswell, 2009:191). This co-checker is also called a critical friend and the process is referred to as peer facilitated debriefing (Marshall and Rossman, 2011:40). For co-checking of data and emerging themes, an experienced qualitative researcher, with a PhD in Nursing and extensive knowledge of NVivo was appointed.

Triangulation by gathering data from multiple sources, by means of various methods and by looking through multiple lenses enhances the credibility of results (Marshall & Rossman, 2011:40). In this study, interviews and analysis of data from the module evaluation questionnaire were used.

Time triangulation involves the collection of data on one phenomenon at different points in time. Method triangulation involves using multiple methods of data collection for one phenomenon (Polit & Beck, 2008:543). Both these methods of triangulation were implemented. Collection of data occurred at different times, with the focus group interviews being held shortly after the students were exposed to the high fidelity simulation sessions. The completion of the module evaluation questionnaire occurred at the end of the semester.

Person triangulation refers to the collection of data from different persons at different levels within an organisation, for example individuals and groups (Gray, 2009:193). The aim is to validate data through multiple perspectives on the phenomenon (Polit & Beck, 2008:543). With focus group interviews it is possible to evaluate the interaction between group members, but also the reaction of the individual to specific statements: thus triangulating the data. In an effort to add to the credibility of data, participant interviews occurred within their functional context, in this case, the academic environment of the University of the Free State. The opinions of

individuals were obtained since the participants completed the questionnaire on their own.

Reflexivity is a method implemented to enhance credibility, thus preventing biases from interfering with the judgement process. Reflecting critically on the self, taking note of personal values and analysing the ones that might affect the data collection and interpretation process form part of this practice (Polit & Beck, 2008:202). The research paradigm of the researcher was explained in Chapter 1 and a clarification of possible biases provided. By including the field notes taken during the focus group interviews as part of data analysis, the researcher could reflect on what was said and how things were really said and not what she thought was said.

'Equivalence' is a term used to describe the consistency and credibility of the moderator and reviewing coders. Kidd and Parshall (2000:302) state that the internal consistency of coding is enhanced if completed by one person. To enhance credibility, one moderator conducted all the focus group interviews. One researcher took field notes and coded and analysed the data.

Lincoln and Guba (1986:77) define peer facilitated reflection as a process in which one expose oneself to a disinterested professional peer with the purpose of keeping the researcher honest in developing hypotheses and designs. Peer facilitated reflection can also be a form of emotional catharsis. The use of the co-coder to check codes and the data attached to these prevented a one-sided interpretation of data. Consulting an expert outside of the context of the study allowed for the objective review of the data.

Member checks entail the process of continuously testing information by soliciting reactions from respondents to the researcher's reconstruction of what he or she has been told (Lincoln & Guba, 1986:77). As discussed in the exploratory focus group interview section, the researcher revisited the participants to determine their understanding of the question posed and to confirm data gathered. The moderator also confirmed whether what was said was adequately understood by summarising the data and asking questions throughout the interviews.

Performing a literature review during the data analysis phase enables the researcher to compare findings with previous studies. This allows for the research problem to be viewed and clarified within the context of the study (Polit & Beck, 2008:106).

2.7.2 DEPENDABILITY

Dependability refers to the stability (reliability) of data over time and different conditions. It is determined by asking whether the same results would be obtained if an inquiry were repeated with the same participants in the same context (Polit & Beck, 2008:539). Dependability of findings is determined by effectively implementing credibility measures (Streubert Speziale & Carpenter, 2007:49).

Multiple focus group interviews were conducted and even though the population was relatively small (35), the data was confirmed by asking the same question to a variety of participants within the population over a period of three months.

Dependability might also demand a presentation of the negative or discrepant information identified. With negative case analysis, the researcher purposefully searches for disconfirming evidence (Brink, 2008:118). The focus in qualitative research is on real life; unique experiences of people and variation are always present. Data that highlights the opposite from what was said or disagreements by participants should not be ignored during data analysis.

Lincoln and Guba (1986:77) mention the performance of an external audit as a method to enhance dependability in qualitative studies. An audit trail, which implies that material and documents are purposefully collected and available, should be left. Examples of these records include the raw data (interview transcripts), data reduction and analysis products, instrument development information and data reconstruction products (Polit & Beck, 2008:545). All the original field notes, the informed consent documents and the electronic file of the coded NVivo data of this study are available. By describing the research method and data collection process in detail an enhanced understanding of how the study was performed is possible and the probability of repetition increased. This chapter on the methodology functions as

proof of the audit trail, seeing that a detailed description is provided of how the study was conducted and how the data was analysed (Merriam, 2009:223).

2.7.3 CONFIRMABILITY

Confirmability as a process criterion means asking, "Does the data help confirm the general findings and lead to the implications?" (De Vos, 2005:347). The congruence between two or more independent people with regard to the accuracy, relevance and meaning of data confirms the findings (Polit & Beck, 2008:539).

Confirmation is only possible where an auditable trail is left. In qualitative research this implies that the researcher describes in detail how data was collected, how categories were derived and how decisions were made throughout the inquiry. Evidence of this is produced by the researcher recording memos (Merriam, 2009:223). During this study, field notes were taken as part of the focus group interviews and with NVivo, it was possible to record thoughts and processes as a memorandum in the program. The original transcripts and codes were available to the co-checker during confirmation audits and consensus on codes was confirmed through communicating electronically.

A strategy that was implemented to enhance the confirmability of the data was that the researcher conducted this study with an open mind and aimed to maintain objectivity for the duration of the research. A co-coder was used to confirm the themes that were identified and check if she agreed with the process of data analysis.

2.7.4 TRANSFERABILITY

Transferability refers to the generalisation of data and determines the extent to which findings can be transferred to other settings or groups (Polit & Beck, 2008:539). This study was conducted in a specific context, which included the use of high fidelity simulators by third-year Baccalaureate nursing students however the manner in which the simulation sessions were presented was based on the theme and simulation development guidelines. It was not the intention of the researcher to

obtain generalised data, but to gain deeper insight into the learning experience of the third-year Baccalaureate nursing students.

Increasing the possibility of generalisation of findings is achieved by triangulation of data, as well as by providing thick descriptions. A thick description is defined as a detailed account of real situations. This type of description is associated with phenomenological research. Phenomenology makes it possible to produce an in-depth description of people's experiences or perspectives within their natural setting (Gray, 2009:28, 582). Seeing that an exploratory design was implemented in this study, thick descriptions could be used as a method of increasing the possibility of transferability.

2.7.5 AUTHENTICITY

Authenticity refers to the extent to which the researcher is able to portray the academic experiences of the participants as they were lived. The reader is invited to experience a heightened sensitivity towards the issues being described (Polit & Beck, 2008:540). This links with providing thick descriptions of the high fidelity simulation learning experience of the participants.

2.8   ETHICAL CONSIDERATIONS OF THIS RESEARCH STUDY

The ethics of research is concerned with the appropriateness of the researcher's behaviour in relation to the participants and those affected by it. Where research is performed in the real world and involves people, ethical issues can arise during any phase of the research (Gray, 2009:68).

The Nuremberg code, addressing ethical issues in research, was published in 1947 after the Nazis conducted unethical medical experiments during World War II. This code contains 10 focus areas and highlights the importance of obtaining voluntary consent from research participants. The code specifies that the risks involved for the research subjects should be considered and that a study should not be executed if there is a valid and current reason to believe that it will cause harm. The Declaration

of Helsinki, which superseded the Nuremberg code, sought to balance the interest of research subjects with the need for scientific research (Gray, 2009:70, 71).

In South Africa, the National Health Act (61 of 2003) specifies that any health research may only be conducted once the prospective participant has been informed of the objectives of research, including any possible negative and positive consequences that the research might have (South Africa, 2003:92).

The Health Professions Council of South Africa published guidelines for good practice in the health care professions. In these guidelines the way in which biotechnological research should be executed is specifically described (HPCSA, 2007).

The Medical Research Council of South Africa, with 33 years of experience of ethics in the health sciences, published the 4th edition of *Guidelines on Ethics for Medical Research* in 2008. In this publication informed consent is once again emphasised, seeing that this is a concept entrenched in the Constitutional Bill of Rights of South Africa (MRCSA, 2008).

Four ethical principles that need consideration include: 1) avoiding harm to participants; 2) ensuring informed consent; 3) respecting the privacy of participants and 4) avoiding deception (Gray, 2009:73). In order to address these, specific measures to enhance the integrity of this study were implemented.

2.8.1 ACCESS THROUGH GATEKEEPERS

Access to participants and research sites is established through informal and formal gatekeepers within an organisation (Creswell, 2009:178). A formal pathway for this study was the ethical approval to continue granted by the Ethics Committee of the Faculty of Health Sciences of the University of the Free State (refer to 4.5). Obtaining ethical committee approval is in line with the requirements as stipulated in section 73 of the National Health Act, where it is stated that an ethics committee should only grant permission for research studies to continue once it has been

established that the proposed research meets the ethical standards of the specific research ethics committee (South Africa, 2003:95).

Permission to continue was obtained from the head of the School of Nursing, the dean of the Faculty of Health Sciences and the vice-rector of teaching and Learning at the University of the Free State (refer to Addendum E and Addendum F). This was necessary since students were invited to participate in this study.

2.8.2 ENSURING AUTONOMY, PRIVACY AND CONFIDENTIALITY

The principle of self-determination implies that the researcher respects the participants as autonomous persons, capable of controlling their own activities. The participants should be allowed to decide voluntarily if they would like to participate in the study. Participants have the right to ask questions, refuse to give information and to withdraw from the study at any time (Polit & Beck, 2008:171). Obtaining consent implies an informed decision based on the information included in the consent form. Gray (2009:75) lists the relevant aspects as follows:

- The aim of the study
- Details of the researcher
- Voluntary participation in the focus group interviews
- The assurance that no losses will be suffered for non-participation
- The rights of the participant and withdrawal from the research at any time
- Knowing about the audio-recording of focus group interviews
- Measures to maintain confidentiality
- Expectations: participation in a focus group interview that would last for more or less two hours
- Risks (impact) of participating in the study
- Permission and approval routes of the study

The informed consent supplied by the participants in this study was based on the above mentioned, since all these aspects were discussed in the consent form (Addendum C).

Section 28 of the Constitution (South Africa, 1996) and the Children's Act (South Africa, 2005:38) defines a person above the age of 18 years as an adult. An adult may provide consent as an individual. All the participants in this study were adults and provided consent based on the information received.

Privacy is defined as an individual's right to determine the time, extent and general circumstances under which personal information will be shared (Burns & Grove, 2009:194). An alphabetical letter was allocated to each participant as identification of the voices heard on the audio-recordings. By providing informed consent, the participants understood that absolute confidentiality could not be guaranteed and that personal information would only be disclosed if required by law (refer to Addendum C).

Confidentiality of a study is promoted by limiting the number of people that have access to the research data (Polit & Beck, 2008:180). The transcribed focus group interview data was checked for correctness by two members of staff who were not involved during the research and did not know the participants. A copy of the audio data and transcribed documents was provided on a compact disc and returned to the researcher.

Measures to protect the participants' identity and ensure confidentiality were included in the information document read by and discussed with participants. They signed these documents without any coercion.

2.8.3 PRINCIPLE OF BENEFICENCE

It is the duty of the researcher to minimise harm and maximise benefits (Polit & Beck, 2008:170). The research should benefit both the participants and society. The students who participated in this study will not benefit directly from the results. This was clearly indicated in the information document provided. The benefit of this study for future students includes a possible improvement in their learning activities through refining the high fidelity simulation sessions that are presented at the UFS School of Nursing.

Minimising harm includes the protection of participants from psychological harm. In qualitative studies, participants are often asked to reveal personnel information. This implies that the qualitative researcher should be sensitive towards participants and their emotional reactions (Polit & Beck, 2008:170).

Participants who had to travel to and from the focus group interviews were compensated for travelling costs incurred.

2.8.4 PRINCIPLE OF JUSTICE

The principle of justice is concerned with the equal distribution of benefits and burdens posed by a research study. It implies that study participants should be selected according to the research requirements and not their vulnerability (Polit & Beck, 2008:173). For this study, the third-year Baccalaureate nursing students were invited to participate, seeing that they were exposed to the high fidelity simulation sessions. As indicated in the inclusion criteria, 32 students qualified to participate in the focus group interviews. Voluntary participation implies that all students had an equal chance to be selected.

Fair treatment and justice include being non-judgemental and not discriminating against participants who chose not to participate, or withdrew from the study (Polit & Beck, 2008:174). This aspect was explained in the information document. Even though the researcher experienced frustration due to students not arriving at the scheduled focus group interviews as promised, they were not treated in an unfriendly manner. The third-year educators were not informed of who participated and who did not participate in the research.

2.8.5 THE QUALITY OF THE RESEARCHER

Producing high quality research is achieved by selecting the applicable methods and strategies but it also involves considering who the researcher is. The researcher's outlook self-demands and ingenuity should be considered (Polit & Beck, 2008:551).

A research study should be built on the expertise and ability of the investigator (Burns & Grove, 2009:80). Best practice is that a novice researcher limits the scope of the research and for this reason a single problem of inquiry was selected. A skilled moderator was appointed to collect data during the focus group interviews. For this study, an experienced researcher, with a PhD in Nursing, was allocated as supervisor.

Polit and Beck (2008:551, 552) identifies commitment to transparency and verification as a principle the researcher must consciously maintain. Where a researcher returns and re-reads data, commitment to absorption and diligence are principled.

Although authors differ on how absorption should occur it is agreed that time and energy should be invested in the analysis and documentation of presuppositions, biases and on-going emotions. Polit and Beck (2008:552) also mention the researcher's commitment to reflexivity. This includes asking oneself, "How might my previous experiences, values, background and prejudices shape my analysis and interpretations?"

The researcher deliberately attempted to maintain objectivity throughout the research study and did not allow her own perceptions, views, experiences and values to influence the data analysis process. As suggested by Merriam (2009:176) the researcher went back and forth between the concrete bits of data. This consolidation, reduction and interpretation cycle is a continuous development process during which the researcher forms her own sense of what was said and develops a deeper understanding of the themes identified. The researcher read the data, reflected on what was said and eventually developed deeper insights into the data. In this way the true context became apparent.

The last principle stated by Polit and Beck (2008:552) is commitment to insightful interpretation. Considerable knowledge about the data and linking it with literature is crucial. This aspect is dealt with in Chapter 3.

2.9   CONCLUSION

The research design of this study followed a qualitative, descriptive, exploratory and contextual approach.   The population and unit of analysis were the third-year Baccalaureate nursing students at the UFS School of Nursing.   Focus group interviews and the completion of a module evaluation questionnaire were used to collect data. The inclusion criteria for the participants were that they were registered for both the third year nursing theory and practical modules and were exposed to two high fidelity simulation scenarios.   The advantages, disadvantages, role of the moderator and the process for conducting focus group interviews have been discussed in detail.   The analysis of all the data followed a hierarchical approach. Trustworthiness of this study was ensured by implementing measures to ensure credibility, dependability, transferability and authenticity.   Ethical principles considered during this study included informed consent from participants, autonomy, privacy and confidentiality.

CHAPTER 3

ANALYSIS AND DISCUSSION OF RESEARCH FINDINGS

3.1   INTRODUCTION

The data collection and analysis process was discussed in Chapter 2. Data was collected by means of focus group interviews held with third-year Baccalaureate nursing students after they were exposed to two high fidelity simulation sessions as well as from the module evaluation questionnaire that were completed. Data from the module evaluation questionnaire is indicated with the # sign.

Through analysis of the qualitative data, themes were identified and the purpose of this chapter is to communicate these results. A review of the control literature is simultaneously performed and data is linked with what is known on the subject. Recommendations follow in Chapter 4.

3.2   DEMOGRAPHIC DATA OF POPULATION AND UNIT OF ANALYSIS

Since the complete third-year nursing student group were invited to complete the module evaluation questionnaire, the characteristics of the group are discussed in Table 3.1, followed by the characteristics of the focus group interview participants. This data was obtained from the student class lists available on the electronic registration system of the University of the Free State.

Table 3.1 Demographic data of third-year nursing student group (population)

DEMOGRAPHICS:	LANGUAGE PREFERENCE OF STUDENTS:	
	AFRIKAANS	ENGLISH
NUMBER	14	21
GENDER Female Male	 13 1	 18 3
POPULATION SIZE	35	
AGE IN YEARS 20-21 22-23 24-25 30 and above	 6 6 0 2	 12 4 3 2
RACE Black Coloured White	 0 2 12	 17 0 4

The complete third-year student group consisted of 35 students. Of these, 14 were Afrikaans-speaking and 21 English-speaking. The majority of the students were female (n = 31) and four male students were present in the population. Thirty one students were between 20 and 25 years old and belonged to the Y generation. Only four students are 30 and above years old. Forty nine per cent (n = 17) of the class (N = 35) were black and 46% (n = 16) were white. Two students were coloured.

The students who chose to complete the module evaluation questionnaire forms part of the above mentioned population. The demographics of this group are not discussed as the completion of the module evaluation questionnaire was done anonymously.

A summary of the demographics of the focus group interview participants based on language preference, gender, age and race are found in Table 3.2.

Table 3.2 Demographic data of focus group interview participants

DEMOGRAPHICS:	LANGUAGE PREFERENCE OF PARTICIPANTS:	
	AFRIKAANS:	ENGLISH:
NUMBER	7	7
GENDER: Female	7	7
AGE IN YEARS: 20-21 22-23 24-25	3 4 0	5 1 1
RACE: Black Coloured White	0 1 6	4 0 3

Considering the data represented in Table 3.2, it is clear that the views expressed during the focus group interviews are those of female students only. Four males (three black and one white) were included in the population (35 students), but none participated in the focus group interviews.

The age of the focus group interview participants is representative of a student of young adults that enter the higher education setting after school at age 18. Thirteen of the 14 participants that took part in the focus group interviews were 20 to 23 years of age in their third year of study.

As specified in the language policy of the University of the Free State, students can choose between English and Afrikaans as preferred language of instruction. The distribution of students based on language preference for the focus group interviews is equal. The focus group interviews were conducted in the preferred language of choice of the participant.

The Afrikaans-speaking students in the population were predominantly white (14 of the 35) and six participated in the focus group interviews. Of the two coloured students in the population, one Afrikaans-speaking student took part in the focus group interviews. Seven English-speaking female students, four black and three white, took part in the focus group interviews.

If brought into context of the population (N = 35), black students were marginally represented with four of the 17 students participating in the focus group interviews. For the white students, more than half of the class was represented, with nine of the 16 students taking part.

Moorman, Newman, Millikan, Chiu-Kit and Dale (1999:191) determined the effect of the interviewers' race on the response rate of black and non-black participants and found that the response rate in black women was higher if invited to participate by a black interviewer.

It might not be possible to transfer these results directly to this study, seeing that personal interviews were not conducted and the sensitive topic of breast cancer not discussed. The aforementioned could, however, provide some insight into the low response rate of black participants and should be considered since the researcher is white.

Set against this background, the learning experience of the participants on high fidelity simulation is discussed in the following sections.

3.3 THE LEARNING EXPERIENCE OF THE THIRD-YEAR NURSING PARTICIPANTS

The learning experience of the third-year Baccalaureate nursing students as gleaned from the focus group interviews and the completed module evaluation questionnaire is discussed below.

A visual representation of the themes and sub-themes identified is presented in Figure 3.1. It should be noted that the excerpts that are quoted in this chapter are verbatim transcriptions of the participants' words.
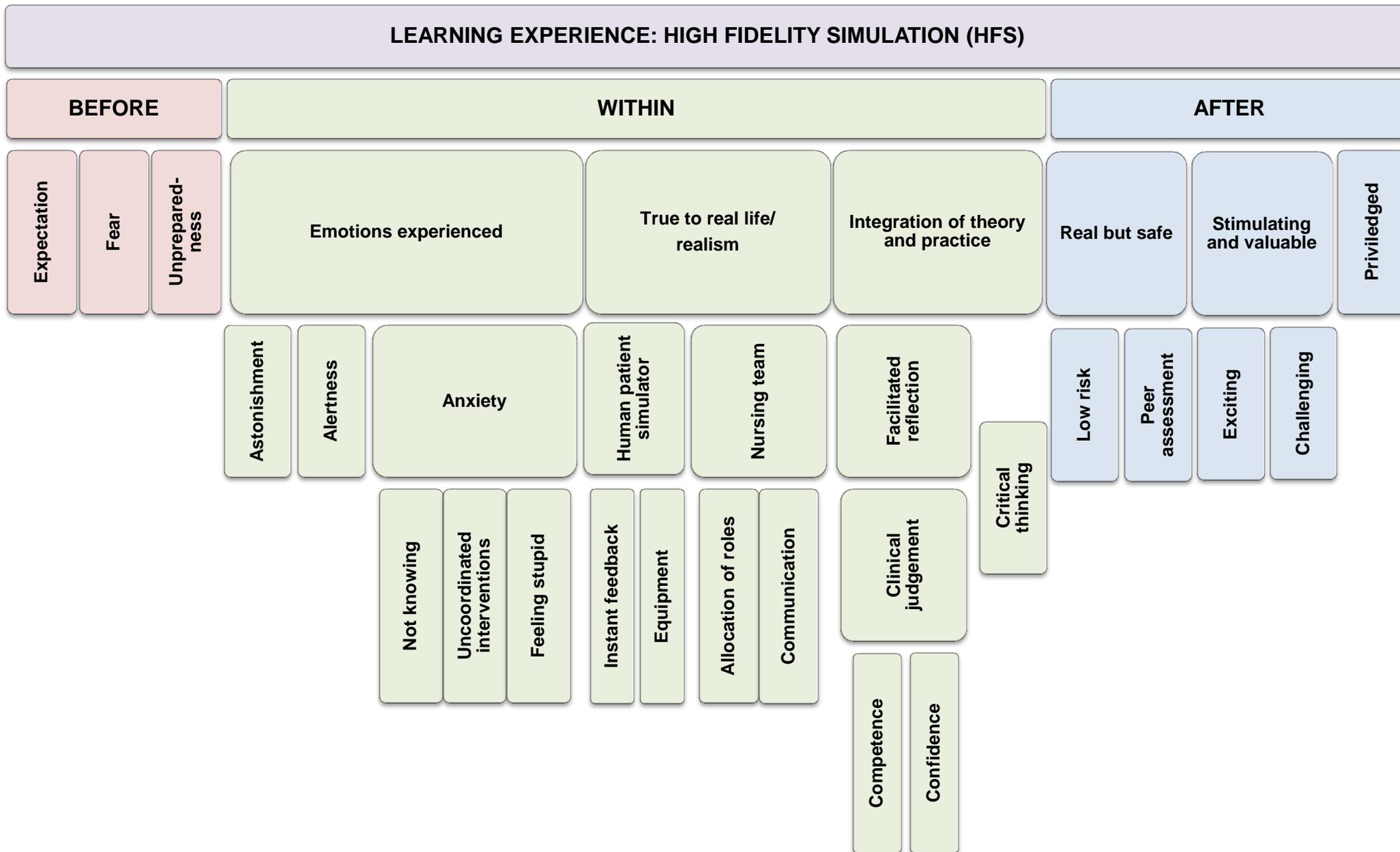
Figure 3.1 Main and sub-themes of the high fidelity simulation learning experience
Note: The size of the blocks in this figure does not represent the value of the contents in terms of the themes identified.

The experience of the participants before commencing the simulation is attended to first, followed by a discussion of their experience during the simulation and lastly, their learning experience after the simulation.

3.3.1 THE LEARNING EXPERIENCE OF PARTICIPANTS BEFORE SIMULATION

Students enter the learning environment with different readiness levels and usually have specific expectations. Educator insight into the fears and expectations of students can influence the selection of learning strategies and methods (Bruce *et al.*, 2011:116).

The participants in this study acknowledged that they had certain expectations of the high fidelity simulation session. They identified fear as an emotion they had experienced before commencing the scenario and explained that they felt unprepared for the learning experience. A visual summary of these themes is provided in Figure 3.2 and a detailed discussion follows.
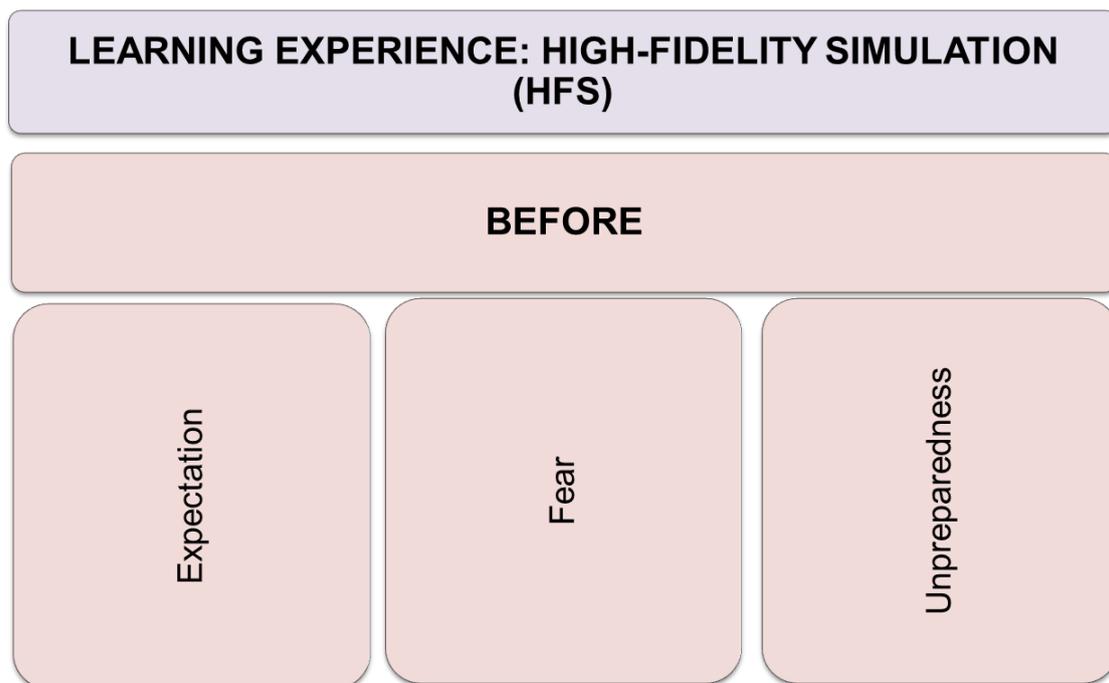
Figure 3.2 Summary of the learning experience before simulation

3.3.1.1   EXPECTATION

In general, students enter a learning environment with certain expectations about what they will learn (Bruce *et al.,* 2011:116). Gagne (1977:61) describes expectancy as one of the conditions that should be present for learning to transpire.

Through providing students with the outcomes for the scheduled learning session, the internal process of expectancy is activated. A sense of anticipation and curiosity is created and students are motivated to learn since positive emotions contribute to meaningful and memorable learning (Dirkx, 2001:67). This process is visually represented in Figure 3.3.
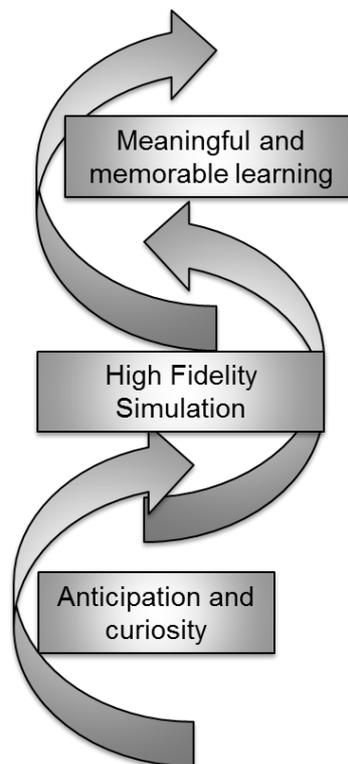
Figure 3.3 Expectation and high fidelity simulation learning

To anticipate something is to eagerly look forward to a future event. Anticipation influences behaviour by determining when and how action is taken (Butz 2004:111, 113, 114). A person will only take action, once the available options have been considered. Cognitive ability is then focused on the actions that should be performed in order to reach the desired outcome. By concentrating on these

activities, a person's ability to process and understand the information is enhanced. A disadvantage of such internally directed cognitive activity is that some important aspects of the situation might be overlooked while the person's attention is focused on other processes.

Anticipatory behaviour is thus defined as behaviour or cognitive processes that do not only depend on the current sensory input state, but also on predicted, desired or intended future states or properties (Allen, 2010:153).

Anticipatory behaviour is beneficial in partially dynamic environments. Where a gradual change in the environment occurs, anticipatory behaviour will allow a student to better adapt to this change. Not only is behaviour influenced by the current environmental stimulus, but it also depends on the desired future stimulus. By planning ahead, a student is able to adapt faster in a changing environment. Where a similar environment is created repeatedly the student will apply and generalise the model learnt and reapply the actions taken (Butz, 2004:114, 115).

The simulated environment is dynamic and the condition of the simulator changes based on the actions taken by the students. This allows them time to adapt to the change and plan their next nursing action.

The participants experienced positive expectancy which gave rise to anticipation. They explained that they were looking forward to being exposed to the high fidelity simulation scenarios. The expectation felt was linked to the fact that the high fidelity simulators were purchased while the participants were in their first year of study (2009). They saw the simulators while attending classes in the SPACE. At the beginning of the academic year they were told that they would be exposed to high fidelity simulation and the scheduled simulation sessions appeared on their academic time-table. They knew that the high fidelity birthing simulator is used during the midwifery module presented in the final year of study. Consequently high levels of excitement were present, as is evident from their comments:

- I remember they started building it (referring to the SPACE) when we were first years.
- I was really excited because we were using the facilities that we've been seeing. We've been walking past there all the time and wondering when are we going to get a chance to do the things. And then it was like a surprise…
- *So ons kan ook nie wag vir Verloskunde nie, want hulle sê daar is daai simulator…kraam.*
- *Ons was almal baie opgewonde!*

Feelings of expectation, anticipation and curiosity stimulate students to learn, thus creating a positive attitude towards learning, allowing students to enjoy, remember and appreciate the experience.

The participants were also very excited because the patient suffering from chest pain and a myocardial infarction had to be defibrillated:

- *Soos in ICU sal ons nou nie graag wil die pasiënt defib nie, maar hierso sien ons baie uit om dit te doen. So ons wil hê hy moet …*
- *En die defib. Almal wil net defib. Ons kon nie wag daarvoor nie. Ja.*

These findings correlate with what Seropian (2003:1698) calls a heightened sense of awareness. Students enter the simulation expecting something to happen. This is a positive aspect and relates to the simulation scenario representing real life.

With reference to their age (20-25 years), the participants in this study are regarded as being part of Generation Y, also called the Net generation (Skiba & Barton, 2006). Members of this generation have priorities that differ from their older cohorts and they are characterised by their distinct culture. They have, for example, created a text message language that is unique and foreign to the older generations (McCrindle, 2002:1). This is due to their extensive use of cell phones, laptops and other gadgets. They are technologically literate with higher expectations of the

education that they receive than what is seen in other students (Nehring, 2008:110; Cannon-Diehl, 2009:129). This explains the excitement caused by the possibility that they had to defibrillate the patient as they were looking forward to being exposed to this technology.

The Generation Y student is confident, ambitious and achievement-oriented, has high expectations and seeks challenges. Curiosity, discovery and exploration are key characteristics of the Net generation student (Skiba & Barton, 2006).

True to their nature, the participants wanted to manage a crisis situation and took the unknown nature of the scenario as a challenge to see what they were capable of doing:

- So we were like on edge. Come on, arrest! You want to see what you can do.
- *So, nou wag almal maar in spanning.*
- *Ons wil daai onbekende toets. Ons wil toets hoe gaan dit wees as jy dit moet doen. Jy wil net voel hoe dit is.*

These young adults are constantly in search of fun and they want to construct their own knowledge. The Net generation students are visual and experiential learners that prefer to be engaged during the learning process. They learn by doing (Skiba & Barton, 2006). This implies that the traditional lecture is not sufficient for teaching. Interactive, spontaneous class activities are better suited to meet their unique needs (McCrindle, 2002:5).

Simulation, case analyses and participatory learning methods are part of the Generation Y student's learning preferences (Skiba & Barton, 2006).

- Fun! (Rest of group echo's this in agreement.) We laughed.
- *Dit was rêrig baie, baie lekker!*
- I quaintly see simulation as most fun thing I can do. #

High fidelity simulation as experiential learning activity with video playback facilitated reflection satisfied the abovementioned needs of these students.

Although the participants described the anticipation that they felt as being positive, Lasater (2007:273) warns that a feeling of foreboding may increase anxiety levels. This is especially present at the beginning of a simulation session when students are waiting for something to happen. This was true for the participants in this study as the anticipation they felt before commencing the simulation was mixed with fear.

3.3.1.2   FEAR

Fear as a basic human emotion is an unpleasant feeling caused by the threat of danger or harm. Fear is a conscious emotion and the threat is identifiable (Belzung & Philippot, 2007:1). Some of the participants experienced fear related to their self-doubt. They were unsure of themselves and made mention of this during the focus group interviews.

- *Aanvanklik was ek baie bang vir dit… Ja, aan die begin. Ek het nie gedink … joe ek weet nie, of ek die kennis het om te kan gebruik in hierdie situasie nie.*
- *Ek is so bang vir 'n defib.*
- It was a bit scary at first because you can't expect a doll to respond you know.
- It was kind of scary.

Even though the students were oriented regarding the features and functions of the simulator, the technology is new and they did not know what to expect. They had to perform clinical skills that had only been practised once or twice before in the skills laboratory on low fidelity task trainers. The Afrikaans-speaking participant identified her fear as being related to uncertainty. She felt that she might not have the necessary knowledge to apply during the simulation scenario or operate the defibrillator competently. She experienced fear of being overwhelmed by a lack of experience that would lead her to make mistakes (Haffer & Raingruber, 1998:64).

The fear of making a mistake is the highest anxiety producing situation for junior and senior level students (Kleehammer, Hart & Keck, 1990:186).

An inherent fear of using the defibrillator is sometimes present in health care providers operating these machines (Warwick, Mackie & Spencer, 1995:235). This is also true for students who have had limited exposure to the use of defibrillators and has never operated one before. Such students fear that they will sustain an electrical shock while delivering care to a patient.

Another reason for the fear experienced by the participants might be the fact that the students at the UFS School of Nursing are continuously assessed for their clinical competence during the semester. Competency is assessed against set standards that are communicated to the students during the clinical demonstration of the specific procedure. The students have time to practise the procedure in the clinical skills laboratory and in the clinical areas. An appointment is made with the clinical preceptor once the student feels competent. Clinical skills assessment occurs in the clinical practice areas and the students need to prove their competency on real patients. The skill assessment marks form part of the final assessment grade for the clinical nursing module.

Ganley and Linnard-Palmer (2010:e2) report that students do not always feel academically safe during high fidelity simulation experiences. Adverse factors that influence academic safety include students feeling that they are negatively judged by their educators or peers while performing a skill (Ganley & Linnard-Palmer, 2010:e2; Nehring & Lashley, 2004:248). Students approach learning in different ways. Assessment-driven learning influences not only what students learn, but also how they approach learning (Bruce *et al.,* 2011:123).

Even though the purpose of the high fidelity simulation was not assessment, the students entered the learning experience with their 'assessment sensors' activated. This might explain the activation of fear, since being evaluated and criticised intimidates students.

The issue of assessment should be discussed with the students before commencing the simulation scenario (Seropian, 2003:1698). In this study, the students were told that the purpose of the simulation was learning but set mind frames are only changed over time and it is hoped that the students will experience increased comfort with repeated simulation exposure.

The notion of fear being experienced by participants before the simulation is in contrast with findings by Cioffi (2001:477) who argues that high fidelity simulation allows for learning without fear of personal or patient safety. The psychological needs of students during learning include feelings of safety, acceptance, affection and achievement. If these are not met, emotional behaviour such as aggression and nervousness may be displayed.

The emotional responses of the participants before the simulation could also influence their perception of learning (Prion, 2008:e74). In an attempt to explain the effect of the fear, the concept of arousal becomes pertinent. Arousal is defined as a state of alertness, wakefulness and readiness for action, caused by nervous system activity. Where negative feelings such as fear occur during the learning task, arousal is a manner in which the student tries to return to a normal emotional state. This is done through seeking peer or teacher support or mental re-evaluation of the situation (Alpay, 2002:1, 4).

The Yerkes-Dodson law (as cited in Alpay, 2002:4) specifies that arousal levels have an influence on performance. Individual factors such as motivation, self-esteem and emotional state should be considered before a student is exposed to and aroused through learning. In the educational context, some degree of arousal is required during the learning situation. Knowing the fears and expectations that nursing students bring to the learning environment will assist the nurse educator in fulfilling their learning needs (Bruce *et al.*, 2011:115).

Tasks that require complex cognitive abilities benefit from low levels of arousal (Alpay, 2002:4). One purpose of the high fidelity sessions is to assist the student in developing clinical judgement abilities (Lasater, 2007:269). This implies high levels of cognitive functioning. Monitoring and controlling arousal levels are thus essential.

The personality of the student also influences the effect of arousal. An extrovert student will thrive under high levels of arousal, whereas the introvert prefers as little arousal as possible. If an introvert student experiences high levels of arousal, his/her anxiety levels are increased. The presence of fear and high levels of arousal will then hamper the cognitive ability of introvert students (Alpay, 2002:4).

A relationship exists between fear and the development of anxiety and stress. Unmanaged fear could develop into anxiety (Belzung & Philippot, 2007:2). This was true for the participants in this study. A more detailed discussion of the anxiety experienced will follow as part of the learning experience of the participants during the simulation (refer to 3.3.2.1.3).

3.3.1.3 UNPREPAREDNESS

Fink (2003:31) in his taxonomy of significant learning defines knowing as the student's ability to remember and understand specific information and ideas. Foundational knowledge provides the basic understanding that is necessary for application knowledge to occur. The development of certain skills and learning how to manage complex situations forms part of application learning. Proper preparation of students for learning is the basic building blocks of foundational knowledge. A student who does not know what to learn or where to find the information cannot learn, thus preventing the formation of foundational knowledge.

The higher the fidelity of the simulation, the better prepared students should be. The students need to possess the pre-required background knowledge and skills applicable to the specific scenario (Alinier, 2007:e247). Aspects that should be addressed during the preparation phase include briefing the educators and students regarding the use of the human patient simulator, what to expect during the session, details regarding the environment and equipment (Alinier, Hunt, Gordon & Harwood, 2006:367).

When high fidelity simulation is used to assess the competency of students, the outcomes for the session should not be provided, seeing that the validity of their performance is diminished if they know what to prepare. For simulation as learning

experience however, the outcomes is made known as this allows students to get ready for the scenario (Prion, 2008:e72). Since simulation is implemented as a learning strategy at the UFS School of Nursing and the purpose was not to assess the competency of the students, the intended outcomes of the scenario were communicated to the students before they entered the simulation session.

The students were prepared for the simulation through workbook activities, the presentation of class activities and clinical demonstrations (see Figure 2.2). The simulation was offered as summative learning opportunity after each theme.

In preparing the students for the cardiovascular system scenario, 14 hours of theoretical activities were offered, including a demonstration on cardio pulmonary resuscitation (CPR), defibrillator use and interpretation of an electrocardiogram (ECG). For the hypovolemic shock scenario, 10 hours of theoretical teaching activities and a demonstration of measuring the central venous pressure (CVP) of a patient were presented. A discussion of a hypovolemic shock patient scenario where legal steps were taken against the health care facility was included as part of the class activities. These hours did not include the time spent by individual students during the completion of their workbook activities.

Since the students at the UFS School of Nursing are continuously placed for the completion of work-integrated learning hours, there is a difference in exposure to real patient care scenarios. This implies that it is possible that some students were exposed to real patients suffering from the same conditions as used during the simulation and might have had clinical experience in caring for these types of patients. An orientation session on the features of the simulator was presented before the students were exposed to the high fidelity simulator.

The expected conduct, safety rules and available resources should be discussed when students are prepared for simulation. It is necessary to define and describe the different roles that students are expected to assume during the simulation. Detailed role descriptions will assist students in fulfilling their allocated role during the scenario. The responsibility of the role that the students need to fulfil should be explained.

Where it is required that students wear props or costumes to establish their roles, these should be included. It might be the first time that a student will have the opportunity to act as a team leader. This implies that the student should know what the roles and responsibilities of the team leader are before he/she steps into this role. For this study, the assigned role expectations were not communicated in detail to the students. They were provided with name cards that indicated which role they would need to fulfil during the scenario.

Although the students were prepared through the completion of class activities and clinical demonstrations, the participants felt that they were unprepared for the simulation. They elaborated extensively on their feelings. They felt that they were not adequately prepared by the educators for the simulation session itself and therefore did not know what to expect:

- *Beter voorbereiding. #*
- The student must be prepared before simulation, so they know what to do. #
- *Jy het nie geweet wat gaan gebeur…*
- *…mens weet nie wat om te verwag nie.*
- I didn't know what to expect and also I was not really prepared.
- We were told that, like *ja* it appeared on our schedule that this is what we will basically be doing, but we've never been exposed to the simulation and even we didn't know what the fidelity simulation was all about.

A participant commented on the fact that she did not know how to prepare for the simulation, which implies that the students were not well informed regarding the preparation that is required for the simulation.

- *Ek weet nie, want ek het gedog, ag, ek gaan maar net deur* scan *en lees, maar jy moet dit weet, want jy kom en lees van …* okay *dit is nou die* regime.

Not knowing what to expect gave rise to the students not knowing what to prepare for the simulation. They could not accept the ownership necessary to successfully complete the learning tasks and did not make the knowledge their own:

- We didn't know what is it that you have to prepare actually. What am I going to be doing in there? I had no idea. So for me, it's like … that's why I'm saying I was not prepared…

- And another thing to add on that is that we knew the theory part of myocardial infarction and hypovolemic shock, so we were asking ourselves, because the educator said it is an active class … the simulation. So you're asking yourself: how are they going to put this in a practical way? So we didn't know what to prepare, like myocardial infarction. Are they going to give us, just like to defib the patient? To see how a defib work, or what?

A student indicated that she did not prepare as well as she should have for the simulation. As adult, active learners, the participants of this study were partly responsible for their own learning and had to come prepared to class, including having done the workbook activities that should be completed for each theme. They could not rely on the educators to tell them what they needed to know (Billings & Halstead, 1998:21, 250; Kardong-Edgren *et al.*, 2008:4).

The participants were unsure of what to prepare and did not know what the expectations were or which aspects of care would be included in the scenario. They understood that they would be performing activities related to the content but were unsure of what these would be. They did not understand the integrated nature of the simulation and that they were expected to care holistically for the simulated patient. They did not seem to be aware that the simulation was meant to allow them to apply their theoretical knowledge during the simulated clinical situation, as is shown by the following excerpt:

- *Maar ek dink ons was nie, of ek persoonlik, was heeltemal glad nie toegerus om dit mooi te kon doen nie. Ek het nie lekker nog*

die begrip gehad van wanneer moet jy presies wat doen nie, al
was dit so bietjie in ons agterkop.

The participants also made recommendations on how to better prepare students before participating in the simulation:

- …at least if they tell you the day before to prepare for simulation it would have been better.
- I think the preparation time was very much limited in the sense of we were not really prepared and we are just given the scenario and do not know where to begin and what to do to help the patient. #
- *Maak die groepe dalk bietjie kleiner en meer duidelik oor wat van elke persoon verwag word, ons is maar nog nie ervare genoeg in hoof rolle nie, en weet nie altyd presies wat van elkeen verwag word nie.*

A participant suggested that they should be provided with the patient scenario the day before the simulation. This suggestion correlates with what has been suggested in the literature where it is reasoned that students are empowered to thoroughly prepare for the simulation if the simulated patient scenario is provided a day before the time (Ravert, 2010:67).

Some of the participants felt that they were better prepared theoretically for the first scenario on the myocardial infarction than the second scenario on hypovolemic shock. This could be due to the difference in the amount of time allocated to each theme:

- *En ek dink die studente wat deel was van dit, was nie so lekker voorberei nie…vir die hipovolemiese skok nie.*
- *Niemand het geweet wat om rêrig te doen met hom nie. So ek dink nie ons was so voorbereid soos wat ons was vir die ander een nie.*

- *Ek dink net dat dit min kennis gehad het oor die tekens en simptome van hipovolemiese skok en wat om te kyk voor vir hipovolemiese skok.*

In his *input-environment-outcome model for assessment*, Astin (1993:18) acknowledges that students bring specific personal qualities to the learning experience. For simulation, Prion (2008:e71) identifies these as their prerequisite knowledge and clinical skills, perceptions of previous high fidelity simulation experiences and personal interest in the topic.

The participants felt that the lack of prerequisite knowledge influenced their simulation experience negatively. Where feelings of unpreparedness are experienced, academic safety, and thus the learning experience, is adversely influenced. Being unprepared includes not having the requisite skills or complete knowledge of the scenario (Ganley & Linnard-Palmer, 2010:e6). Therefore, the effects of being unprepared include deflated self-confidence, dissatisfaction with own performance and negative reactions to current and future simulations (Prion, 2008:e73-e74). The detrimental effect of being unprepared for the simulation experience affects the complete group. It is possible for one person to influence the learning experience of all members negatively. The following comments from the participants are relevant to this issue:

- *Min kennis.*
- At first a feeling of not being a competent nurse and at the time not knowing what to do, but we build the confidence. #
- *Het nog nie al die kennis om die regte besluite te kan neem nie. #*

Two participants realised that they had not prepared sufficiently for the simulation experience. They made a link between the degree of effort and the quality of the learning experience.

- We went to simulation without preparation so we felt out when we had to do the procedure, feeling like we know nothing. #

- But at the same time I think we didn't prepare as well as we should have for that. If we knew our things better then it would have been like perfect. We knew the drill. Chop, chop. We would have been able to go in there and do it. *Ja*.

Preparing students for simulation does not guarantee success. Knowledge provides the foundation for actions, but students are sometimes still unable to perform the required tasks. By providing students with opportunities for repeated, deliberate practice, critical thinking and clinical judgement abilities can be developed as these require time and repeated effort.

The purpose of high fidelity simulation as a learning strategy in this study was to provide students with the opportunity to practise their skill and apply their theoretical knowledge and to assist them in identifying gaps in their understanding of the simulated condition. Being unprepared and realising that it is a gap can sensitise students to prepare better for future simulations. It can help students to identify their strengths and weaknesses, and improve on these, before patient contact (Baxter, Akhtar-Danesh, Valaitis, Stanyon & Sproul, 2009:861). The participants did not elaborate on what effect this realisation would have on their actions, but it is hoped that they will better prepare for future simulations.

The learning experience of the participants before the simulation was based on what they felt. They were looking forward to being exposed to the simulation, but at the same time felt fear of the unknown. It seems that feelings of being unprepared influenced the simulation experience of some of the participants negatively.

The learning experience of the participants during the simulation is discussed in the following sections.

3.3.2 LEARNING EXPERIENCE OF THE PARTICIPANTS WITHIN THE SIMULATION

The capabilities that a student possesses before he or she enters the learning environment are called internal conditions. External conditions are those instances

that educators have control over. Both internal and external conditions influence learning (Gagne, 1977:20) In part, the purpose of implementing simulation as a learning strategy is to engage students in active learning, creative thinking and high level problem-solving activities (Bland *et al.,* 2011:664). This implies that the educator has to carefully plan and control the external conditions that students are exposed to during simulation as this will influence the effectiveness of their experience and the learning that occurs.

In describing their learning experience during simulation, the participants in this study made mention of both internal and external conditions of learning and how these influenced the depth of the learning that occurred. The effect of the emotions that were experienced during the simulation, the authenticity of the simulated situation, as well as the theory and practice integration that occurred, are discussed below. A visual summary of the experiences of the participants during the simulation is presented in Figure 3.4.
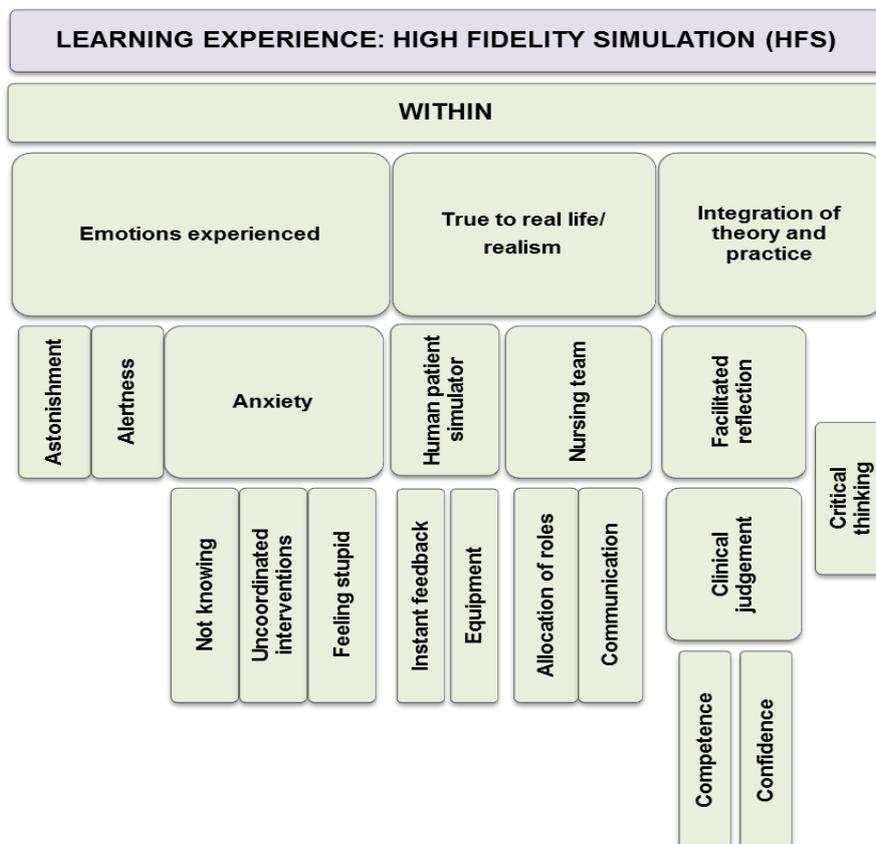
Figure 3.4 Summary of learning experience within simulation

3.3.2.1   EMOTIONS EXPERIENCED

Emotions are intimately intertwined with almost every aspect of the teaching and learning process and play a prevalent role when students engage in academic activities (Schutz & Lanehart, 2002:67; Linnenbrink-Garcia & Pekrum, 2011:1). The emotions experienced by the participants' while taking part in the scenario ranged from astonishment to anxiety. An understanding of the effect of these emotions on high fidelity simulation learning was required since emotions influence memory. A summary of the emotions experienced at the time of the high fidelity simulation is provided in Figure 3.5 below.
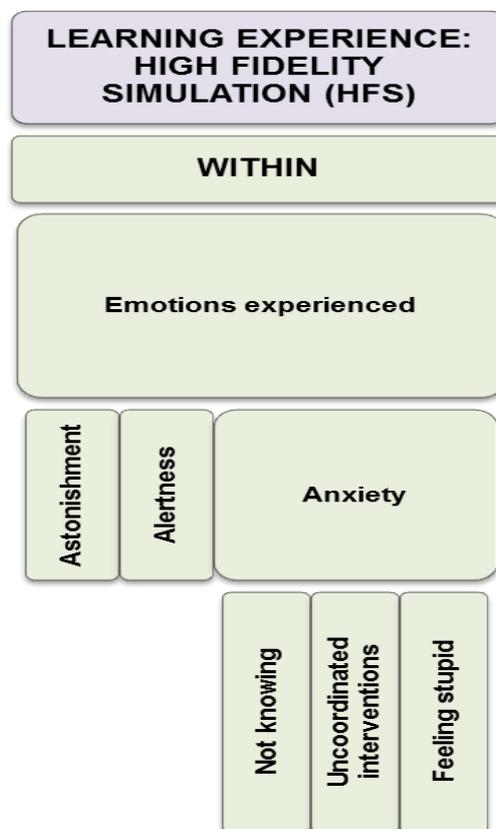
Figure 3.5 Summary of the emotions experienced within the simulation

3.3.2.1.1   ASTONISHMENT

Being astonished implies that one is filled with the impact of an overwhelming surprise. The participants in this study described their astonishment in terms of the

technical features of the human patient simulator as well as their surprise regarding their own capabilities.

The theme of astonishment related to high fidelity simulation is not well described within the literature. A positive emotion associated with high fidelity simulation is excitement (Partin, Payne & Slemmons 2011:187). It could thus be argued that the astonishment theme identified is unique to the participants of this study.

The technical abilities of the human patient simulator appeared to come as a surprise to the participants who could not believe that a *'doll'* responded in the same manner as humans does. This created fascination that satisfied the needs of a "tech savvy Y generation" (Starkweather & Kardong-Edgren, 2008:1). These feelings of astonishment were described with words such as 'wow' and 'fascinating.' This indicates positive emotions that are associated with constructive learning:

- Wow! Fascinating! It really showed what technology could really do.
- You should see the people's faces when the doll blinked. It was something so simple and everyone was like: 'Did you see that? Did you see that?'
- *Die feit dat daai simulasie-poppe so geontwerp is dat dit actually 'n regte persoon is en as dit regtig gebeur, dan voel jy: "Rêrig?* Wow! *Ek het iemand gered."*

The participants were astonished by their own abilities. It is as if they had entered the learning experience believing that they would fail, but being able to manage the clinical situation created surprise. In fact, it felt incredibly good to be part of such a learning experience:

- Surprised.
- It's like wow, I could have done this!
- *Die miokardiale infarksie was vir my ongelooflik!*
- *So dan is dit ook 'n ongelooflike ondervinding.*

- It is awesome!
- The simulation was awesome! #
- What I was really fascinated about and it really changed my outlook of working.

The mid-brain or emotional brain is the part of the mind responsible for emotional control and long-term memory. Where an emotional connection is made during learning, the mid-brain is engaged and involved, leading to lasting and meaningful learning (Pritchard, 2005:78). Meaningful learning experiences can be created by provoking surprise, awe or puzzlement in students (Allen, 2010:154).

Through the high fidelity simulation experience, the participants experienced astonishment and this created a platform for the activation of long-term memory and a possible change in behaviour since perceptions changed.

3.3.2.1.2   ALERTNESS

Through being alert a person is able to apply close and continuous attention to a specific situation.   The high fidelity simulation episode allowed students to experience the alertness that will be felt in an emergency situation during real patient care.   Their attention capacity was stretched and the participants mentioned that they realised that it is necessary to think and act fast in an emergency situation. This emotion is confirmed by literature (Schoening, Sittner & Todd, 2006:256):

- She was very alert.
- …Real situation… What you are going to do and the adrenalin.
- The simulation sessions were very informative and it helped me to understand how important it is to think and act fast in an emergency situation. #
- *Leer my om vinnig te dink in 'n stres situasie. #*
- *Jy moet vinnig reageer.*
- *Ek dink ook ons reaksies is ook vinniger op die simulasie-poppe as wat dit is op ander wat nie iets kan doen nie.*

A rise in adrenalin levels was experienced since the students had to act quickly and alleviate the patient's problem. This allowed the participants to be alert and practise the application of their knowledge and skills in an emergency situation without putting a real patient at risk. They realised that the alertness felt was necessary for them to effectively manage the patient.

The participants verbalised that they were anxious during the simulation. This emotion and its effect are discussed in the following section. For the purpose of this study, no distinction between the concepts of anxiety and stress are made and they are discussed simultaneously.

3.3.2.1.3   ANXIETY

The presence of displeasure together with high arousal produces anxiety. An anxious person usually experiences an overwhelming sense of uneasiness and has the expectation that something will go wrong and such a person is concerned with the task to be completed. The debilitating effect of high anxiety levels is that decision-making abilities are influenced negatively and a diminished ability to make sound clinical judgements is present; giving rise to decreased learning (Kleehammer, *et al.,* 1990:183; Rhodes & Curran, 2005:256).

Some of the participants in this study experienced high levels of anxiety. This correlates with the literature available on the topic since Lasater (2007:273) agrees that anxiety is a possible response during high fidelity simulation and describes simulation as stressful. This sentiment was echoed by some of the participants:

- It made me extremely anxious! Extremely! Because I was on the defibrillator with the cardio one and I didn't know what I was doing. I had no idea. So, *ja* it just made me anxious.
- *Dis net, dis nogals spanningsvol as jy dit nou reg wil toepas en alles.*
- *Ek was verskriklik op my senuwees.*

Several factors can give rise to anxiety. In the first quotation above, the student reveals that her anxiety was caused by being unsure whether she knew how to operate the defibrillator. According to Brannan, White and Bezanson (2008:495) Baccalaureate nursing students often feel unprepared and anxious when caring for patients with myocardial infarctions. This is also true for some of the participants in this study.

This was the first time that this group of students were exposed to high fidelity simulation. This complex experience generated some anxiety among the inexperienced student nurses (Larew, Lessans, Spunt, Foster & Covington, 2006:17). The newness of the electronic equipment available in the environment added to their anxiety since they felt unequipped to use it.

Reilly and Spratt (2007:547) describe an incident where a student experienced the simulator and the patient's cardiac arrest as traumatic. A participant in this study described the simulation as distressing, but attributed it to the newness of the situation.

- Traumatic! It was because it was our first one.

Additional exposure and repetitive practice will alleviate the anxiety experienced by students since it is argued that added experience with simulation lowers learning anxiety (Hoffmann, O'Donnell & Kim, 2007:113; Partin *et al.,* 2011:187).

The uncomfortable emotions sometimes experienced during the simulation can be dealt with in a safe, controlled environment that is in contrast with what might happen if similar emotions arose in the clinical setting. It is argued that students who explore and deal with their feelings in simulation will be better equipped with strategies to manage these emotions in real patient situations (Henneman & Cunningham, 2005:175). Facilitated reflection allows students to cope with the emotions regarding the experience (Starkweather & Kardong-Edgren, 2008:6). In agreement with this, an Afrikaans-speaking student expressed the need for a simulation scenario where the students are allowed to support a dying person:

- *Want, ons gaan werk by plekke en dan het jy nog nooit daai lesing gekry oor afgestorwenes nie en dan onstel dit jou so. Jy dink dit doen nie, maar psigies doen dit. So ek dink dit is belangrik dat hulle dit doen, wanneer jy begin swot en sê: Luister, mense kan doodgaan en jy moet dit so hanteer. Of dalk...in die simulasie 'n pasiënt laat doodgaan.*

In contrast with the above mentioned statements, Jeffries (2005:102) argues that the simulated environment is safe. The student is able to practise psychomotor skills without posing a risk to the patient. Ironside, Jeffries and Martin (2009:335, 336) reported an increase in patient safety competency through students being exposed to multiple-patient simulations. Even though patient safety is improved, the academic safety of the student should be considered as well and the effect of simulation on anxiety levels explored. The stress factor is emphasised in the following excerpts:

- I think it showed a lot of people's reaction to stress and reaction to a situation like that; because I know a lot of people in situations like that freeze or they work well under that sort of pressure.
- *Dis stresvol. #*

The realism of the simulated situation makes it possible to create stress levels equal to those experienced in the real environment (Yaeger, Halamek, Coyle, Murphy, Anderson, Boyle, Braccia, Mcauley, De Sandre & Smith, 2004:329). Stress as experienced in a demanding environment increases the excretion of endogenous glucocorticoids. The presence of high levels of this steroid in the body impairs cognitive ability (Lupien, Maheu, Tu, Fiocco & Schramek, 2007:220, 231).

In the real setting, making a mistake can cause patient death. Creating stress levels equal to those experienced in the clinical setting can assist the student in being better prepared to manage these emergency situations. Bremner, Aduddell, Bennett and Vangeest (2006:172) found that novice student nurses reported a decrease in stress levels associated with providing care to real patients on the first day of

practicum rotations after being exposed to high fidelity simulation. Even though the participants experienced anxiety, it is important to expose them to situations similar to those that will occur during practicum placements to assist them in preparing themselves for real world experiences.

To explain the emotions that the participants felt, the circumplex model developed by Russell (1980) is used. He argues that a cognitive process occurs before a person is able to identify and verbalise an emotion. A person cognitively appraises an experience, interprets it and attaches meaning to the information obtained. This interpretation is then expressed as an emotion (Russell, 1980:1176).

According to Russell's model, emotions are categorised in a circular cognitive structure on a horizontal and vertical axis (refer to Figure 3.6). Eight groups of emotions are identified. Misery and pleasure are placed opposite each other on the horizontal axis, with arousal and sleepiness on the vertical axis. Distress, excitement, depression and contentment fall within the quadrants of the space (Russell, 1980:1163).
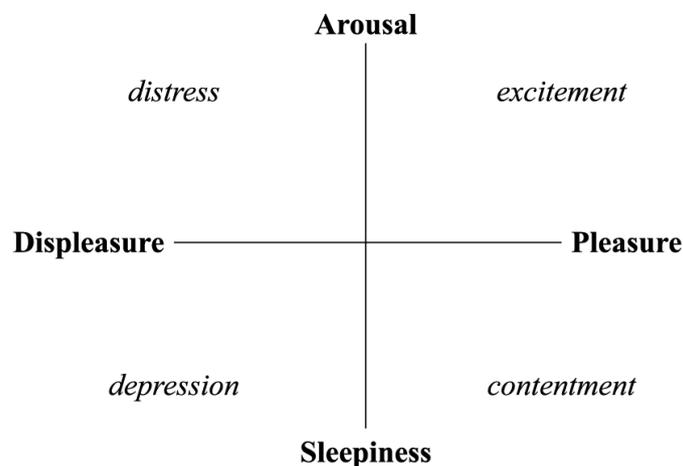
Figure 3.6 Circular scaling of emotions (Russell, 1980:1164)

A link exists between arousal and pleasure. The correct balance between arousal and pleasure creates excitement, which is the emotion preferred for effective learning to occur. When a student is distressed due to high levels of arousal and displeasure, learning is impaired.

Russell (2003:147) defines core affect as a neurophysiologic state that is consciously accessible as a non-reflective feeling. It is accumulative and responds to events as they occur. Core affect does not determine one's decisions, but plays a role during the decision-making process. The presence of positive core effects creates optimism. This implies that an optimistic student might choose the more difficult task and work harder at achieving the outcome. Feeling depressed has the opposite effect, with a student choosing a less challenging task and not working as hard to achieve it (Russell, 2003:156).

An emotional episode is triggered by the occurrence of an event. A person will evaluate the affective quality of the event and an alteration in core affect follows. The event is then associated with the emotion experienced. The event and object, toward which the feeling is felt, are appraised and their relevance towards one's goal determined. A decision on action is taken and this includes either approaching or withdrawing from the situation. Based on the emotion felt, the current situation is placed within a broader body of knowledge, including social norms and roles and action based on these (Russell, 2003:150, 151). During learning a student needs to focus consciously on the task at hand, interpret and build new knowledge. When the cognitive, conscious ability of the student is unavailable and occupied by intense core feelings, such as anxiety, learning cannot occur. Because memory is improved when associated with positive affect students will remember better when a positive simulation experience is created.

It is thus clear that the anxiety that is created during a simulation session should be addressed and managed effectively. This ends the discussion on the emotions experienced by the participants while taking part in the high fidelity simulation session. The focus of the next section includes the realism of the simulation as reported by the participants.

3.3.2.2   TRUE TO REAL LIFE/REALISM

An important aspect to consider is the degree to which the simulation scenario represents real life. It should be realistic and embody the actual clinical practice (Hotchkiss, Biddle & Fallacaro, 2002:473; Kneebone, 2005:551). Factors influencing

the realism of clinical simulation include fidelity, equipment, the environment and the psychological reaction of participants (Hotchkiss *et al.*, 2002:473; Medley & Horne, 2005:32). It is therefore important to plan every minute detail of the experience carefully to enhance the realism of simulation. Educators should, however, understand the limitations of the simulator and realise that a degree of imitation will always be present.

These aspects that were identified as important by the participants in this study are presented in Figure 3.7 below.

Figure 3.7 Summary of the realism of simulation

Psychological fidelity refers to how realistic the student finds the simulation. Where the simulation scenario is authentic, students will act as if the situation is real (McCallum, 2007:827). The fidelity of the simulation does not guarantee and is not equal to authenticity. It is possible to create an authentic simulation with low fidelity equipment. The main objective is to create a clinical situation that is as true to real life as possible. Educators need to plan simulation in such a way that the translation

of knowledge into action within a contextual environment becomes possible (Bland *et al.*, 2011:666).

The environment in which the presentation of the two simulation scenarios in this study occurred was the SPACE. This venue is a state of the art classroom with advanced computer equipment and software, and included the human patient simulators. (For a reminder of the capabilities of the SPACE please refer to the compact disc (CD) in the back cover of this dissertation). The UFS School of Nursing did not have authentic simulation spaces at the time that the data collection occurred. The realism of the environment was enhanced by the availability of functional equipment such as the defibrillator, oxygen, and patient monitor. Real medical stock, including oxygen masks, stethoscopes, syringes, needles and medication was available. This is a practice that is encouraged by Brannan *et al.* (2008:498), since they argue that simulation authenticity is enhanced in this manner. Even though authentic simulation spaces are better equipped to represent the clinical reality, presenting the scenarios in the SPACE did not affect the reality perceptions of the participants negatively. In fact, for them it was quite real, as reflected by the following comments:

- It was more real.
- It gives us a clear reality of the real practice. #
- It was like a real, real patient. With the monitors and everything.
- *En dit voel meer werklik.*
- *Want dit voel werklik.*
- One thing I like about the simulation is that it gives you the experience of being in the real situation, what you need to do; it stimulates your critical thinking abilities. #
- The simulation was good. It gives one the chance to experience the real situation that happens in real situations. It guides students and believe me, you will never forget what happened that day in the simulation. #

It is not only the environment and the human patient simulator that enhances the reality of the simulation, but also the manner in which the students are dressed. Having students dress for simulation as they would for their practicum placements encourages them to interact with the simulator as if it is a real patient (Kesten, Brown, Hurst & Briggs, 2010:260). The students were required to wear their uniform during the simulation session and they felt that this added to the realism of the scenario and enhanced their professional behaviour. This finding correlates with data published by Ravert (2010:68) and is confirmed by the comment below:

- We also do feel like professional because when we are doing our simulation, you are in your uniform and everything… You do feel like a sister. It is a very good thing that we do have to wear our uniforms.

A more realistic environment is created if the students are not directly observed during the scenario (Alinier, 2007:e244). Well-designed simulation centres usually have a control room from which the simulation coordinator can operate the human patient simulator and watch the video-recorded scenario. Offering the simulation in the SPACE meant that the simulation coordinator was present in the room as the scenario was presented. Although the simulation coordinator was present, the participants in this study experienced the simulation as integrated and real and were not influenced by her presence.

It is sometimes difficult for educators not to interrupt the students during the simulation. However, interruptions should be avoided as far as possible. Where possible, the educator should not be present in the room. A participant is a study by McCaughey and Traynor (2010:830) felt that the simulation was unrealistic because they were being observed. Leaving the students alone during the simulation allows for increased simulation authenticity.

In agreement with Jeffries and McNelis, (2010:414), the participants in this study felt that the human patient simulator and its capabilities enhanced the realness of the high fidelity simulation. This aspect is discussed in the following section.

3.3.2.2.1   HUMAN PATIENT SIMULATOR

High fidelity human patient simulators have the ability to provide realistic physiological and pharmacological incidents in actual time. Students are able to implement actions based on these occurrences and observe how the body responds to their interventions (Nehring, 2008:110, 116).

The high-technology features of the simulator have been identified as an advantage in this study. This positive reaction of the participants correlates with the needs of a technologically literate Generation Y student group that requires more active learning techniques (Nehring, 2008:110). The participants felt that these unique features of the human patient simulator enhanced the realism of the simulation:

- *Dit is baie naby aan die werklikheid. Veral omdat… Want jy kan polse voel. Jy kan sien hoe die borskas uitsit.*
- *Hy knip sy oë. Vinniger en stadiger. …Hulle kan dilateer.*
- *…maagklanke hoor. So daai goedjies is verskriklik. Dit maak dit baie realisties en dit bring ons baie naby aan wat werklik gebeur in die praktyk.*
- *En dit laat jou wil dink, want as 'n pop daar lê wat niks sê nie en jy sê vir iemand: "Okay, as hy sou braak, dan sal ek dit doen." Nou maak die pop of hy rêrig braak…nou moet jy dit eintlik doen. Jy moet hom op sy sy draai, want hy braak nou eintlik. Of hy sê sy bors is seer. So jy moet nou reageer daarop, want hy is half 'n regte mens...*
- Now when you come to the doll that responds, at least you know what you are doing. You know what you are doing right, you know, okay, that is wrong and he's gonna die. Not like that doll, the one that does not respond you don't know if he is really dead or not.

The participants spoke in awe about the ability of the simulator to communicate. They felt that this is a feature that greatly enhanced the realism of the situation:

- You can't expect a doll to respond you know. We were all like: 'Why is he responding?'

- It felt like a real patient.

- It is like the whole simulation was interesting, because we didn't expect the doll to respond. When he was responding, saying: 'I have chest pain.' 'I feel nauseous' and everything. It was like a real, real patient. With the monitors and everything.

- *So dit was lekker om by te wees en te sien hoe maak die monitor en nou te hoor wat hy sê, want hy kan mos praat ook!*

In contrast to this, Sanford (2010:1008) found that students reported feeling stupid talking to a manikin. This caused anxiety, especially at the beginning of the simulation. Students are usually able to overcome this feeling and effectively take part in the simulation.

Since high levels of realism are created during the high fidelity simulation experience, students are forced to engage actively during the scenario, suspend disbelief and implement interventions to improve the condition of the simulated patient (Yaeger *et al.*, 2004:328).

Suspending disbelief is defined as the ability of the students to react in the same way as they would in real life. This ability is influenced by the realism of the simulation. Even though it is only an exercise, the reality of the simulation should totally engage the students (Alinier, 2007:e248). The participants in this study were able to suspend disbelief and acknowledged the seriousness of the simulated situation, as indicated by these comments:

- But it gives you that initial shock of you know this is quite serious.

- It just makes it more realistic and I think people think then actually, you know what, this is actually serious.

Fidelity is sometimes identified as a limitation of simulation. Even though it is possible to imitate physiological signs and symptoms with human patient simulators,

it is still not real and simulation cannot replace real patient contact (Baxter *et al.*, 2009:861; Hicks, Coke & Li, 2009:2). Two of the Afrikaans-speaking participants experienced the features of the human patient simulator as being unrealistic. This caused disappointment as they were expecting more:

- *Dit is nie soos … dit is nie soos wat dit in die regte lewe sal wees nie, want dit is maar bietjie moeilik soos as hy nie asem kry nie en hulle sê jy moet kyk na sianose en goed. Jy kan dit mos nou nie so mooi op die pop sien nie. Ja, en ek dink as hulle rêrig pyn het of goed. Hulle beweeg mos en hulle doen dinge. Hy lê maar stil…*
- *En hy het sianose ook gekry, maar... ja dis min...*

These comments echo the sentiment expressed in a study by Bremner *et al.* (2006:172) in which a student nurse regarded the simulator's inability to smile as a limitation. Gates *et al.* (2012:10) describe the restricted capability of the simulator to communicate with the student as one of its limitations.

Although the restrictions of the human patient simulator were mentioned, the instant feedback capability of the simulator received attention and added to the realism of the situation.

Instant Feedback

The capabilities of the human patient simulator allows for the provision of immediate feedback on actions performed by the students, providing them with pathways for both correct and incorrect interventions (Medley & Horne, 2005:32; Weaver, 2011:38). This allows for the application of critical problem-solving skills and makes physiological responses of the human patient simulator to physical and pharmacological interventions taken by the students possible (Tuoriniemi & Schott-Baer, 2008:107). The response to medication or an action taken is displayed on the cardiac monitor attached to the simulator (Issenberg & Scalese, 2007:74; Cannon-Diehl, 2009:129).

The immediate feedback mechanism of the human patient simulator can be implemented to provide contextual cues to students during the simulation since the feedback received can guide them towards taking specific actions (Decker *et al.,* 2008:76).

The immediate feedback mechanism of simulation has been identified as a unique feature and advantage (Rauen, 2004:47). The participants are able to see the outcomes of their actions immediately and these instances can be used during the facilitated reflection to stimulate discussion (Lasater, 2007:272). The participants in this study agreed that the immediate feedback mechanism of the simulator added to the realism of the situation and allowed deeper insight into the precision of their actions:

- You know like when you are doing OSCE, you are doing it on the doll that is not responding. Now when you come to the doll that responds, at least you know what you are doing. You know what you are doing right, you know, *okay*, that is wrong and he's gonna die. Not like that doll, the one that does not respond you don't know if he is really dead or not.
- You know what you are doing wrong and what you are doing right.
- *Ons het* actually *gedefib en jy kon sien op die EKG al die goedjies wat verkeerd gegaan het.*

In a study by Garrett, MacPhee and Jackson (2010:311), students indicated that the real-time patient changes added value to their experience. This allowed them to practise their nursing actions based on the changes in the condition of the patient. The participants in this study compared the immediate feedback mechanism of the HPS to the non-responsive (low-fidelity) manikins that are used during their skills demonstrations and clinical examinations and felt that it was an improvement.

It is not only the capabilities of the human patient simulator that enhances the realism of simulation, but also the equipment that is used.

3.3.2.2.2 EQUIPMENT

As previously indicated the detail of the context adds to the realism of the simulated scenario and creates an environment in which the student is able to suspend disbelief, participate completely. Therefore, an environment that allows for the transition from reality into the simulated world should be created (Seropian, 2003:1696). The participants in this study identified the equipment available during the simulation as a positive aspect that enhanced the authenticity of the situation:

- It is like the whole simulation was interesting. With the monitors and everything.
- *Ons het* actually *gedefib en jy kon sien op die EKG al die goedjies wat verkeerd gegaan het.*

Schoening *et al.* (2006:257) define the integrated nature of simulation as 'getting the whole picture'. By using real equipment and stock, an appearance of being useful and real is created (Seropian, 2003:1699). The availability of the defibrillator and allowing participants to complete tasks (defibrillating the patient) that are traditionally restricted in practicum contributed to the believable nature of the simulation (Schoening *et al.*, 2006:257).

An aspect that further added to the realness of the simulation was the interaction within the team. A discussion on the nursing team and group work that the participants were exposed to is presented in the following paragraphs.

3.3.2.2.3 NURSING TEAM

It is often assumed that solid communication and teamwork skills come naturally to nurses, but this is actually not the case (Holtschneider, 2007:55). Through simulation, student nurses are to improve their teamwork skills and practise collective nursing actions (Wallin, Meurling, Hedman, Hedegard & Felländer-Tsai, 2007:178).

The participants in this study felt that the interaction within the team added to the reality of the situation and allowed them to practise their team nursing (Weller, 2004:35; Schoening *et al.*, 2006:256). Various studies have found that students are able to critically analyse each other's performance and learn from each other (Lasater, 2007:274; Garrett *et al.,* 2010:310). This principle is confirmed by the responses cited below:

- What I realised is that, teamwork is very important in the situations like this.
- *En dan ook om in 'n span saam te werk. Want ons was hierdie groot groep mense wat saam moes werk.*

The participants confirmed that the integrated high fidelity simulation allowed for meaningful, collaborative and narrative learning to occur. They learnt from each other's experience within a team environment (Lasater, 2007:274). This is confirmed by the comments below:

- We learn as a team. All of us, we learn a lot from it.
- *Maar wat lekker was, is die multi-dissiplinêre sisteem wat ons gehad het en ek het heeltyd vir hulle gevra: 'Wat dink julle? Ek dink ek moet adrenalien gee. Hoeveel milligram dink jy? 1 mg, okay.' Dan, ons het met mekaar gepraat, want, en dit is hoe ons mekaar bietjie gemotiveer het en al die goeters wat in die klas kom, het bietjie teruggekom.*

Communication and teamwork are important skills in the management of crisis situations. A crisis situation requires simultaneous, sequential, coordinated interventions performed by a number of responders (DeVita, Schaefer, Lutz, Dongilli & Wang, 2004:S63). In this study, an instance of uncoordinated activities was reported for the myocardial infarction crisis. This is due to the complexity and newness of defibrillation that these students had to perform and it resulted in their providing care in an incorrect sequence, as indicated by one of the participants:

- *Op die spesifieke stadium wanneer ons toe begin defib het. En ek dink, toe het ons bietjie agter geraak met wanneer ons medikasie moes gee en toe gee ons eers die pyn een en toe... Toe ons eintlik die adrenalien moes gee, toe besef ons o gits... Dis die verkeerde een nou. Dis wat gebeur het.*

For the hypovolemic shock scenario, a similar incident is described. A participant referred to the team as being unorganised, causing uncoordinated nursing interventions:

- *Ek dink dit was die studente wat deurmekaar was, nie die opset nie, die studente.*
- *Elkeen het maar sy eie ding probeer doen en dit was maar bietjie deurmekaar. Ongeorganiseerd. Hulle het nie in 'n span gewerk soos die eerste groep nie.*

In a study by Rhodes and Curran (2005:261), the students commented that they felt disorganised during the simulation experience. The participants in the current study had similar experiences of uncoordinated interventions that led them to feel frustrated and confused with what was going on:

- The simulation is frustrating you as a student you get confused and do not know what to do. #
- Everybody was in each other's way.
- *Ons was deurmekaar gewees. Ons was verward…*
- *Ja, dit het ook maar gelyk of almal 'n bietjie verward is.*

These negative experiences can have an adverse effect on learning and should be addressed during the facilitated reflection session (Allen, 2010:156).

McCaughey and Traynor (2010:830) found in a study that 71% of their participants agreed that their value as a member of the health care team were increased as a

result of taking part in simulation. In accordance, a participant in the current study felt that the simulation allowed her to find her place within the team:

- It also helped me in a sense that it gave me confidence to act part of the health care team, be able to help where I could.

In contrast to this view, the students in a study by Garrett *et al.* (2010:311) identified teamwork as an aspect that they did not like. They preferred working alone or with one partner. As part of the interdependent function of the nurse, teamwork is a skill that needs to be taught and acquired since it is not a natural product of working together. Failure to work effectively in a team is one of the causes of adverse patient events in health care (Wallin *et al.*, 2007:174.).

The allocation of a role and certain responsibilities to each team member forms part of the measures to enhance the effectiveness of a team. For the high fidelity simulation, roles were allocated to the students that took part in the scenario. The experience of the participants regarding this aspect is discussed in the following section.

Allocation of Roles

Since every second is important for positive patient outcomes during a patient emergency, roles are allocated to the team members, e.g. runner, scribe and team leader. Each member of the team is responsible to perform their allocated tasks swiftly. Although responsible for their own actions, all members in the team are interdependent on each other. They should communicate, coordinate actions and cooperate with each other (Salas, DiazGranados, Weaver & King, 2008:1003). Two of the participants described their experience of a similar patient crisis situation that occurred during their practicum rotations. They commented on how the simulation allowed them to see the importance of the different roles that have to be fulfilled during an emergency situation:

- *Ek het in Multi ICU gewerk voor die vakansie. Toe sien ek ook op die bord is daar elke dag nou iemand anders se naam langs suurstof of medikasie geskryf, maar ek het nooit geweet dat jy 'n spesifieke rol kry vir iets nie en toe was dit nogals vir my snaaks. Ek het gedink dat as iets met jou pasiënt gebeur dan moet almal net kom help. Ek het nie geweet daar is 'n struktuur nie, totdat jy dit self doen, dan sien jy eintlik hoe belangrik dit is. Hoe nodig dit is, want daar was iets wat met 'n pasiënt gebeur het en dit was nogals baie nice om te sien almal het dadelik geweet wat om te doen.*

- It is, because I remember in, in... I was working in KTE *(Kardiotorokale Eenheid)* and then we had to, *okay*, some patient collapsed. I didn't know about this whole leader and that there is supposed to be a leader and so the Matron was the leader that time and the other one was writing. I was just like, *okay*, what are they writing and then when I got there, now I got an idea of *okay,* they writing these things on how the whole process went and stuff.

It would be preferable to expose students to these emergency situations in simulation before they enter the clinical areas since simulation role-play allows students to experience the same cognitive and behavioural processes that will be utilised while they practise nursing (Salas *et al.*, 2008:1007). This is not always possible as placements do not occur at the same time as when the content is taught. However, it is clear from the comments that some of the participants were able to link what happened in the scenario with a situation that transpired during their practicum placement. This confirms that adults learn through experience. Productive adult learning transpires when a student is able to establish a relationship between the learning content and their experiences (Bruce *et al.,* 2011:98).

In this study, the role of team leader was allocated to a student during the simulation scenarios. Lasater (2007:271) identifies the primary nurse in each scenario as the person ultimately responsible for patient care interventions. The participants

acknowledged the allocation of a role to each member as a constructive aspect. They felt that it enhanced their overall experience of the simulation positively and created order. Team nursing as it occurs in clinical practice was replicated.

The integrated nature of simulation permits students to construct their own knowledge during the activities in which they are involved. Through engaging students actively, new knowledge is built on what they already understand (Biggs & Tang, 2007:21). A correlation between practicum placement experiences and simulation exists, since simulation allows hands-on experiences without compromising patient safety (Alinier *et al.*, 2006:363). The following excerpts are relevant to this matter:

- *Ja*, and how the people are put into different roles and how they act their different roles.
- And what I also like was the group leader, the way she handled everything.
- *Dit help dat almal weet watter rol hulle het. Ons het almal geweet wie's op medikasie en wie's nou die leier en wat ook al. Jy moet saamwerk.*
- *Net soos die rol. Soos sê nou maar jy is die leier van die groep wat moet delegeer, jy moet sê wat moet gebeur… jy moet delegeer, take uitdeel, sê wie moet wat doen en wat moet nou gebeur… En as elkeen hulle eie takie doen, dan sal daar gefokus word op die pasiënt.*
- *Anders kan dit groot verwarring veroorsaak as ons mekaar se rolle begin oorneem, dan gaan dit chaos wees.*
- Every member of the team has to have a job. Not all of us: go take adrenalin, we all go. 'Cause one is allocated for medication and one for breaths and for compressions and stuff.

The participants realised the importance of teamwork and felt that the simulation had assisted them in developing this skill.

A well-integrated simulation scenario allows students to solve problems and practise interpersonal communication skills (Beyea & Kobokovich, 2004:741). Acquiring the necessary communication and decision-making skills in a nonthreatening environment is possible (Schoening *et al.*, 2006:257). Since patient safety is directly affected by teamwork, the importance of communicating one's actions becomes essential (Salas *et al.*, 2008:1002). The participants in this study commented on some of the important communication aspects included during the high fidelity simulation.

Communication Skills / Communication within the team

The participants focused on the importance of communication within the team, the effect of poor communication and the influence of language in the communication process:

- *In hierdie spanverband is kommunikasie maar een van jou belangrikste goed. Vir seker, want sonder dit kan alles of opbou... Met dit kan dit mooi opbou na iets en sonder dit kan alles val en als lelik word.*
- *Ek het nou geleer, wat ek geobserveer het, is dat kommunikasie tussen kollegas en so baie belangrik is.*
- *Kommunikeer wat doen jy en wat doen ek.*

With the hypovolemic shock scenario, the general view is that the participants did not communicate effectively. The effect of poor communication was linked to real life and the participants realised that unsafe care of patients may result from this:

- *Ja, hulle het nie rêrig met mekaar gekommunikeer nie.*
- *Dis net onder mekaar was die kommunikasie nie vir my so goed nie.*
- *Ek dink in die tweede simulasie met die hipovolemiese skok was daar nie baie kommunikasie tussen die … daai spannetjie, wat daar... En dit is nogals baie belangrik dink ek as ons nou uitgaan*

in die praktyk gaan werk, want nou spuit ek whatever, adrenalien,

dan gaan my kollega nie weet ek het adrenalien gespuit nie.

Hulle was baie doodstil. Hulle het nie rêrig gepraat nie.

Although some of the participants identified the negative effect of poor communication during the hypovolemic shock scenario, one participant felt that she was able to learn from this mistake and identified the importance of providing a complete nursing report when a patient is post-operatively transferred to the ward. As the person responsible for the welfare of the patient, communicating one's actions directly after they have occurred allows fellow team members to make informed decisions based on the report and their interpretation of the information. The importance of communication is emphasised by the following excerpts:

- Communication is very important in a situation like that because you always have to tell: I did this, I did that.
- With the hypovolemic shock one, I was like the theatre nurse. Okay. Yes, you need to communicate with your members very well. And when you give a report, give a thorough, full report. Know what you have done, because you are the scrub nurse *mos*, you have seen what the doctor has done. Yes and the vital signs of the patient and what happened, what went wrong, and stuff. So you need to reflect it again back to other assistants in the ward and the recovery room. Yes, so communication is very, very important. I can say so.

The manner in which students communicate with each other is not the only important aspect that were identified but the language spoken was also shown to be significant; it was identified as a barrier to effective communication. An Afrikaans-speaking student felt that the English-speaking scribe struggled to understand the Afrikaans words spoken during the myocardial infarction scenario and this caused her to feel stress. Although this led to discomfort, the simulation allowed her to experience communication within a bilingual group.

- *…groot groep mense wat saam moes werk en ons moes vir mekaar lees. En dit... Want ek weet daar was soms kommunikasiegapings tussen die persoon wat moes noteer wat ons doen en die leier van die hele situasie of die probleem. Dan was sy verskriklik opgewerk oor dit, want sy kan nie hoor altyd wat hulle sê nie. Sy is Engels en hulle praat Afrikaans ook. Daai hele ding ook was sleg gewees. Vir haar ook.*

- *Uhm, ons het net Afrikaans gepraat en die enetjie wat geskryf het, was Engels. So, sy kon nie, al het sy gehoor wat XXX sê dalk, kon sy nou nie mooi verstaan nie. Sy het bietjie gesukkel. En ons het vergeet daarvan. (Stilte). Maar verder was dit oraait. (Stilte).*

- *Uhm, ons skriba, wat moes skryf het nie Afrikaans verstaan nie en party van ons groepe het en party nie, maar ek bedoel omdat jy half in 'n noodsituasie is, dink jy nie nog daaraan om Engels te praat nie. So, dit het nogals…want toe moes sy die heel tyd vir ons vra wat…of sy moet kom kyk het wat ons doen en dit dan gaan skryf het.*

- *Die skriba het so bietjie anxious geraak en sy en nie geweet wat daar aangaan nie.*

Although the communication gap created anxiety, a participant commented that the bilingual group allocation increased the realism and authenticity of the simulation, since they are exposed to different languages and cultures during their practicum rotations and have to adjust in these situations.

- *Ek dink dit was regtig lekker dat hulle ons so gemeng het. Ek meen die Engelse en die Afrikaans, want dit voel vir my, want jy gaan nie in die praktyk ingaan en jy gaan nie net Afrikaanse disiplinêre span kry nie of multi-dis... Verstaan? Dit was vir my rêrig lekker dat daar Engelse kinders was en daar was Afrikaanse kinders. Die Engels het verdwyn toe ek by daai defib kom. (Lag).*

Nurses do not only communicate with each other but have to communicate on a regular basis with other members of the multi-disciplinary team as well. Students generally do not feel competent in having a conversation with a doctor on the phone and they do not know how to communicate changes in their patient's condition. SBAR communication *(Situation, Background, Assessment and Recommendation)* is a technique that can be used effectively to teach students how to communicate with another member of the health care team (Benner, Sutphen, Leonard, & Day*,* 2010:148).

During the facilitated reflection after the simulation, this communication technique was explained to the students. A participant commented that she felt that this is a system that she will be able to use effectively. She had learnt that effective communication within the interdisciplinary team is important. Some of the participants commented as follows:

- The myocardial infarction one. And it was also like, *ja*, it shows you that when you are in a situation like that you don't always think to phone the doctor.
- From her mistake, or maybe not really mistake, but from the things she left out, we now know how to give, like how to do SBAR thing.
- I was just saying about this one, like one of the sisters and when she was like, what do you call it, the SBAR thing. Like when she called the doctor. I think she really did well provided she didn't, *ja*, she wasn't expecting that that question was going to appear. She had to do it in the simulation. She did well. And then from it again, we learnt a lot.

Communicating with the patient's family is an aspect of communication that should be practised during simulation. The presence of the patient's family adds to the realness of the simulated patient encounter and creates an opportunity for health care workers to practise communicating with them (Tsai, Harasym, Nijssen-Jordan, Jennett & Powell, 2003:72,75).

A participant who was allocated to act as a family member of the simulated patient commented that she realised the importance of communicating effectively with family members after being exposed to this role:

- *Ek dink wat belangrik…wat ons daaruit geleer het is om met die pasiënt se familie te, hulle op hoogte te hou, want hulle het ons glad nie ingelig nie. Hulle het ons net kort-kort uitgejaag.*

Lack of teamwork and poor communication skills contribute to low morale, high turnover and low satisfaction within the workplace, eventually affecting patient safety negatively (Holtschneider, 2007:55). Simulation provides opportunities for repeated practice of these important skills.

Maintaining realism was identified as an important aspect of simulation and should be carefully planned. The educators at the UFS School of Nursing managed to present the students with authentic patient problems within a realistic patient care environment that allowed students to practise real life nursing actions. The authenticity of the simulation added positive value to the learning experience of the participants during this study. Effective simulation reflects reality and translates knowledge through action (Bland *et al.*, 2011:666). By providing students with authentic problems, the integration of theory with practice is enhanced.

3.3.2.3   INTEGRATION OF THEORY AND PRACTICE

A gap often exists between nursing theory and practice. One reason for this gap is that the information in nursing theory books is often an imperfect representation of nursing practice (McCaugherty, 1991:1056).   In this study, the participants demonstrated that they were able to integrate their theoretical knowledge with what is seen in practice during their high fidelity simulation experience. This is confirmed by literature on the subject where the integration of theory and practice is described in terms of facilitated reflection, critical thinking and clinical judgement, as indicated in Figure 3.8.

Figure 3.8 Integration of theory and practice within simulation

Through experiential learning, which is learning by doing, a linkage between the classroom and the real working world becomes possible (Kolb, 1984:4).   In this study, the integration of nursing theory and practice was made possible through a process of experiential learning.   This theme is thus explained based on the experiential learning theory as described by Kolb (1984:4).

According to Kolb (1984: 30) information processing and learning occurs in cycles. The process begins with a *concrete experience*. Students immerse themselves fully and openly into a new experience that they consider to be stimulating or challenging. Before the students are exposed to this first step, a theoretical foundation is created by exposing them to the completion of workbook activities, the presentation of theory classes and clinical demonstrations (refer to Figure 2.2). During the second phase, *reflective observation*, students observe and reflect on the concrete experience. This is followed by *abstract conceptualisation*, in which logical theories are created through the integration of observation. The last stage, *active experimentation* is the

phase in which students apply the newly formed theories during decision-making and problem-solving activities (Hughes & Quinn, 2013:29).

The researcher suggests the creation of a collective model that proposes a linkage between the experiential learning theory and the integration of theory and practice. In this model, the first step in the experiential learning theory, *concrete experience* is equated to the *high fidelity simulation experience* that the students were exposed to. Through the *facilitated reflection (debriefing)* session that followed after the simulation, the students were able to engage in *reflective observation*. Formation of *abstract concepts* is linked to what the participants describe as improved *critical thinking* abilities. Students are able to develop their *clinical judgement abilities* through *active experimentation* (Kolb, 1984:197). This model is visually represented in Figure 3.9.

The simulation allows for experimentation to occur but is not sufficient, since the students are usually exposed to only one simulation experience (as was the case in this study). The development of clinical judgement is promoted when students are repeatedly exposed to similar clinical situations, both in simulation and during practicum placements. The advantage, however, is that critical thinking is enhanced during the simulation exposure and forms the basis for the development of clinical judgement.

The overall theme of theory and practice integration is discussed next. This discussion is followed by a detailed explanation of each sub-theme and how they are assimilated within the proposed model.
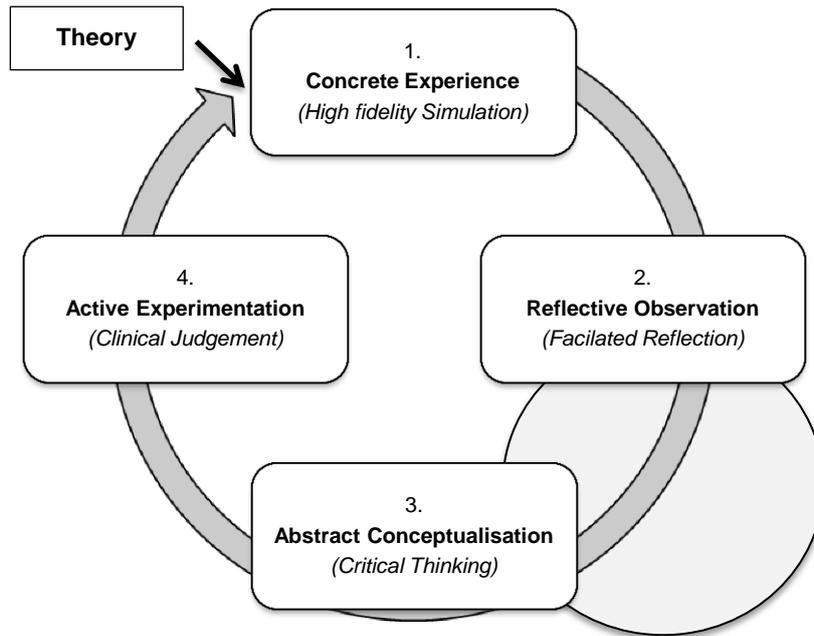
Figure 3.9 Model for the integration of theory and practice through Experiential learning (Kolb 1984:42)

The high fidelity simulation session that the students were exposed to provided them with a concrete experience which detonated the experiential learning cycle. Consequently, the participants recognised that they were able to integrate nursing theory with practice, as shown by the excerpts below:

- It was enjoyable as it integrated theory and practical very well. #
- I realised that on practical level things work differently if you don't have a good theory, so simulation allowed me to fuse both theory and practical. #
- When we got to the simulation. Now it is theory and practical mixed. *Ja*, so I've learnt that you have to know both of them.
- So it is like the theory part now is coming back to practical.
- *Ja*, I think that is one of the biggest advantages, is the integration of theory and practice on a real, sort of level.
- *Hulle leer ons toepassing van al die leerwerk.*
- *Dit het my gehelp om prakties en teorie saam te laat smelt.*
- *Baie goeie manier om leerwerk toe te pas. #*

- *Skep 'n realiteitsbeeld. Maak die studente bewus van hoe hard hulle moet werk om die teorie en prakties te integreer. #*
- *Dit leer my ook om die nodige kennis met insig te kan toepas. #*

Prion (2008:e71) identifies the instructional advantage of high fidelity simulation as providing the opportunity for students to put it all together realistically. They are able to integrate psychomotor skills, content knowledge, multidisciplinary communication, assessment skills, nursing care and critical thinking abilities into one, real-time clinical situation.

Integrated learning occurred since the participants were able to see and understand the connections between different things. Connections between ideas, people and life realms were made (Fink, 2003:31). A deeper understanding of the subject content was possible, since the students were exposed to the theme matter before they took part in the concrete experience. They were able to embed the simulation experience and their actions within the subject knowledge.

- You can now apply all that knowledge and you would be able to answer the question that you were given. It also helps, like practically and theoretically as well.
- If the patient maybe goes into a myocardial infarction, you will know what to give because you know what is happening inside of the body, so you would not give the wrong medication or what so ever.
- Assisted me to understand the content of the module better. #
- *Dit help jou om jou teorie saam met die prakties te bring en dit het ons baie beter laat verstaan. #*
- *So dit laat mens darem goed voel as jy weet wat daar aangaan. Ja, jy voel darem nie net jy staan daar en jy spuit iets in 'n drip in nie. Jy weet darem hoekom jy dit inspuit en hoeveel jy moet inspuit en alles.*

The theory taught in the classroom provided the foundation for the nursing knowledge that the students required, but was reinforced through practising within a safe simulated environment. This created an opportunity for experiential learning to occur as the simulation was presented soon after the theory had been completed (McCallum, 2007:828).

A discussion on how this process continued during the facilitated reflection sessions is presented in the following paragraphs.

3.3.2.3.1 FACILITATED REFLECTION (DEBRIEFING)

Experiential learning is enriched when students are allowed to reflect on the concrete experience to which they were exposed since reflection and feedback promotes the integration of theory and practice through the development of critical thinking. Although sequential, an overlap between reflective observation (facilitated reflection) and abstract conceptualisation (critical thinking) exists. Critical thinking abilities are developed while the students reflect on the experience. It is during the facilitated reflection session that the students, as adult learners, start to conceptualise and reconstruct their cognitive frameworks (Waldner & Olson, 2007:7).

Reflection, both on action and in action, is equal to the reflective observation phase (step 2) as described in the experiential learning process. During reflection-in-action, a student reads the patients response and change in condition and adjusts her nursing interventions accordingly. Reflection-on-action and subsequent clinical experiential learning completes the cycle (Tanner, 2006:208-209).

Since critical thinking forms the foundation for the development of clinical judgement, a progressive format as presented in the experiential learning theory is indicated although these processes might occur simultaneously for some students, depending on their level of functioning (Figure 3.10).
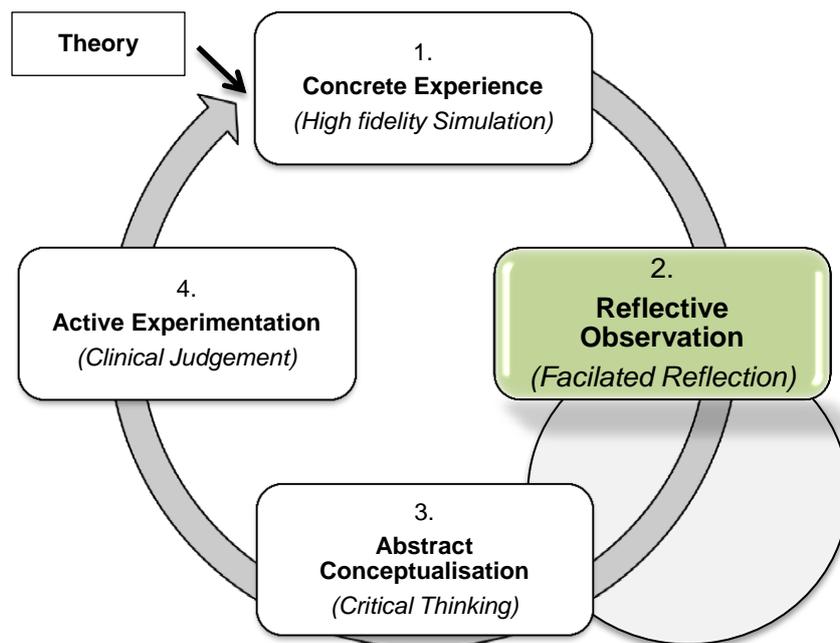
Figure 3.10 Model for the integration of theory and practice through facilitated reflection (Kolb, 1984:42)

The aim of facilitated reflection is to promote student self-assessment. The students in this study had to reflect on what was done well, what actions required improvement and what would be done differently in the future. The students' actions that were completed well received praise and suggestions on what to improve were provided (Wagner, Bear & Sander, 2009:466). A participant responded to this in the following manner:

- It was like reflection. You know, feedback is like, you did this wrong, and you did this wrong. It was just reflecting. We were all reflecting back.

This approach enhances experiential learning since students are allowed to reflect on the concrete experience from a range of perspectives (Hughes & Quinn, 2013:483).

Reflection after simulation occurs even if it is not facilitated. Students discuss their experience with peers and internally reflect on the events as well. However, such informal facilitated reflection does not always allow for proper learning and the

students' thoughts could become disorganised. Through facilitated reflection, students are assisted to review specific objectives, learn through the expression of feelings and nurture critical thinking and problem-solving skills (Johnson-Russell & Bailey, 2010:369).

The role of the educator during facilitated reflection is that of a facilitator and students are encouraged to highlight the important points of their management of the patient during the scenario (Alinier, 2007:e247). Several of the participants in this study testified that they had learnt from and during the feedback received as part of the facilitated reflection sessions:

- *Omdat ons deel was daarvan en ek dink ons almal … van ons wat* ge-observe *het, het na die tyd, het hulle gesê,* okay. *Nou wys hulle die video. Dit was rêrig lekker, want hulle wat gekyk het wat ons gedoen het, het net so baie geleer soos wat ons wat self in die situasie was.*
- They asked us what we thought we did wrong and they asked the rest of the class who was spectators what they thought we did wrong and they correlated the two and really like put it into place and you will never forget that stuff. Especially if you do it practically yourself.
- I think doing something like this is right, but they will tell you, instead of doing it this way, rather do it that way. So it is kind of, *ja*, we appreciate the input because we learn a lot. We learn as a team. All of us, we learn a lot from it.

The role that the students fulfils during the simulation -that of participant or observer- does not seem to influence their learning experience. By observing, a student can learn how to be an effective observer, prioritise nursing actions and think critically (Partin *et al.*, 2011:186).

- *Maar dit is baie, as 'n observeerder, moet ek sê, het ek rêrig baie geleer. Ek sal dit vir niks verruil nie.*

- *Ek het nie persoonlik deel geneem nie, maar dit was baie opvoedkundig om te kyk. #*
- *Maar ek was in altwee simulasies … was ek observeerder en ek moet sê… Ek het baie geleer. Ek persoonlik het baie geleer. Ek was nou nie fisies deel van altwee die situasies nie, maar ek het geleer.*

Larger student classes can be divided into smaller groups and given a specific activity to complete while observing the simulation (Johnson-Russell & Bailey, 2010:376). At the UFS School of Nursing, the observer group needs to complete an activity while observing the actor group. The vertical strands identified for each scenario (as discussed in Chapter 1) are divided within the group and the observers provide feedback on the specific aspects that they were supposed to focus on. A participant commented that this way of doing things added value as they had clear instructions and learning during feedback was provided for both the actor and the observer group:

- *Ek weet Mev. XXXX sê aan die einde van die sessie … dan sê sy vir elke … sê nou maar vir hierdie groep kinders wat op hierdie stoele sit en hierdie groep, julle moet kyk na iets spesifiek en dan net terugvoer gee daaroor. Dit help ook, want dan kyk jy spesifiek daarna. Die kinders gee ook terugvoer en dan leer hulle ook daaruit. Daai terugvoer is goed. As jy moet evalueer, dan leer jy self.*

Both the classroom observers and actor groups are debriefed. The classroom observers can be debriefed separately or with the actor group, or a combination of both can be used (Johnson-Russell & Bailey, 2010:376). At the UFS School of Nursing, the actor group is debriefed separately and then joins the complete class for a discussion of the vertical strands. This is done to allow the primary participants to feel free to express their emotions as they may feel threatened by being exposed to the criticism of the larger group (Johnson-Russell & Bailey, 2010:376).

The participants experienced a difference between the two facilitated reflection sessions. The myocardial infarction facilitated reflection went well and they were satisfied with the amount of time spent and the learning that occurred. With the hypovolemic shock patient, the allocated scenario time was exceeded and the participants felt that there has not been enough time to complete the facilitated reflection successfully:

- But I think it took like long. By the time we were told to get… The time was always running out so we didn't watch part of the video and we didn't get to see the whole thing, so we were catching up on this and losing all of that.

- The ones who were doing the simulation. I don't know what caused them to take so long but it took a really long time and by the time they were finished, it was nearly time for the class to end, so they … the person rushed through the important points, we didn't get to watch the whole thing.

- And there wasn't feedback on it. We ran out of time.

- I found there wasn't enough time for the feedback! #

- *Die simulasie self vat lank en dan is die terugvoer nie effektief nie.#*

- And you don't want to remember the wrong thing and there were quite a few cases where something went wrong where like in the myocardial infarction where they went quite thoroughly. This one. It wasn't anyone's fault, we just purely ran out of time. So, uhm … I think there was something that came up unexpectedly. So, then we didn't get to see all the mistakes and that was quite important 'coz there were quite a few important things, like the morphine key was still left in the thing. Like it is very stupid. I remember that it wasn't really addressed. *Ja.*

- *Los punte was wat nie bymekaar gekom het nie.*

Due to the difference in the amount of time that was available for effective facilitated reflection for the two scenarios, the participants felt that their learning was influenced and there was a distinctive difference in memory between the two situations:

- *Ja*, no it was really that feedback was really done well. Because, like, a lot of the stuff from the myocardial infarction, I remember a lot more than the one from the hypovolemic shock. Ja, that one sticks out. When I think of the simulation, I think of that one. Not so much the hypovolemic shock one.
- *Ek dink die observeer is goed. Van as almal na die tyd die video kyk, maar ek dink die wat daai spesifieke... Want soos die hipovolemiese skok, kan ek nie... Ek weet presies wat in die miokardiale infarksie te doen, maar die hipovolemiese skok is ek bietjie... Ek moet maar weer bietjie gaan kyk wat ek daar moet doen. Ek weet waarna jy moet kyk vir as die pasiënt … maar ek het nie regtig 'n idée nie. Ek sal maar die suster roep of die dokter roep as daar iets gebeur.*

The participants in this study discussed the manner in which feedback is given. They commented that respect towards the student is displayed through showing genuine interest in their actions and the reasons for the particular actions. This is done through adopting a position of inquiry and valuing the perspectives of the students (Rudolph, Simon, Dufresne & Raemer, 2006:49, 51).

Tone of voice, nonverbal behaviours and the words chosen are important aspects to consider: *"Tell us more about what you were thinking"* is much more effective than asking *"What were you thinking?"* A critical tone as expressed in the second example which causes students to become defensive and impair learning. Rephrasing, rewording, echoing and repeating parts of what the student has said are effective communication techniques that can be applied during facilitated reflection (Johnson-Russell & Bailey, 2010:379). These techniques are effective to create a relaxed atmosphere in which the Generation Y student will discuss and share experiences, improving the quality of learning (McCrindle, 2002:5).

The discussion during the facilitated reflection session should be collegial, supportive and focused on behaviour, rather than individuals. Playing the blame game and humiliating students is to be avoided. The goal is to provide constructive criticism that leads the students to identify their own strengths, deficiencies and areas for improvement (Weller, 2004:33). This is achieved through a discussion of rationales for the clinical decisions made, suggesting alternative actions and sharing feelings related to the incident and the mistakes identified (Medley & Horne, 2005:32). The participants commented on supportive criticism as follows:

- *Sy het die kritiek half... Wat almal nou neergeskryf het, het sy nou half vir jou gesê en sy het die sagste persoonlikheid. So dit is baie mooi wat sy vir jou gesê het en sy het vir jou gesê… Sy het nie net vir jou gesê: "Hoekom het julle dit gedoen nie!" Sy het net gesê: "Okay, julle het dit gedoen. Dit sou dalk gewerk het as julle dit kon doen."*

- It was great especially when we evaluated what we did right and wrong, it was casual and made me feel comfortable. #

- Everyone was laughing; even the people that made the mistakes were laughing. They are like … *ag* now I see what I should have done.

- *…was gemakilk, omdat ons weet ons kan leer deur ons foute. #*

The participants were satisfied with the manner in which the educators communicated with them during facilitated reflection. They appreciated the respectful manner in which they were addressed and felt comfortable in sharing their experiences. This corresponds with the needs of the Generation Y student. They were seeking respect and understanding, which they felt they received (McCrindle, 2002:4). The praise they received for the nursing actions that were successfully completed came as a surprise. This reaction confirms the importance of publicly acknowledging good performance (Johnson-Russell & Bailey, 2010:380).

- *Dit was nogals lekker. Want na ons ding het ek gedink, o my hel, ons het so aangejaag. En toe ons klaar is toe sê hulle vir ons*

maar hulle is so impressed met ons.

- *Hulle het gesê ons het rêrig goed gedoen en ek was heel geskok.*

- *Positiewe terugvoer vanaf die dosente na dit als. Hulle breek jou nie af en sê: "Ai, jy kon dit en dit en dit gedoen het nie. Dis mooi. Mooi gedaan. Julle het..."*

Being judgemental during reflection causes students to feel humiliated, dampening motivation and preventing them from asking questions, as is indicated by the response of one of the participants:

- *Ek weet baie studente slaan toe as hulle negatiewe kritiek sleg ontvang. Dan luister hulle nie en hulle het sommer dadelik 'n negatiewe houding teenoor die dosent. So, ek dink dit was... Alles was baie goed gehanteer deur hulle.*

The extensive discussion on facilitated reflection (debriefing) as part of simulation for the advancement of experiential learning confirms the importance of effective feedback to students during learning. Experiential learning is optimised when feedback is provided in a constructive and timely manner.

The terms 'critical thinking', 'clinical reasoning' and 'clinical judgement' are used interchangeably in the literature, but a difference between these concepts exists. Since critical thinking is developed during reflection, a discussion on how the critical thinking abilities of the participants in this study were promoted is discussed in the following section.

3.3.2.3.2 CRITICAL THINKING

Abstract conceptualisation implies that students are able to create new concepts that integrate the observations that were made, through concrete experience and reflective observation, into logically, sound theories (Kolb, 1984:30). This becomes possible when students think critically. Critical thinking, which is defined as thought processes that require analysis and synthesis of information, is a pre-requisite for the development of clinical judgement (Brown & Chronister, 2009:e46). It is the ability to

formulate an argument using evidence to support and substantiate the claims made (Fink, 2003:40).

The development of critical thinking is enhanced through exposing students to theoretical teaching and experiential learning (Huitt, 1998:4). This link is visually represented in Figure 3.11. Simulation allows for experiential learning to transpire and has the ability to advance critical thinking as students need to function at a higher cognitive level while taking part in the simulation (Seropian *et al.*, 2004:168; Horan, 2009:28). One may ask why nurses need critical thinking. Nurses encounter multiple clients with the same health care needs, but each client responds differently to the care provided. Therefore a holistic nursing knowledge base is required to enable the nurse to provide individualised, effective care (Billings & Halstead, 1998:248).
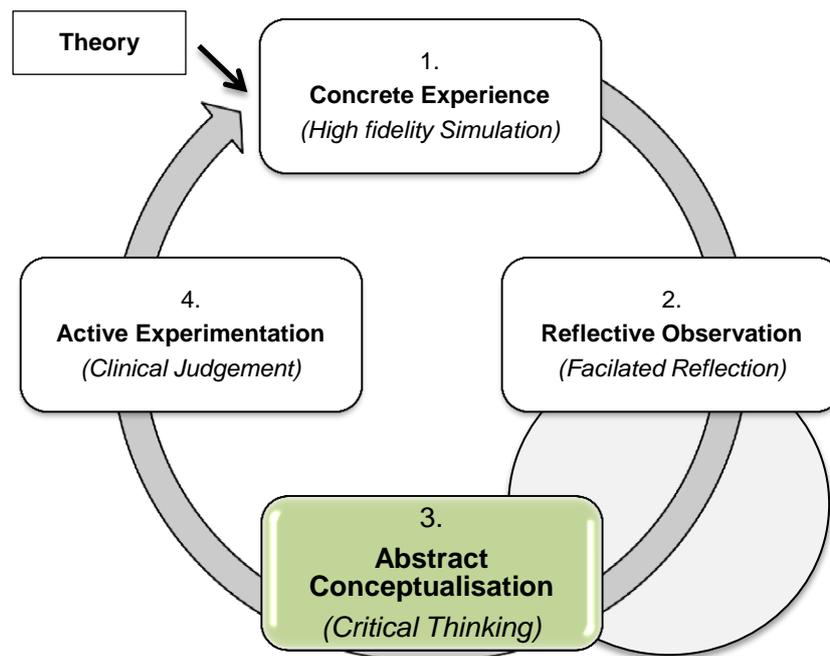
Figure 3.11 Model for the integration of theory and practice through critical thinking (Kolb, 1984:42)

Critical thinking is developed by allowing students to identify what they were thinking while they were performing a specific task. Recognising the motivations behind their actions permits students to rethink the situation, analyse their own actions and

develop alternatives (Johnson-Russell & Bailey, 2010:373). In agreement with Medley and Horne (2005:31), the participants in this study identified the ability to develop critical thinking skills through the simulation as an advantage, as shown by their responses:

- *Kritiese denke.*
- *Later toe het hulle vir ons terugvoering gee, toe is jy soos, o* okay*! Toe gaan die* light bulb *aan.*
- That was an interesting experience I ever had, one thing I like about the simulation is that it gives you the experience of being in the real situation, what you need to do, and it stimulates your critical thinking abilities. #
- To get used to thinking on a high level and fast level like that. So that is how it is very different to a text book style.
- *So, dit help, dan kan jy darem 'n bietjie vir jouself ook dink.*
- *Ja, en ek dink in die praktyk of jou omgewing is nooit dieselfde waarin jy iets doen nie, so dit stimuleer jou ook om aan te pas by dit wat tot jou beskikking is en die ruimte hoeveel dit is en hoeveel mense jou moet help.*
- *Ja, ek dink dit is belangrik om te weet hoekom jy iets doen en watter ander gevolge het dit op jou pasiënt of op jou uitslae of op enige iets. En dit voel vir my partykeer dink mense net, jy moet net doen. Dit maak nie saak hoekom jy dit doen nie of wat jy doen nie. Jy moet dit maar nou net doen. En dit voel vir my net as jy weet hoekom jy dit doen … As jy weet hoekom is … wat is dit, aseptiese tegnieke belangrik dan is dit vir my beter as wat jy net iets doen, maar jy weet eintlik nie hoekom nie.*
- *As hy daar goeters doen en ewe skielik … wat jy nou nie in daai volgorde verwag het nie, dan moet jy nou weer anders dink. Soos met die... toe hy begin braak het. Niemand het dit verwag nie, want ons is so besig om vir die monitor te kyk en ons wil net aan die hart goeters doen. Toe begin hy braak en dan moet jy hom nou eers omdraai en nou eers aandag daaraan gee voordat jy*

- *kan verder gaan en op die ander goed fokus. So dit help rêrig dat jy 'n biejtie dink.*

- *Ek gaan nou nie verbalise en sê, okay jy het nou dit verkeerd gedoen nie, maar ek gaan my altyd self vra vrae: "Is dit reg? Moes dit so gedoen wees?"*

- *En jy vra vrae. "Maar hoekom moet dit so wees? Hoekom moet ek dit so doen? Hoekom moet ek eers wag? Hoekom moet ek Pot Chlor gee? Waarnaa gaan ek kyk?" Dan stimuleer jy jouself.*

- *Dit leer ons om onafhanklik te dink. #*

- Another thing is it wasn't step by step. Like, step by step. You go from there to there to there. You had to think for yourself.

- Things could change at any second and now you've gotta decide. Now you actually gotta stand there and think quickly and that's what you could see in the simulation.

- *Ja*, like you said, the adrenaline and you think on your feet. You have to.

- It was very mind stimulating, it gives a feeling of how the emergency environment feels like and I think it is the best way to make students make critical decisions. #

A specific question to determine if the students felt that their critical thinking abilities were affected through the simulation and the facilitated reflection was asked in the module evaluation questionnaire. Sixty one per cent of the participants in this study *strongly agreed* that their critical thinking abilities were developed through the simulation. Thirty two per cent of the respondents *agreed* that their critical thinking abilities were enhanced and three per cent *disagreed* that their critical thinking abilities were developed through the high fidelity simulation. In contrast to the 61% strong agreement in this study, Horan (2009:30) found that 91% of the participants in her study felt that their critical thinking abilities were developed through participating in the simulation scenarios.

Although students should possess critical thinking skills, Benner *et al.* (2010:84) calls for shift from an emphasis on critical thinking to an emphasis on clinical reasoning. It

is argued that multiple ways of thinking are required in nursing practice. Clinical reasoning is defined as the ability to reason as a clinical situation changes, taking into account the context and concerns of the patient and his/her family. When nurses use clinical reasoning, patients' trends and trajectories are identified. This implies that competent and proficient nurses are capable of clinical reasoning. Clinical reasoning is developed through nurse educators asking the 'What if?' question (Benner *et al.*, 2010:85). The process of clinical reasoning will result in clinical judgement. This point is discussed in the following section.

3.3.2.3.3   CLINICAL JUDGEMENT

Clinical judgement, which requires clinical reasoning across time, is the ability to make logical, rational decisions based on the process of observation, reflection and analysis of the patient data. Beyond observation, clinical judgement allows nurses to associate pieces of information, review them and to establish relationships with known facts (Phaneuf, 2008:5). Clinical judgement is thus the result (or end-product) of critical thinking and clinical reasoning and includes the final decision or opinion that is made regarding the condition of the patient.

Clinical judgement is developed through experiential learning within a specific patient context and is associated with professional competence. Nuances of clinical judgement were visible during the simulation session in this study since decisions around the care of the patient had to be made (Hughes & Quinn, 2013:29). However, true clinical judgement will grow from one experience to another and as Benner *et al.* (2010:86) explain, from novice to expert performance. This is because clinical judgement is associated with professional competence. The speed and ability of nurses to make sound judgements is affected by their experience (Phaneuf, 2008:3).

As explained during the problem statement in Chapter 1 (section 1.2), the steps in the clinical judgement process as described by Tanner (2006:208) include noticing, interpreting, responding and reflecting. In relation to the experiential learning theory, clinical judgement can manifest during the fourth phase in the process, namely

active experimentation, especially when students are exposed to similar clinical situations in real life. This link is demonstrated in Figure 3.12 below.
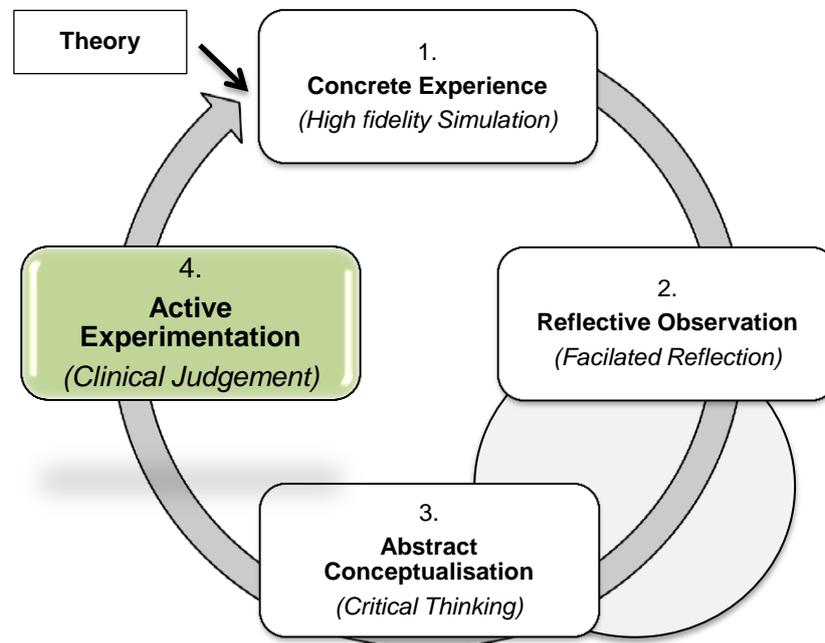
Figure 3.12 Model for the integration of theory and practice through clinical judgement (Kolb, 1984:42)

Noticing, interpreting and responding, as described by Tanner (2006:208), takes place during the concrete experience phase (1) as well as during the active experimentation phase (4). These can be described as the 'doing' phases. It is during the doing that reflection-*in-action* occurs. Reflection, as described by Tanner (2006:208), takes place during the 'thinking' phase (2) and relates to reflection-*on-action* after the actual experience transpired. Reflection in turn results in abstract conceptualisation (3) and strongly relates to critical thinking.

The clinical judgement abilities of students will grow with every exposure to a similar situation or active experimentation (4) until the novice clinician becomes an expert clinical judger. Initially this ability will be limited to similar situations but will later be used in different, more advanced situations. It is in phase 4 that the transfer of learning is demonstrated through the application of clinical judgement. This process is visually represented in Figure 3.13 below.
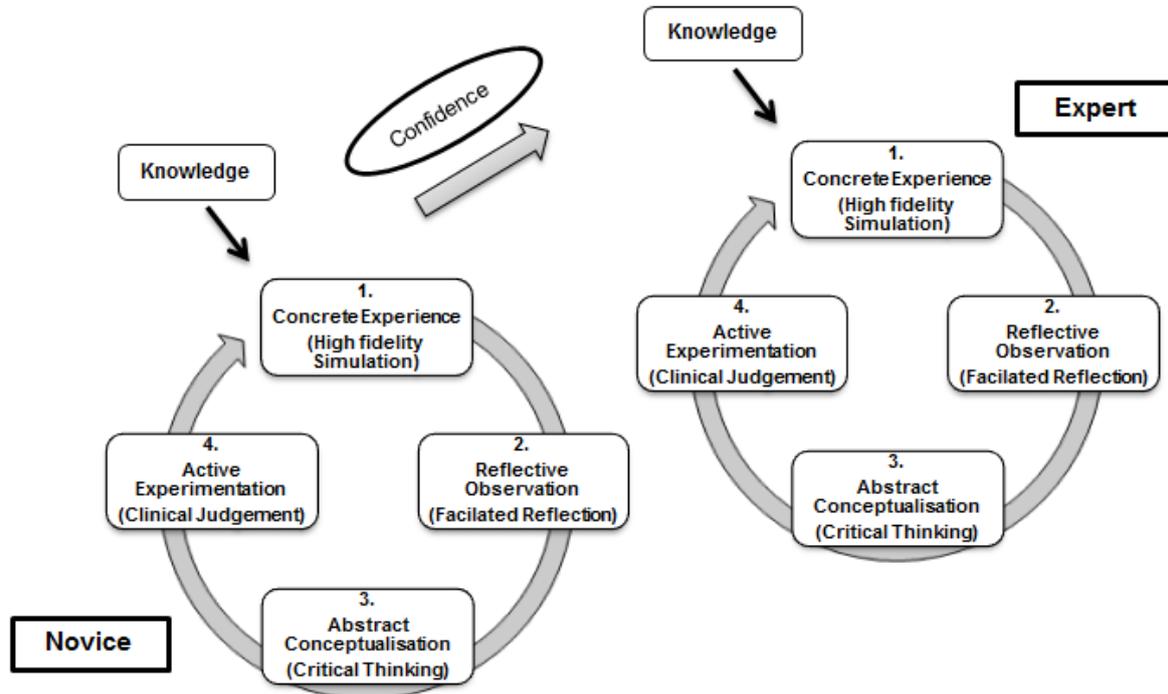
Figure 3.13 Development of clinical judgement

Rhodes and Curran (2005:257) list some of the advantages of high fidelity simulation as the enhancement of knowledge, the facilitation of skill acquisition, its ability to decrease anxiety and its ability to promote clinical judgement. The participants in this study commented on the clinical judgement nuances that were present during high fidelity simulation. They felt that the integrated, experiential nature of the simulation allowed them to make critical, clinical decisions.

- They really opened our minds. They really opened our minds.
- I think it is the best way to make students make critical decisions. #
- *Definitief 'n goeie manier om praktiese denkwyse te stimuleer.* #
- It puts students in a leadership role because you know currently we … when we work … we still … we don't make decisions. We don't, we're not there yet and it sort of gives them, or us, the experience to, *ja*, the responsibility to make decisions. Make big decisions, life and death decisions, which I think you need to learn.

The participants in this study made limited mention of their clinical judgement abilities and the improvement thereof, but referred to the characteristics related to clinical judgement. It was found that high fidelity simulation does allow students to develop their clinical judgement abilities.

Confidence is a strengthening factor for clinical decision making and clinical judgement since it provides a foundation for the acquisition of knowledge and is essential for the successful implementation of a skill (Lundberg, 2008:86). The participants in this study commented on their improved self-confidence levels experienced during high fidelity simulation. This aspect is discussed in the following paragraphs.

Self-confidence and Competence

Professional confidence is defined as an internal feeling of self-assurance and comfort. This feeling is usually reaffirmed by other nurses, patients or friends when they ask for an opinion or advice and trust in the judgement provided. Therefore, the professionally confident nurse is someone who has much confidence and competence in what he/she does and who is able to solve problems. When an individual meets or exceeds the required skill level of an activity or solves clinical problems successfully, confidence levels are increased (Crooks, Carpio, Brown, Black, O'Mara & Noesgaard, 2005:361-362; Lundberg, 2008:86). The steps of the experiential learning cycle, as described by Kolb (1984: 30), namely *concrete experience*, *reflective observation*, *abstract conceptualisation and active experimentation* are strengthened by the presence of self-confidence in students.

Increased knowledge is the foundation required for the development of confidence and clinical skills (Bearnson & Wiker, 2005:423). In agreement with the results published by Baillie and Curzio (2009:301), the participants felt that their confidence in skill performance was increased. They also described confidence in terms of a feeling: 'feeling good about me' (Brown, O'Mara, Hunsberger, Love, Black, Carpio, Crooks & Noesgaard, 2003:165).

- It also helped me in a sense that it gave me confidence to act part of the health care team, be able to help where I could.
- *Meer selfversekerd gemaak. #*
- *Ek voel vaardig in my skill en nie meer so onseker nie. #*

A participant indicated that she now knows how to organise the members of a nursing team. She made a link between the knowledge acquired and its relation to the development of self-confidence. Knowledge acquisition forms part of the definition related to professional confidence (Brown *et al.*, 2003:165).

- The confidence builds up because we work with kind of real situations, so it really helps to know how to organise you members in the unit and help the patient. #

Brown and Chronister (2009:e51) found that a positive correlation exists between confidence levels and critical thinking abilities. Students that obtained a higher critical thinking score on their Electrocardiogram (ECG) SimTest also reported higher self-confidence levels.

The self-confidence of students can be increased through high fidelity simulation. Confidence-enhancing strategies include providing immediate feedback and allowing students to learn from peers and by practising newly acquired skills (Lundberg, 2008:87). Confidence is increased because students are allowed to practise their skill in a non-threatening environment, allowing for less anxiety and an increased focus on the task at hand (Rhodes & Curran, 2005:258). Self-evaluation and feedback are important strategies that can be used to increase self-confidence, as reported by one of the participants:

- I feel confident now, because really now you know when they were doing it and when they showed that video, the educators didn't say anything, but we could see what was wrong there. You know. You could still correct yourself and be like, 'No man, I could have done that and that.'

Senior student nurses develop the ability to learn from their mistakes. The integration of knowledge, experiences and skills is seen as the trademarks of a confident nurse (Brown *et al.*, 2003:166). A positive advantage of presenting the high fidelity simulation scenarios in the third-year is that these students are ready to develop their self-confidence. The simulation provided an opportunity for this to occur as senior students develop increased self-confidence through high fidelity simulation experiences more easily than do junior nursing students (Brown & Chronister, 2009:e51).

One may ask whether the skills acquired during the high fidelity simulation sessions transfer to the real clinical setting. The educators in a study by Feingold, Calaluce and Kallen (2004:161) are of the opinion that transfer of the skills acquired during the high fidelity simulation to the clinical setting is possible. Half of the student group in their study felt that transfer occurred.

Wagner *et al.* (2009:465) suggested that research in this area is required to determine whether it is possible to transfer high fidelity simulation skills to actual clinical practice. More recently, however, it was found that transfer of clinical skills acquired in the medical simulation laboratory to the clinical area and direct patient care is possible (McGaghie, Issenberg, Cohen, Barsuk & Wayne, 2011:708).

The participants in this study felt that they are better prepared for practicum following the high fidelity simulation. A feeling of increased capability in caring for patients was experienced (Horan, 2009:30). This supports McCaughey and Traynor's (2010:831) stance that it is possible for simulation to increase the competence of students. The excerpts below illustrate the participants' views:

- I think actually also because especially at the end of the year we're qualified sisters and it is very appropriate that the simulations are done in this year to get us on our feet and to get us there to know that we actually have to know stuff and be able to do stuff on our own at the end of this year.
- It was an awesome experience. We really learnt a lot from it: it

helped to better equip us with the necessary skills and knowledge we need when confronted with the similar situation in the hospital setting. #

- Because now you feel like you are ready you know? You feel like you can go back in the theatre. You've been exposed, like really now, you can do it. You feel like you can do it on a real patient.

- *Ja, ek dink dit sal ons definitief help daai eerste dag in ons Zuma jaar instap in die praktyk. Jy weet jy het darem al 'n bietjie van 'n voorsprong. Ons het darem nie niks ooit rêrig gedoen nie.*

- *Ja, dit berei jou bietjie voor vir as so iets sou in die werklikheid gebeur.*

- *Omdat ek so sê: ek het in Kardio ICU gewerk in XXXXX hospitaal en daar was 'n pasiënt wat asistool gekry het en ek het onmiddellik geweet wat om te doen, want die rolspel wat ons gedoen het en die simulasie het in my kop afgegaan. Presies wat ek moet doen.*

- Being part of the simulation was eye opening and I now know what to do next time if I come across the same situation. #

- The simulation was motivating us because when you get in the real situation outside you are having exposure and experience of the situation. #

A participant in this study made mention of the fact that she felt that her nursing actions were effective and this led to an increase in her self-confidence levels.

- Now you know, *ja*, you are effective. You know that when you are doing things that are effective, then you feel yes, confident.

Students are often pushed to the side when a critical code or patient incident occurs during their practicum placements. This limits their ability to gain hands-on experience (Horan, 2009:28). A participant in this study identified a crisis incident that occurred in the clinical practice, but explained that the simulation prepared her

to take proactive action, seeing that she knew what was expected from her in this situation:

- *Sê nou maar daar gebeur so iets in die saal, veral in die ICU's ook, dan hardloop al die Susters en jy staan daar soos, half soos 'n blommetjie daar aan muur en jy weet nie rêrig wat om te doen nie. En met daai ding het ek ten minste geweet daar kan ek solank die noodtrollie nader stoot of daar kan ek solank ekstra wat ook al gaan haal net om, ja, jy weet ten minste wat om te vat en wat om te los.*

It is argued that students who are exposed to repetitive simulation practice opportunities acquire the necessary skills in a shorter time than those exposed to routine clinical patient-care activities (Issenberg & Scalese, 2007:75).

The participants in this study felt that the high fidelity simulation prepared them for their practicum placements since they repeatedly practiced their clinical skills (Baillie & Curzio, 2009:302).

The repeated practise of procedural skills is an important condition for learning, but it is not sufficient. It is not enough to have clinical skills since competency implies that a student possesses both knowledge and psychomotor abilities. A competent nurse is able to apply these abilities within a given context (Decker *et al.,* 2008:75). Competency development is thus dependant on environments that provide students with the opportunity to integrate both knowledge and clinical skills during learning. Simulation allows the educator to create such an environment.

The integration of theory and practice theme in this study was discussed on the basis of the experiential learning theory as described by Kolb (1984). A comparison was made between the experiential learning theory and the integration of theory and practice, as described by the participants, was made. It can be concluded that the theory and practice gap that is sometimes present was reduced by exposing the students to the high fidelity simulation experience and allowing for the development

of their critical thinking and clinical judgement abilities through the scheduled facilitated reflection.

It is clear, from the extensive discussion and comments made by the participants, that their learning experience was generally influenced by what happened during the simulation. Most of integration occurred during the facilitated reflection session and it can be viewed as an important characteristic and determinant in the successful implementation of high fidelity simulation as a learning strategy.

In moving towards a wrap-up of the learning experience of participants on high fidelity simulation at the UFS School of Nursing, the experiences of participants after simulation are discussed in the following paragraphs.

3.3.3 LEARNING EXPERIENCE OF THE PARTICIPANTS AFTER SIMULATION

In describing their learning experience after the high fidelity simulation, the participants in this study explained that they had experienced the simulation as being real but it was safe to make mistakes. They described it as stimulating and challenging. The participants experienced a sense of pride and felt privileged through being exposed to the high fidelity simulation sessions.

A detailed discussion of these themes is presented in the following paragraphs. The themes are summarised in Figure 3.14.
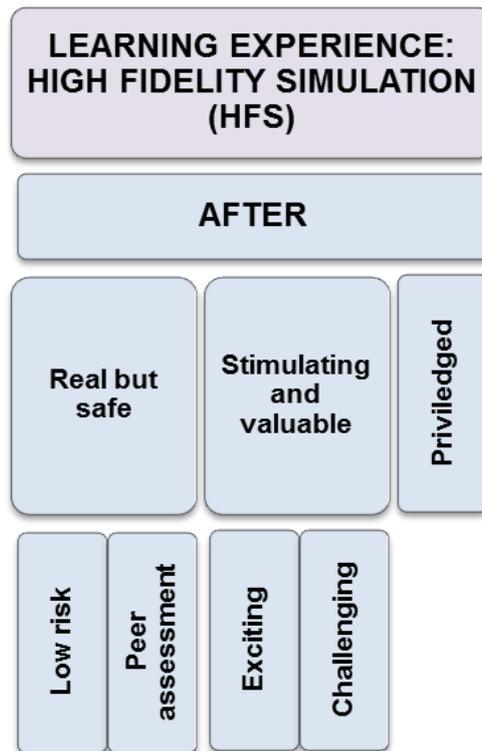
Figure 3.14 Summary of the learning experience after simulation

3.3.3.1   REAL BUT SAFE

The potential of simulation to promote patient safety by allowing students to practise their clinical skills is widely discussed in the literature (Rauen, 2004:49; Bearnson & Wiker, 2005:421; Kneebone, 2005:550; Reilly & Spratt, 2007:544; Gore, Hunt, Parker & Raines, 2011:e175).   Their capabilities in terms of patient care are improved, leading to increased safety in patient care.

The participants in this study said that although the simulation felt real, it was safe for them to make mistakes, thus confirming the low risk nature of the high fidelity simulation (Lasater, 2007:273).

3.3.3.1.1   LOW RISK

Different authors have commented on the characteristics of the simulation environment. Issenberg and Scalese (2007:76) describe the simulation environment as controlled and forgiving and Prion (2008:e69) says that it is safe and supportive.

Real patients are not placed at risk (Halstead, 2006:e5). The participants in this study commented that even though the situation felt real, the knew that it was safe for the human patient simulator to die. By eliminating this fear, a positive learning environment is created and learning in the absence of anxiety becomes possible (Medley & Horne, 2005:33; Hoffmann *et al.,* 2007:113).

Rauen (2004:49) found that since students felt less intimidated by the simulated situation than they would in real life, their learning was improved. Through simulation, students are permitted to review the good or bad decision they make without causing harm to an actual patient (Gates *et al.,* 2012:9). Some of the participants' views on this matter are expressed below:

- If you make a mistake, no one's life is at stake. No... Nothing is like, set in stone, you know. You can just reset the machine again.
- *Ja*, like she said, without putting anyone at danger.
- *Jy het die hele tyd in jou agterkop die bevrediging dat wat ook al gebeur ons kan nie iets verkeerd doen dat hy kan doodgaan nie.*
- *Ek dink dit maak jou meer gerus dat hy kan doodgaan. Dis om te oefen. Dis nie die einde van die wêreld as hy doodgaan nie.*
- *Ons kan hom darem weer lewendig maak.*
- *Hulle het hom gered. Hy's nie dood nie.*
- *Sonder dit, maak mens die foute op regte pasiënte.*
- *Ek weet nou nie of hy eintlik moes doodgaan nie, maar toe hy nou lewe. Dis 'n lekker gevoel!*
- *Die meisietjie wat die medikasie so verkeerd gespuit het. So ek dink nie een van ons gaan dit ooit doen nie, want ons pasiënt... Hy sou doodgegaan het as dit in die regte lewe was.*

The opportunity to learn from one's mistakes is a powerful teaching tool (Hoffmann *et al.,* 2007:111). This view is confirmed by the experience of the participants in this study:

- *Dit was gemaklik, omdat ons weet ons kan leer deur ons foute.*
- *Nou wys hulle die video. Nè, en hulle praat van wat het ons nou fout gemaak en wat sou hulle nou gedoen het. Dit was rêrig lekker, want hulle wat gekyk het wat ons gedoen het, het net so baie geleer soos wat ons wat self in die situasie was.*
- *'n Ongelooflike leerervaring al maak jy tonne foute. #*

It is clear from their comments that the participants were comfortable during the simulation and really enjoyed the experience and learnt from their mistakes:

- *Want jy maak foute en dan kan jy daaruit leer. As jy nou eendag rêrig moet dit doen.*
- They showed us the really important stuff, that they made a mistake here, that they should have done this.
- So when they play that video, that's when they like, evaluate this video you know and then now, that is where you see the mistakes. You know you've got your theory, but you still, you remember, okay, no they didn't communicate well. The leader is supposed to do that. Why didn't they record the vital signs at that time? Those kinds of things.
- The feedback we received after each simulation was beneficial to us because we learnt from our mistakes and now know how to deal better and effectively in those situations.

Another aspect that enhanced the safety aspect of the high fidelity simulation included the fact that the entire class had signed a confidentiality agreement before being exposed to the simulation. This prevented them from sharing the high fidelity simulation experience with people that did not have any interest in the actions that transpired (Johnson-Russell & Bailey, 2010:381). Even though taking part in the simulation caused the students to feel excited, they knew that they could not share the specifics of the simulation or facilitated reflection with others. They commented on this as follows:

- I like also the confidentiality part of it, where you have to sign the confidentiality form, that form that they give you. It's like; you don't go out there, now starting like discriminating each other. No man, you are not supposed to do this; you did this and this and this. No. What they do there is basically … it is between us, our third-year group, because it is all about, for us. So *ja*, I really think that it is good that the confidentiality things are remaining between us. It's good. Like, when you go there, you don't have to be, to feel anxious, like worried, like oh my word, the whole school is gonna know I didn't know how to do this. So *ja*, it is really good.

- Because I was so... After the simulation I was so excited, I wanted to go call my mother and tell my friend what happened. And it was like, oh the confidentiality thing. Now I can't. Now it's like I have to keep it to myself. The interesting part of what happened. Nah, *okay*, I'll just keep quiet.

- And the best part is, that the people actually really kept their word by no one has ever spoken about it out of that group. *Ja*, like really, once everyone has left that door it's like as if we've been debriefed, like properly. Everyone's laughed at, they've said what they had to say and as you walk out the door, and then you feel: you don't actually need to say anything.

- In class, no one is like *awh* I remember how you did that. You know. It's not like that at all.

- It's got nothing to do with anyone else.

Students will only share experiences and admit mistakes if they feel safe and know that the information shared remains confidential. By signing the confidentiality agreement, safety was created and the participants were in agreement that it is a good practice to uphold as a sense of belonging is created and anxiety is lessend.

An individual needs to feel safe if he/she is to admit that a mistake was made. The participants in this study were initially afraid that they would be judged on the mistakes made. This was because they had not previously been exposed to high

fidelity simulation at the UFS School of Nursing. They did not understand the purpose of the simulation as a learning opportunity. Since they were used to formative assessments and receiving feedback on mistakes that were made, they thought that the simulation would be executed in the same way and that their mistakes would be highlighted in front of the complete class. They realised during the facilitated reflection session that this was not the case and that it was safe to admit to the mistakes that were made. Consequently they felt comfortable to discuss these in detail. This meant that the debriefing (reflection) environment was safe. Henneman and Cunningham (2005:175) identified a safe psychological environment as a prerequisite for effective reflections. The students understood each other and felt safe to admit their mistakes in the group, seeing that they were exposed to the same experience:

- It's not about, like embarrassing people and that. We all make mistakes. And everyone is in the same boat and you're gonna be there soon and you might make something even worse.
- Everyone was laughing, even the people that made the mistakes were laughing. They are like, augh now I see what I should have done.

For a student to acknowledge that he/she has made a mistake during the facilitated reflection requires courage and can be facilitated by the educator taking a 'stance of genuine curiosity' (Rudolph *et al.*, 2006:49). The mistakes the students made then become puzzles rather than serious errors. The student should be facilitated to identify the mistake, but he/she should never leave the room without knowing how to correct it.

An increase in stress levels during simulation are reported when students are graded (Baxter *et al.*, 2009:864). The participants in this study identified the simulation as being less stressful than the Objective Structured Clinical Examination (OSCE). One of the participants responded as follows:

- It's way less stressful than OSCE.

The fact that the participant experienced the high fidelity simulation as less stressful than the OSCE corroborates the decision of the UFS School of Nursing to implement simulation as a learning strategy and not for assessment purposes. The participants felt safe in the learning environment to learn and in being allowed to make mistakes (Mahoney, Hancock, Iorianni-Cimbak & Curley, 2012:5, 6).

Even though the high fidelity simulator is used during assessment in some fields and specifically medical education, it is implemented effectively for learning at the UFS School of Nursing (Scalese *et al.,* 2007:48).

Although the mistakes that the students made were pointed out in a relaxed environment, the participants in this study realised that a mistake can cause a patient's death and they took the feedback seriously. In the example below, a participant admitted to making a mistake while administering medication. She nervously giggled while doing this, which implies that she felt uncertain and shy to admit this publicly during the focus group interview:

- *Ja, ek het foute gemaak (giggle). Ja, ek het die medikasie verkeerd gelees. So dit wys jou dat as jy dit verkeerd lees en dan toedien en jy dien die verkeerde goed toe. Dan kan dit 'n groot probleem wees.*

Linked to the fact that the participants were willing to admit their mistakes publicly, is the fact that they were assessed by their peers and not by the educators. This is an aspect commented on by the participants and is discussed in the following section.

3.3.3.1.2   SELF- AND PEER ASSESSMENT

Peer assessment is defined as the assessment of a student by his/her peer group. It is used effectively during class teaching, but can also be implemented for the assessment of clinical skills. Peer assessment as part of simulation is used for feedback and not as formal assessment (Hughes & Quinn, 2013:267). The following excerpts emphasise the value of this aspect:

- We are learning and correcting each other. We are learning from each other's mistakes.

- That's why we say it is very good, because now from just sitting and observing you can see that they forgot to like, to spray their hands in between. Now from just looking at it, you now know how to correct that mistake.

- I love that part where you like watching that video and you like: 'No man XXX, why did you that? Why?' You know. You still correct yourself. No one told you that XXX was supposed to do that, but you could see that that was wrong.

- From her mistake, or maybe not really mistake, but from the things she left out, we now know how to give, like how to do SBAR (Situation, Background, Assessment, and Recommendation) thing. (referring to how to communicate with the doctor).

- *Ja, jy dink: "Wat sou ek nou beter? Wat kon ek gedoen het? As ek nou sy gewees het, sou ek dit gedoen het?" Dit is net soos jy kyk 'n film of 'n ding of 'n fliek. Jy kyk 'n fliek en jy dink na die tyd as jy klaar die fliek gekyk het dan dink jy: "Ag dit lyk tense. Vyf uit tien. Of uhm, ek dink hy moes haar gevat het of sy moes dit gesê het."*

- *En ek dink die foute wat ons elkeen gemaak het of wat jy gesien het van jou ander studente ook. Dit sal jy nooit vergeet nie. Jy gaan dit onthou eendag as jy self in daardie situasie is, dan sal jy onthou, kyk spesifiek na hierdie dingetjie.*

- *En ek dink die feit dat jou mede-studente dit doen, uhm, voel jy jy kan kritiseer, want jy weet jy is op dieselfde vlak kennis as hulle. As 'n suster dit sou gedoen het sou ek nie kon kritiseer nie, want ek voel ek weet nie so baie soos sy nie.*

- *Wat lekker is, al het hulle jou gekritiseer van hoe, weet ek nou, okay, vir die vervolg gaan ek dit nie weer so doen nie. So dis lekker. Niemand is kwaad vir niemand nie. Jy leer. Dis hoekom ons hier is. Dis hoekom die simulasie daar is. Vir leer.*

The participants elaborated on this theme by saying that they had learnt from each other and the mistakes that were made. This is in agreement with the view that learning occurs as a result of the interaction between peers while engaged in practice (Kneebone, 2005:551).

Student errors during the simulation and unpleasant simulated patient outcomes influence the self-confidence of students negatively and lower their perception of the learning (Prion, 2008:e74). Therefore, it is important for the students, as well as their peers, to provide feedback. If there is no in-depth discussion, a surface approach to learning is adopted. Learning becomes tedious and negative feelings such as anxiety and cynicism arise. A deep approach to learning is preferable. Students need to feel engaged in a task and apply the correct cognitive activities. Learning becomes pleasurable and positive and exhilarating emotions are experienced (Biggs & Tang, 2007:24). The feedback that was provided allowed students to assess their own ability and monitor their progress made towards skill acquisition (Issenberg & Scalese, 2007:74).

The participants in this study describe the high fidelity simulation experience as stimulating. This implies that they found the learning opportunity to be interesting and invigorating.

3.3.3.2   STIMULATING AND VALUABLE

The medical students in a study by Flanagan, Nestel and Joseph (2004:62) described their high fidelity simulation session as a 'stimulating way of learning' and 'one of the best learning experiences' ever received. The participants in this study described their experience in similar terms:

- It gives you a chance to evaluate yourself, you test your knowledge on the theory that you did. I found it very stimulating. #
- The simulations were also very stimulating. #
- It was very mind stimulating. #

Simulation allows students to stop and consider the meaning of findings, think critically about the situation and consider alternatives for their actions. During the facilitated debriefing, students are allowed to rethink the situation and analyse their own actions (Johnson-Russell & Bailey, 2010:372). The comments made allude to these specific simulation capabilities. The participants enjoyed the fact that the simulation allowed them to think deeper than they normally would during traditional teaching. This correlates with the needs of a technology proficient Y generation that prefers the integration of advanced methods into their teaching (Starkweather & Kardong-Edgren, 2008:1).

Since the simulation satisfied their learning needs, the participants indicated that they realised the value of simulation as a learning strategy and wanted more. They stated that they wanted more regular exposure to high fidelity simulation and that it should be included in the curriculum of the complete undergraduate group.

This confirms the findings of several authors in the field (Baillie & Curzio, 2009:302; Partin *et al.*, 2011:188; Mahoney *et al.*, 2012:5). They commented as follows:

- Highly informative and educational. #
- Have more simulation sessions. #
- *Om meer simulasies aan te bied vir praktiese sessies. #*
- *Die sessie moet net op 'n gereelde basis plaasvind. #*
- Give students more practice sessions so that they can get to training in the simulation. #
- *Ek voel net hulle moet meer sessies aanbied vir prakties, want regtig as jy dit sien, hoor, skryf en al daai dinge, joe, dit* stick *hierbo.*

These responses echo the views expressed by students in a study by Jeffries and Rizzolo (2006:10). The students in their study stated that they were satisfied with the learning experience associated with simulation. Two participants in this current study felt that the integration of simulation should already occur during the first year of study:

- *Ek dink rêrig dit is vir my goed dat hulle dit ingebring het. En dis hoekom ek sê, ek dink dit is goed hoe vroeër hulle daarmee begin om die kinders bloot te stel, hoe beter. Ek sukkel maar bietjie om goeters te onthou van die eerste en tweede jaar.*
- It must be introduced right from first year. #

The students that participated in research conducted by Baillie and Curzio (2009:302) expressed similar views and felt that simulation programmes should be established across the curriculum during their studies. Learning occurs through active engagement during simulation (Lasater, 2007:275). By exposing students to high fidelity simulation early and repetitively, students can reap the valuable benefits that simulation adds to nursing education.

The stimulating nature of the high fidelity simulation experience created excitement within the students.

3.3.3.2.1   EXCITING

Excitement can be defined as a feeling of enthusiasm, eagerness or exhilaration. A situation can cause excitement. Simulation as learning experience is less boring than traditional methods and participating usually causes excitement (Wong, Ng & Chen, 2002:133). As discussed in reference to Russell's circumplex model of affect (Figure 3.6), stimulation activates excitement, producing pleasure. Learning associated with positive emotions is more memorable and enjoyable, as indicated by the excerpts below:

- *Ja*, and I know the second years are pretty excited for next year.
- So, *ja* I'm quite excited for the future to see what more they have.
- At first I was like: 'No I don't want to have a turn.' And now when you see it being done, you're just like: 'No, I want to do something like that.'
- Because I was so... After the simulation I was so excited, I wanted to go call my mother and tell my friend what happened!

- So I thought it was very exciting and it was really well done.

- Maybe it is really because of the type, the type of … the type of topic we had, like the myocardial infarction. Because it is so much more exciting. Maybe because it was our first one. But still, I find it very exciting to go in there and the whole experience, cause there is always something new that that doll is gonna do.

- *Ja*, no it is very exciting!

- Was amazing! Loved every second of it. I still remember the defib session like it was yesterday. #

These responses are in agreement with findings from a study by Partin *et al.* (2011:187) where the participants experienced obvious excitement. Although the participants in the current study did not specify the cause of their excitement, they wanted to share their experience with others. The initial uncertainty surrounding simulation changed to excitement and they indicated that they want more after being exposed to the high fidelity simulation experience.

Even though the participants experienced excitement after being exposed to simulation, they also found it challenging and expanded on this theme as explained below.

3.3.3.2.2   CHALLENGING

A challenging task requires great physical or mental effort and might be said to be difficult. Being exposed to a challenging situation can have different implications for different people. One person will call it problematic while another might see the difficult task as a challenge. It is then viewed as something to be mastered, a challenge to take on.

The participants indicated that intense mental effort had been required while taking part in the simulation, producing a challenging task. This, however, was not seen as disadvantageous. On the contrary, it made them realise how serious the simulation was and they were thankful for the opportunity to practise their skills independently:

- *Hulle help jou mos nie met die simulasie nie. Jy is daar op jou eie. So, jy moet self dink wat moet ek nou doen. Daar is nie iemand wat vir jou sê: 'Hoor hier, okay dit of dit. Of doen dit.' Jy moet self dink wat met die pasiënt… So wat moet ek doen. Jy moet self die pasiënt aan die lewe probeer hou.*
- *Ja, die geleentheid gebied en vir ons mooi verduidelik voor die tyd en ons gelos. Nie ons met 'n lepeltjie voer nie, want dis wat deesdae gebeur. Almal voer 'n mens met 'n lepeltjie en dan wat as jy nou in die praktyk kom?*

As adult learners, the students need to be presented with challenging learning opportunities, since this keeps them interested. Growth needs, as identified by Maslow, increases as they are met (Bruce *et al.*, 2011:89). The more a student knows, the more they want to know. In order to keep their interest, challenging learning opportunities should be provided.

The participants ended their discussion on the learning experience of high fidelity simulation by saying that they were privileged to have had this exposure. A discussion on their remarks is presented in the next section.

3.3.3.2.3   PRIVILEDGED

Since realising the potential and importance of high fidelity simulation as a valuable learning strategy, the UFS School of Nursing has made considerable investments in acquiring the human patient simulators. Strategies to ensure the successful implementation of this approach includes the international benchmark visits that occurred, the design and opening of the SPACE and authentic simulation learning spaces, as well as the appointment of the simulation centre staff.

Even though the students at the UFS School of Nursing are not necessarily familiar will all the above-mentioned detail, the participants experienced a sense of pride and realised that they are privileged to have the simulators available at the UFS School of Nursing:

- It is very much valuable.
- *So ek dink dit is 'n baie groot voorreg om so iets te hê.*
- *Ja, ons is bevoorreg om dit te hê. Ja verskriklik!*
- *Dit is vir my baie... Dit is regtig 'n uitstekende ding en ek dink dit is 'n baie... Ons is baie gelukkig om dit te hê hierso.*
- It's really cool to be actually proud of something. Like, I've told most of my family about this room!

A sense of exclusivity was experienced. Compared to the medical students at the University of the Free State, the participants feel that they have more privileges where simulation is concerned:

- *Ek dink ander jaargroepe beny ons.*
- *Beter as mediese studente. Baie beter.*
- And it's like, it's like, rumours have spread throughout the university, cause I mean I had some medical students that I'm like friends that came up to me, like: '*We hear you have this cool room with these cool dolls that move and stuff.*' And they're like *'We wish we could have something like that.'*
- It is something that we have that the rest of the university doesn't have, even the medical students.
- But what's nice, is that it is also, it's like the nursing schools little special thing that we have, you know. It's nobody else's business. That's what we have, that is special to us.

The situation has changed since this research was completed as the Medical School opened their own clinical simulation training facility in February 2013.

The positive reaction of the students towards the high fidelity simulation is part of the aspects that make the venture worthwhile. It is evident that this undertaking is providing returns on investment. An Afrikaans-speaking participant summarised it well in the following comment where she describes the simulation as wonderful and the learning experience as something that will not be forgotten:

- Okay*, ek dink dit was uitstekend gewees. Ja. Omdat ek so sê: ek het in Kardio ICU gewerk in XXX hospitaal en daar was 'n pasiënt wat asistool gekry het en ek het onmiddellik geweet wat om te doen, want die rolspel wat ons gedoen het en die simulasie het in my kop afgegaan. Presies wat ek moet doen. Die defib, ek moet onmiddellik defib. Ek moenie eers kompressie, nie sukkel daarmee nie, en watse medikasies, hoe ek dit moet optrek. Al daai dinge. Ag, dit was wonderlik!*

The educational value that a high fidelity simulation brings to nursing education lies within its ability to complement clinical practice. It assists students to develop their critical thinking and clinical judgement abilities and integrate nursing theory with practice (Lasater, 2007:269; Nehring & Lashley, 2004:247).

3.4   CONCLUSION

The focus of this chapter was to discuss the themes that were identified after data analysis was completed. The learning experience of the participants before, during and after exposure to high fidelity simulation was discussed. These findings were integrated with literature available on the subject. Recommendations on how to improve the learning experience of Baccalaureate nursing students at the UFS School of Nursing during high fidelity simulation is discussed in Chapter 4.

CHAPTER 4

CONCLUSIONS AND RECOMMENDATIONS

4.1   INTRODUCTION

The learning experience on high fidelity simulation of the third-year Baccalaureate nursing students at the UFS School of Nursing was discussed in detail in Chapter 3. The findings emanating from the study were discussed in terms of the students' experiences before, during and after the simulation. Both positive and negative experiences were described. Recommendations based on the findings of the study are presented in this chapter.

4.2   CONCLUSIONS AND SUMMARY OF FINDINGS

This summary focuses on the themes as discussed in terms of the learning experience of participants before, during and after exposure to high fidelity simulation as a learning strategy.

The participants had high expectations of the learning experience that they would be exposed to and entered the learning environment anticipating that they would learn new things. A definite theme on the emotions experienced by the participants emerged. Emotions extended over all phases of the high fidelity simulation learning experience. Fear was present before they commenced the simulation scenario. This emotion developed into astonishment, alertness and anxiety during the simulation, but changed into confidence as they progressed through the scenario. The anxiety experienced was caused by the participants being unsure of how to care for the patient as well as the uncoordinated nature of nursing actions that transpired during the simulation. They felt 'stupid' at times. The participants described their post-experience as feeling excited and stimulated.

Being unprepared for the simulation was an aspect that was identified by the participants. They felt that the educators did not prepare them well enough for the simulation, but they also commented on the fact that they did not come fully

prepared to class. Being unprepared has a negative effect on learning and this is an area that requires attention.

Comments were made on the level of realism created by the human patient simulator and the equipment available in the environment. The convincing nature of the environment and the interaction within the team led them to experience the simulation positively. Even though the authenticity of the simulation was high the participants felt safe in the knowledge that they could not harm the simulator and that he could be revived if he died. Through the instant response mechanism of the simulator, immediate feedback on their actions was received and it was possible to adapt their nursing care accordingly. This unique feature of the human patient simulator enhanced the realism of simulation. Since the students worked in a group and each member had a specific role and function to fulfil, they were able to learn how to communicate with their fellow students as well as with other multi-disciplinary team members.

The students felt that they were able to integrate their theoretical knowledge with nursing practice while taking part in the high fidelity simulation. This integration was facilitated during the reflection session that followed after each simulation scenario. An opportunity to develop their critical thinking and clinical judgement abilities was the result of the effective theory and practice integration that occurred. This led to increased self-confidence levels and the belief that the skills acquired during the simulation session is transferrable to instances of real patient care.

The low risk nature of the simulation received attention. High fidelity simulation poses fewer risks than real patient care. In this case the students were allowed to make mistakes and they felt safe to learn from their errors. Through self- and peer assessment, they were able to identify the gaps in their knowledge and skills and could recognise areas that need improvement.

A sense of pride in being exposed to the high fidelity simulation was reported as part of the post-learning experience. The students felt privileged to have had this experience. Even though they found the learning experience to be challenging, they

indicated that they wanted more regular exposure to high fidelity simulation during their studies with this contact commencing in their first year.

The above-mentioned findings correlate with some of the literature available on the subject as discussed in Chapter 3. Even though positive aspects were identified and the UFS School of Nursing has successfully implemented high fidelity simulation as a learning strategy, improvement in certain areas is required. These instances are addressed in the following section and recommendations are made for the implementation of relevant improvements.

4.3   LIMITATIONS OF THIS STUDY

Limited attendance by participants during the focus group interviews is a restraint in this study. Less than half (14 of the 30) students participated. The sentiment of the entire group is thus not represented. By focusing on the data saturation point and not the number of participants, this problem was addressed and did not influence the quality of the data.

Even though there were male students present in the third-year Baccalaureate nursing group, none of them participated in the focus group interviews. This implies that the views expressed during the focus group interviews were those of female students only. This is regarded as a limitation to this study since it is possible that the perspectives of female students and male students could differ. Various race groups were represented but their viewpoints did not differ. Generalisation is thus limited to participants with similar characteristics as the sample in this study.

The participants of this study had limited exposure to high-fidelity simulation learning experiences. Their experiences were described based on their exposure. It is argued that their viewpoints may change with increased exposure and further research in this area is recommended.

4.4   RECOMMENDATIONS

Although the learning experience was discussed in terms of before, during and after the simulation, general recommendations, with a focus on the complete experience, are made.   A summary of the headings under which these recommendations are discussed is presented in Figure 4.1.
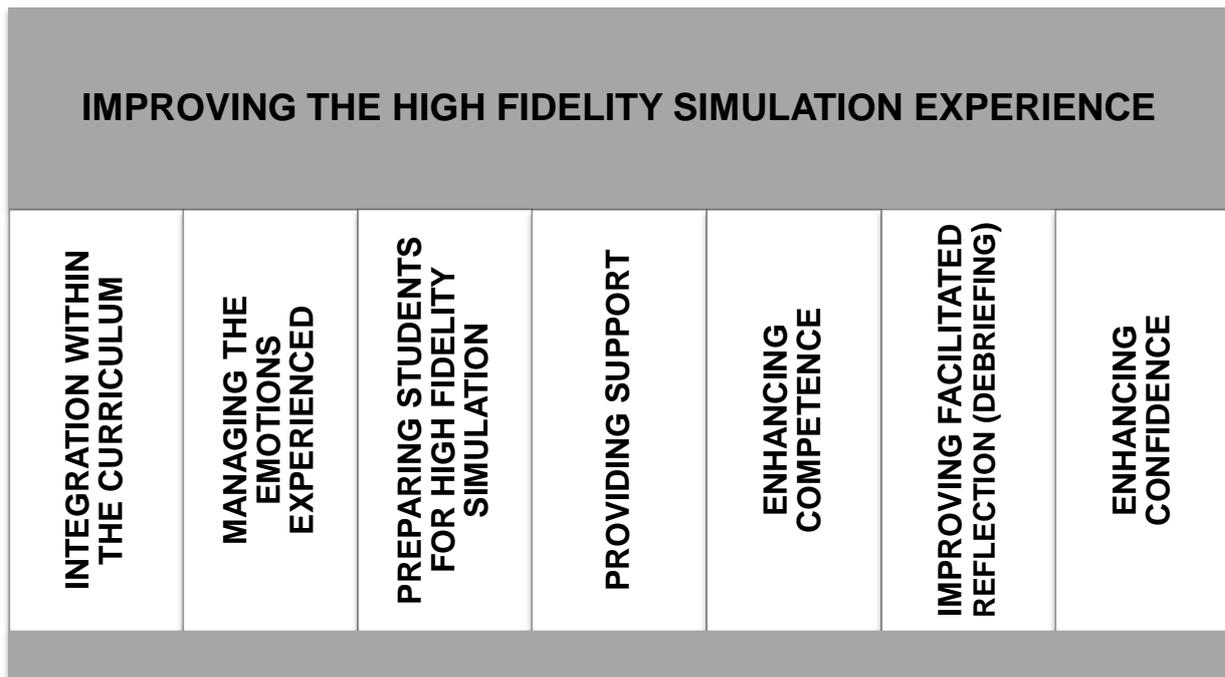
Figure 4.1 Reccomendations on improving high fidelity simulation

The discussion commences with suggestions on how to improve the incorporation of learning based on high fidelity simulation into the Baccalaureate nursing programme.

4.4.1 INTEGRATION INTO THE CURRICULUM

Simulation complements clinical training and is not meant to replace it (McGaghie, Issenberg, Petrusa & Scalese, 2010:53).   Simulation learning is not a stand-alone strategy, but it should be integrated into the curriculum with the purpose of exemplifying current practices.

- The integration of simulation-based education into the wider curriculum needs careful planning. It is recommended that it be integrated together with reading, lectures, group discussions, laboratory work and clinical experience. The wider curriculum context should be considered and high fidelity simulation slotted in.

- Considering the curriculum and outcomes of the integrated undergraduate programme offered at the UFS School of Nursing, the researcher recommends that the high fidelity simulation should be used during learning for all the year groups since the integrated nature of the high fidelity simulation scenarios allows students to develop their critical thinking and clinical judgement abilities.

- Waxman and Telles (2009:e234) suggest that the novice nursing student should be exposed to less complex scenarios and that the degree of fidelity should match the learning outcomes. Basic clinical skills can be acquired through using low fidelity task trainers. For the student near graduation, however, more complex clinical scenarios are provided. High fidelity simulators are indicated if complex clinical events, requiring a team response, are needed (McGaghie *et al.*, 2010:56). The scenarios that the students are exposed to at the beginning of the semester should be less complex than those presented at the end of the year.

- The implementation of standardised patient scenarios at first-, second- and fourth- (psychiatry component) year level is indicated for the development of communication and history-taking skills. High fidelity simulation can be used effectively at third- and fourth- year level as senior students are better able to integrate multiple contextual factors and process complex situations (Blum, Borglund & Parcells, 2010:10). With the birth simulator available it is possible to expose the fourth-years (midwifery component) to the management of the mother and neonate during the ante-natal, intrapartum and post-partum periods. This recommendation has been implemented at the UFS School of Nursing since this research has commenced.

- In designing the simulation scenarios for inexperienced nurses, the educators should consider the complexity of patient care needs, the order of problem

presentation and the pace at which the scenario will unfold (Larew *et al.*, 2006:19). The simulation should be structured in such a way that even if co-morbidities exist, only one problem is presented at a time. This promotes the development of critical analytical diagnostic thinking and allows students to structure their actions (Garrett *et al.*, 2010:311).

- Successful implementation of this innovative learning strategy into both the undergraduate and post-graduate programmes within the UFS School of Nursing, but also wider into the Faculty of Health Sciences, should be promoted. Schools within the Faculty of Health Sciences at the University of the Free State, other university schools and departments and even international universities can participate and share resources (Medley & Horne, 2005:33).

- It is suggested that the simulation scenarios be run once before student implementation as this practice run augments the implementation process (Kardong-Edgren *et al.*, 2008: 11).

- Expert performance is built on experience (Benner, 1984:3). The nurse educators responsible for the implementation of high fidelity simulation at the UFS School of Nursing need to be trained on the high fidelity simulation software, writing the scenarios and on facilitated reflection of students. Simulation trainers may be expert nurses in the clinical setting, but are novices when it comes to the writing and execution of the simulation scenarios (Waxman & Telles, 2009:e232). They also need to attend nursing education conferences to disseminate simulation research results obtained and to learn more about simulation as a learning strategy.

At the UFS School of Nursing two simulation champions were trained during 2011 and each one received an internationally recognised certificate in simulation from Drexel University. The development and implementation of both high fidelity simulation and standardised patient (SP) experiences were included as part of the course material. This five-day train the trainer workshop was repeated at the UFS School of Nursing in collaboration with Drexel University (Philadelphia, USA) in 2012

and 24 trainers, of which 7 are staff members of the School, were trained. These educators can empower other colleagues to explore new ways of implementing interactive teaching modalities into their curriculum. A repeat presentation of this workshop is scheduled for November 2013 and 24 educators will be enabled to design and implement both high fidelity simulation and standardised patients within their field of study.

- As suggested by Jeffries (2008:71), it is possible for the above-mentioned educators to train the other personnel at the UFS School of Nursing as well.

- As suggested by Jeffries (2008:72), the simulation team established at the school of nursing, after the training was held should meet on a monthly basis to discuss and develop simulation implementation plans, guidelines for educators and share ideas across programmes. Successes should be shared. The template used for the development of high fidelity simulation scenarios at the UFS School of Nursing can serve as a design template for other training institutions.

- Effective management of venues and maintenance of equipment are important aspects that add to the success of high fidelity simulation as a learning strategy (Medley & Horne, 2005:33). For that reason, a technical and laboratory assistant was appointed at UFS School of Nursing as part of the simulation team. Together with the simulation laboratory coordinator and high fidelity simulation coordinator, he is responsible for the maintenance of the simulation and recording equipment. The bookings of the simulation laboratory and lecture venues are also his responsibility. It is recommended that this practice be continued.

A new learning strategy will never be employed perfectly for the first time. It is vital to learn from mistakes and implement improvements based on concrete findings. The quality of student learning experiences is enhanced when its implementation is based on evidence-based practice (Halstead, 2006:e6).

- It is thus necessary to determine what works best within the context of high fidelity simulation in the Baccalaureate nursing programme at the UFS School of Nursing and apply these practices during the implementation of the scenarios.

- Instruments that can be used by nurse educators to evaluate the effectiveness of simulation are available from the National League for Nursing (NLN). These can be obtained for research purposes from the website and are free for NLN members. Evaluation of these instruments and their possible use for research purposes in the UFS School of Nursing should be considered. Three instruments are available:
  - The Simulation Design Scale is a 20-item instrument that is designed to evaluate the design features of simulations.
  - The Educational Practices Questionnaire is designed to measure whether the four educational practices (active learning, collaboration, and diverse ways of learning and high expectations) are present during simulation.
  - The Student Satisfaction and Self-Confidence in Learning instrument is designed to measure student satisfaction with simulation and determine self-confidence in learning (NLN, 2011).

- On-going research on the different aspects of implementing high fidelity simulation at the UFS School of Nursing is required. Since only the learning experience of the students was determined during this study, further research on the perspectives of the educators is required (Halstead, 2006:e7).

The researcher believes that high fidelity simulation as a learning strategy has seemingly endless possibilities for nursing education. This said the true test to determine improved competence of student nurses, taught by means of high fidelity simulation, lies within the feedback received from patients.

- The impact of simulation on placement performance should be confirmed (Baillie & Curzio, 2009:304). Further research in this area is required since

there is the danger that students will become skilful in dealing with the training technology (human patient simulator) rather than with real patients (Alinier, 2007:e246). Evaluating the impact of simulation-based training on actual patient outcomes is essential (Yaeger *et al.*, 2004:331).

- Further research on the topic of high fidelity simulation and its implementation in undergraduate nursing within the UFS School of Nursing might include topics such as the following:
  - Is there a difference in the skill acquisition of student's taught by means of high fidelity simulation versus other teaching strategies? (Halstead, 2006:e7).
  - Does the use of high fidelity simulation to teach clinical judgement facilitate the transfer of learning and skills to the clinical setting?
  - What nurse educator's competencies are required to implement high fidelity simulation effectively as a learning strategy?
  - Determine and describe the critical role of educators and preceptors with regard to simulation technology (Medley & Horne, 2005:34).

The participants identified feelings of fear and being unprepared for the simulation as aspects that require attention. These concerns need to be addressed and recommendations are made to this effect.

4.4.2 MANAGING THE EMOTIONS EXPERIENCED

Trying to deny the presence of emotions during learning is an unproductive exercise since emotions form an integral part of any educational activity (Schutz & Lanehart, 2002:68). Students react differently to arousal and its effect is influenced by student motivation, self-esteem and current emotional state. Educators should realise that it is not always possible to control the emotional reactions of students during learning (Alpay, 2002:4).

- Although this is true, careful planning and implementation of measures to manage the effect of emotions during learning should be executed. It is

possible to motivate some students through assessment-driven activities, for example tests and examinations, but this method might cause fear in other students. Internally driven motivation, such as sparking a genuine interest in the subject, is more effective and causes less arousal (Alpay, 2002:6).

- Simulation educators must be realistic in their expectations of students and their performance abilities and not create stress in students by telling them that they may not make mistakes.

When simulation sessions are video-recorded, students experience unsafe feelings that lead to increased anxiety. The high fidelity simulation sessions in this study had to be video-recorded, since the recording was played back to the students during the facilitated reflection session (Ganley & Linnard-Palmer, 2010:e6). Students become anxious because they feel exposed and are afraid that they will be embarrassed in front of their peers.

- In order to decrease its effect and lower anxiety, no extra observers should be allowed to watch during the simulation session as this creates student discomfort (Henneman & Cunningham, 2005:176).

- Where emotions such as fear and anxiety are verbalised during the facilitated reflection session, these should be defused. The students need to discuss its causes and effect of such feelings. The importance of having skilled educators to complete the facilitated reflection session cannot be stressed enough (McCaughey & Traynor, 2010:831). It is thus necessary to ensure that the educators at the UFS School of Nursing receive training in this area.

It is necessary to implement strategies to limit the negative effect of anxiety (Larew *et al.*, 2006:20).

- Such strategies include the orientation of students on the simulated learning environment and allowing students to ask questions. During the orientation, educators need to communicate to students that the simulation is not

implemented for assessment but is only used as a learning tool. They should constantly be reminded of this fact (Dubose, Sellinger-Karmel & Scoloveno, 2010:198; Horan, 2009:29).

- The educator usually knows the students. It might be necessary to adapt selection criteria for simulation scenarios and choose students based on their learning needs. It is suggested that the role of primary nurse is allocated to the academically stronger student (Henneman & Cunningham, 2005:176). This is to ensure compatibility of students within the group and to protect the introverted student from suffering trauma. Another possibility is to allow the students to choose their own roles within the team. The less confident student can then choose a minor role (Weller, 2004:33).

- The role allocation should be managed by the simulation coordinator after consulting with the nurse educators/preceptors of the specific year group. The students can be allowed to choose their own role, although this should be managed by the simulation coordinator since a student may choose the same role each time and it is important that all students are provided with the learning opportunity to act as group leader. The anxiety students experience will be decreased if they are allowed to choose their own role.

- Students enter the simulation with a heightened sense of awareness. As suggested by Seropian (2003:1698), students should be provided with time to relax before a crisis is introduced.

With the implementation of simulation as a student-directed learning strategy, differences in performance are expected. This is due to the fact that the inexperienced student takes longer to identify the applicable patient problems and progresses at a slower pace. The more competent student will progress at a faster pace and identify and manage more patient problems in the corresponding time. This element is identified as a disadvantage by Larew *et al.* (2006:20), but the researcher does not see it in a negative light as it is an essential aspect in meeting the needs of the students.

- It is important to keep to the allocated time and progress through the simulation as planned, but the planned time frame should be used as a guide. Anxiety of students can be reduced through allowing for flexibility regarding the preparation, delivery and facilitated reflection of the scenario. This will only be effective if there is constant observation and vigilance on the part of the educator. He/she has to pace cues/prompts based on the needs of the students (Ganley & Linnard-Palmer, 2010: e7; Garrett *et al.,* 2010:311).

- Repeated exposure and practice opportunities will diminish the fear that students feel when exposed to high fidelity simulation (Baxter *et al.*, 2009:864). It is essential to expose the Baccalaureate nursing students at the UFS School of Nursing to numerous high fidelity simulation practice experiences and these must commence in their first year of study.

The feeling of anxiety that the simulation experience creates in some students cannot be prevented, but it should be controlled. The above-mentioned recommendations might assist the educators in reaching this goal.

The preparation of students for high fidelity simulation is an important aspect that should receive attention as this was identified as one of the aspects with which the students were not satisfied.

4.4.3 PREPARING STUDENTS FOR HIGH FIDELITY SIMULATION

Students should be empowered to learn (Maree & Fraser, 2008: 196). In preparing students for the high fidelity simulation, an introduction to the strategy is necessary, followed by an illustration of how the video material is used during the facilitated reflection sessions.

- It is recommended that a video of a previously recorded simulation or an example from the internet be screened (Yaeger *et al.*, 2004:328).

- Even though the human patient simulator is designed to represent the features of a real patient, it differs from reality and students should know how abnormalities will be presented in the simulator. They need to touch and feel the simulator and a hands-on orientation at the bedside of the human patient simulator is indicated since they also have to familiarise themselves with the monitor attached to the simulator as well as the simulated environment (Rhodes & Curran, 2005:259; Wallin *et al.*, 2007:175).

- After acquainting themselves with the simulator, the students should be briefed on the simulation session. An explanation of what is expected and what help they can request from the educators forms an integral part of this (Alinier *et al.,* 2006:363).

The participants in this study indicated that their high fidelity simulation scenario roles had not been clearly allocated neither had they been well explained. This aspect needs improvement.

- It is recommended that the students who will be taking part in the scenario be provided with the outcome for the session, the patient information that will be used during the simulation scenario and their role allocation a day before the simulation. Jeffries (2008:72) suggests that the specific simulation role that is allocated should be within the scope of practice of the individual. A student nurse cannot act the role of physician or advanced nurse practitioner.

- A detailed, written explanation of their role and its expectations are required. Seeing that simulation is used as a learning strategy at the UFS School of Nursing, this practice, as suggested by numerous authors, is not contra-indicated (Seropian, 2003:1698; Henneman & Cunningham, 2005:176; Reilly & Spratt, 2007:545; Horan, 2009:29; Bergström, Dahlström, Henriqson & Dekker, 2010:223).

Recommendations as how the experience of the students on simulation can be improved through the provision of support are offered in the following paragraphs.

4.4.4 PROVIDING SUPPORT

The role of the educators during the simulation scenario is to provide support, facilitate and guide student activities and monitor the appropriateness of interventions (Rhodes & Curran, 2005:259). Guidance of students during the simulation is aimed at enabling them to reach the set objective (Brannan *et al.*, 2008:498). This is a labour-intensive practice that requires constant educator observation. Although Larew *et al.* (2006:20) have identified this aspect a limitation of simulation, the current practice at the UFS School of Nursing is to have an educator and the high fidelity simulation coordinator present to monitor the actions of the students while taking part in the scenario. Student actions are observed through direct video streaming and it is possible to intervene if required.

- Students who are exposed to high fidelity simulation for the first time cannot be left alone. It is necessary to assist them in making correct and sound decisions. Students should be allowed to stop their actions during the simulation and seek assistance from peers or educators (Rauen, 2004:49; Brannan *et al.*, 2008:498).

- It is also possible to allocate a nurse educator to the students to accompany them while taking part in the high fidelity simulation scenario. This educator can stop the scenario and ask the participants to identify the reason for the interruption, allowing them to rethink their actions. This should be done when the team is performing poorly and does not recognise the patient problem (Wallin *et al.*, 2007:176).

- Where students get stuck, probes should be used and educator support provided (Weller, 2004:33). Educators should be sensitive towards the need for and the timing of prompts. Prompts can be provided in a verbal, visual or scripted format (Larew *et al.*, 2006:17, 18; Blum *et al*, 2010:5).

- It is possible to design prompts so that they progress from vague to specific. Novice student nurses often require more specific prompts, as they are

unable to recognise the subtle changes in the simulation patient's condition. The clinical signs and symptoms as it occurs in the human patient simulator should be deliberately made easy to recognise (Wallin *et al.*, 2007:175).

As suggested by Kneebone (2005:552), the provided support can fade once the students reach satisfactory performance levels.

4.4.5 ENHANCING COMPETENCE

'Mastery learning' and 'deliberate practice' are two concepts that should be mentioned if the need for repeated simulation exposure is discussed. Mastery learning is a rigorous approach that is applied during competency-based education. The purpose of mastery learning is to ensure that all learners accomplish all educational objectives with little or no variation. The amount of time needed for mastery level differs from learner to learner (McGaghie *et al.*, 2010:57).

Knowledge becomes an integrated part of a nurse's make-up when she/he is exposed to learning experiences and needs to process information multiple times (Gates *et al.*, 2012:14). Integrated simulation by means of the high fidelity simulator and repeated practise will enable the students at the UFS School of Nursing to effectively develop their clinical judgement abilities and their competencies. Simulation should not be presented for the sake of repetition only.

Repetitive practice prevents skills from declining, but deliberate practice allows for the improvement of skills by constantly setting new goals and higher performance standards. Ericsson (2008:991) argues that specific conditions are required for deliberate practice to occur. Deliberate practice has a specific focus within a well-defined area (specific goal), supported by detailed, immediate feedback and gradual improvement of skills (through practice opportunities).

- Where mastery learning is the aim of simulation practice, the implication is that simulation scenarios should be repeated until all the students in the group have reached an acceptable level of functioning. This has implications for the

programme design, implementation and resources necessary for simulation because it is very time-consuming.

- Where mistakes that affect patient safety are made students need to learn from their mistakes and repeat the simulation until it is completed successfully (Henneman & Cunningham, 2005:176). The hypovolemic shock scenario was repeated at a time that suited the group of students who took part the first time.   This practice session occurred after data gathering had been completed.   Repeating the scenario allowed students to appreciate the learning opportunities embedded in the scenario and to reach the expected outcomes (Kardong-Edgren *et al.*, 2008:3).

Simulation experiences cannot replace the knowledge and skills that a student gains in the clinical placement areas but can be used to supplement these (Nehring, 2008:116). In the most recent regulation (R. 174) published by the South African Nursing Council in March 2013, the number of hours that may be spent in simulation are not specified, however, it is stated that these conditions will still be determined and published in the Gazette at the discretion of the Council (SANC, 2013:5). In the United Kingdom, 300 of the 2 300 curricular placement hours can be used for simulation practice (Baillie & Curzio, 2009:304).

- Current and future research on simulation, including high fidelity simulation, can guide the regulatory body in deciding on how much time a student may spend in simulation (Nehring, 2008:116).   The establishment of formal guidelines regarding the number of hours that may be spent in simulation could be established at the UFS School of Nursing, once these regulations are finalised.

- In terms of assessment, the South African Nursing Council specifies that 60% of the formative clinical assessment activities should be performed on real patients (SANC, 2013:6). This has implications for the implementation of high fidelity simulation as a learning strategy, since it is possible to prepare students for these real patient contact experiences in simulation.

- The size of each group of students that will be taking part in the scenario is determined by the simulation. Optimised group size allows for the attainment of learning outcomes and maximum student participation. A maximum number of six students per group are suggested (Horn & Carter, 2007:66). Exposing all the students in a year group equally to the high fidelity simulation becomes a challenge. Even though the complete class are exposed to the simulation through watching the video-recording, every student does not have the opportunity to take part in the simulation experience.

- It is thus advised that the needs of the students should guide decisions regarding the availability and presentation of simulation experiences. Simulators should be available at times that fit the schedule of the students and they should be located in places that are physically convenient (Issenberg & Scalese, 2007:75).

- The human patient simulators as well as the low and moderate fidelity equipment are kept in a building on campus. The students have access to these when they are on campus for classes. Access to the low fidelity manikins and simulation rooms are managed on an appointment basis. A similar system could be considered for access to the moderate and high fidelity simulators. The availability of the high fidelity simulation coordinator can be included as part of this system.

The students mentioned that they were able to integrate their nursing theory and practice through the facilitated reflection sessions that were held. Since most of the learning occurs during these sessions, it is important that they are managed well. Recommendations on how these sessions should be arranged are made.

4.4.6 IMPROVING THE FACILITATED REFLECTION (DEBRIEFING) SESSIONS

Some of the aspects that should be considered when the facilitated reflection sessions are planned are the environment, the time that is spent on the discussion and the characteristics of the educators that facilitate the session.

Recommendations concerning these aspects, including some frameworks available for facilitated reflection, are presented in the following paragraphs.

- The environment in which facilitated reflection occurs should be quiet and away from the simulator. The students need to feel that it is a safe environment in which to discuss their thoughts, feelings and mistakes without fear of ridicule or criticism. A circular seating plan is suggested, as it creates a strong sense of unity. It also suggests that the educator is on an equal footing with the students, rather than being an evaluator. Furthermore, the complete group should be able to watch the playback of the video-recording (Johnson-Russell & Bailey, 2010:375).

- The facilitated reflection sessions in this study were held in the SPACE where the simulation was conducted. This practice has changed since a designated debriefing room was created in the authentic simulation areas that are now available at the UFS School of Nursing. This venue is designed to allow a circular seating pattern and is furnished with the necessary audio-visual equipment and software that makes the replay of the scenario possible.

- Facilitated reflection is a time for shared learning and discovery, not evaluation. The stage is set for discussion through reminding the students at the beginning of the session that the facilitated reflection is not being graded or evaluated. They need to be reminded that the purpose is to enhance learning and that the questions asked are intended to stimulate their thinking (Johnson-Russell & Bailey, 2010:371, 381).

- The educators responsible for the discussion should be sensitive to the atmosphere that is present when the students enter the room and carefully plan the manner in which the questions are asked. It is recommended that the students be reminded at the beginning of the session that there are no right or wrong answers.

- The emotions evoked during and by the simulation, as pointed out earlier, can include excitement and anxiety. Students should be allowed to express their feelings before the educator moves on to the cognitive phase of the facilitated reflection. Once feelings are openly expressed, the educator can lead the discussion and allow students to understand the relationship between the simulation events and the emotions they created (Johnson-Russell & Bailey, 2010:371; 382).

- The amount of time allocated for facilitated reflection should correlate with the number of students, the complexity of the scenario and the number of outcomes to be reached, as well as the cognitive level of the students. Inexperienced students will need more time to debrief as they will take longer to understand the outcomes of the simulation.

- As suggested by Johnson-Russell and Bailey (2010:375), no less than 30 minutes should be scheduled for facilitated reflection, but an hour should preferably be available. Facilitated reflection time is usually two to four times longer than the high fidelity simulation. This is an important aspect that should be addressed during the planning phase of the simulation scenario. The facilitated reflection session may not be neglected and sufficient time should be designated for this session.

- The educators responsible for the facilitated reflection should agree on the amount of time that they will spend on each outcome, what questions they will ask and what methods they will use. This will ensure continuity and prevent confusion (Johnson-Russell & Bailey, 2010:376).

- The educator's role during facilitated reflection is that of facilitator. The educator needs to act as catalyst and ask questions, stimulate thinking and lead students into a deeper analysis. The amount of educator involvement is determined by the initiative taken by the students. They may discuss the key elements of the simulation without much assistance, but some groups may show little initiative and will need more involvement. Educators sometimes

tend to take over and lead the discussion. As long as the students' discussion is relevant and they are meeting the objectives, educator support is not indicated (Johnson-Russell & Bailey, 2010:378).

- A student-centred approach is suggested and this implies that students should be allowed to ask and answer each other's questions. For that reason, references and resources, for example prescribed books, should be available and students should be allowed to discover the answers they need (Johnson-Russell & Bailey, 2010:370, 372, 373).

- At least two educators should be present during the facilitated reflection. This adds to the richness of the experience as observations and perceptions differ and both educators can contribute to the discussion (Johnson-Russell & Bailey, 2010:376).

- The practice currently in place at the UFS School of Nursing is that the high fidelity simulation coordinator takes the lead during the facilitated reflection. She is present during the simulation as she is responsible to operate the human patient simulator during the scenario. Depending on the sex of the simulated patient, she might also be the voice of the patient. These are complex actions to focus on. As the other educators at the UFS School of Nursing develop and become comfortable with facilitated reflection, it is suggested that the role of lead reflector is alternated between them.

- It is important, through feedback, to correct the mistakes that the students have made. They should not only remember the incorrect actions taken, but must be presented with a framework of what the correct actions should be. During the facilitated reflection session, the students are asked to reflect on what was done well and not so well. Suggestions on how they can improve nursing care and their decision-making abilities should be provided (Gates *et al.*, 2012:11).

Different frameworks for effective debriefing are discussed in the literature. At the UFS School of Nursing, the format of the facilitated reflection sessions includes a discussion of the outcomes of the simulation, nursing actions that were performed successfully and areas that need improvement. This framework is validated by Horan (2009:30). In his framework, a discussion of the patient problem is followed by characteristics that support this problem. The interventions that were performed well are highlighted before the interventions that were omitted or the needs improvement is discussed. Following this sequence allows students to connect the nursing environment to the simulated patient and develop their critical thinking. A focus on specific aspects of the scenario that required critical thinking and clinical judgement is also included (Horan, 2009:29).

- With objective focused debriefing, as suggested by Johnson-Russell and Bailey (2010:372), the scenario outcomes are used to guide the reflection. The outcomes can be stated at the beginning of the facilitated reflection or mentioned as the events are discussed. Questions that will encourage the students to discuss how the objectives were met can be asked since this allows for improved learning. The reflective thought process as encouraged during facilitated reflection should focus on the pathophysiology of the condition, the nursing interventions applied and the reaction of the simulated patient towards these. Individual and team performance should be discussed (Johnson-Russell & Bailey, 2010:373). This reflection method could be implemented successfully at the UFS School of Nursing and further discussion and research in this regard is recommended.

- To ensure a deeper thinking process, open-ended questions should be asked during the facilitated reflection as these stimulate group interaction and individual reflection and maximise learning. Students need to look at what happened to the patient, how it happened, why it happened as well as what they did that influenced the outcomes. The open-ended questions asked should assist in evaluating the overall experience and its relationship to the real world. They need to make the connection between what happened

during the scenario and how this will influence real patient care (Johnson-Russell & Bailey, 2010:378).

- For the hypovolemic shock scenario, poor theory and practice integration occurred and the learning opportunity was lost. The educators at the UFS School of Nursing responsible for facilitated reflection should apply the principles for effective facilitated reflection consistently and be able to adjust if problems occur.

- Facilitated reflection in a written format can follow after the verbal reflection session has occurred. The added time and opportunity to express their thoughts on paper enhances learning for many. Students can, for example, be asked to list five things that they had learnt during the simulation. Further learning is possible if written comments on these questions are made by the educators and the questionnaires returned to the students (Johnson-Russell & Bailey, 2010:377).

- A method of written facilitated reflection that could be implemented at the UFS School of Nursing is that of internet-based bulletins or chat rooms (Johnson-Russell & Bailey, 2010:377). With Blackboard learn interactive technology, it is possible to discuss relevant matters informally ('create a chat') with all the students and educators of the specific year group since they are listed as users. A specific time can be scheduled for the chat or an informal discussion can follow on the formal facilitated reflection that occurred after the simulation.

Considering the extensive discussion above and the recommendations made, it can be concluded that the facilitated reflection (debriefing) session is one the most important aspects to be considered when the effectiveness of the high fidelity simulation at the UFS School of Nursing is discussed.

As discussed in Chapter 3, the students in this study felt that their self-confidence levels had been increased after being exposed to high fidelity simulation.

Recommendations on how this aspect can be further enhanced are presented in the following section.

4.4.7 ENHANCING CONFIDENCE

The confidence levels of students are increased if they have an outcome to reach and a problem to solve. A direct relationship between the level of confidence experienced and the design factors of the high fidelity simulation session (Smith & Roehrs, 2009:77; Brannan *et al.*, 2008:499).

- Clear objectives are available for each simulation session at the UFS School of Nursing and the level of complexity provides students with the opportunity to solve a specific patient problem. These practices should be continued as self-confidence is enhanced.

- Success breeds confidence. Students should not be set up to fail by setting unrealistic outcomes (Lundberg, 2008:87). The difficulty level of the simulation can be increased as they progress, but completing the first simulation successfully is important in developing their confidence.

- Confidence is specific to the context and the case that was presented during the high fidelity simulation. The students in a study by McCaughey and Traynor (2010:831) felt that they would be better prepared to manage the patient if they were presented with a similar condition as practised. This is due to the fact that a correlation exists between the attainment of the objective and the development of confidence (Smith & Roehrs, 2009:76, 77). The students in this study commented that they felt confident to manage patients that present with the conditions that were practised during the high fidelity simulation. This does not necessarily imply that confidence is transferred to all clinical situations. Further research in this area is required.

The participants in this study identified the positive value that high fidelity simulation added to their learning. Recommendations on how to enhance this impact have been offered in this chapter.

4.5 CONCLUSION

This concludes the discussion on the recommendations made based on the results obtained in this study as presented in Chapter 3.

The integration of simulation into the undergraduate curriculum should be pursued vigorously since the enhancement of critical thinking and clinical judgement by means of integrated high fidelity simulation permits students to render better care to their patients. The students should be exposed to simulation throughout their studies with this contact commencing in their first year. By commencing high fidelity simulation exposure early, the students will be allowed to practise their abilities repeatedly and increase the depth of their knowledge and application of skills.

Proper orientation of students before the scenario commences is essential and support by means of carefully planned prompts should be provided during the simulation.

Careful planning in terms of the time available as well as the environment in which the facilitated reflection sessions are held is indicated. It is important to properly defuse the emotions that were experienced during the facilitated reflection session.

The knowledge that the students obtain becomes embedded within their framework and although high fidelity simulation is a time- and work intensive practice, the benefits outweighs the limitations. The positive impact that the high fidelity simulation had on the students and its ability to better prepare students for their practicum placements is confirmed by the following quote by one of the focus group interview participants:

It was an awesome experience. We really learnt a lot from it: it helped to better equip us with the necessary skills and knowledge we need when confronted with the similar situation in the hospital setting.

ADDENDUM A THEME AND SIMULATION DEVELOPMENT TEMPLATE

SIMULATION DEVELOPMENT TOOL

Theme: Acute coronary syndrome with an abnormal ECG

Programme: General Nursing Science

Module Name: NUR316

Coordinator: Mrs XXXX (decide on patient's identification)

Estimated time:

Simulation: 30 min

Debriefing: 90 min

AUTHENTIC PROBLEMS

Admission in unit / stable

Chest pain & dysrhtymia

Arrest , CPR & defib

Successful/ unsuccessful
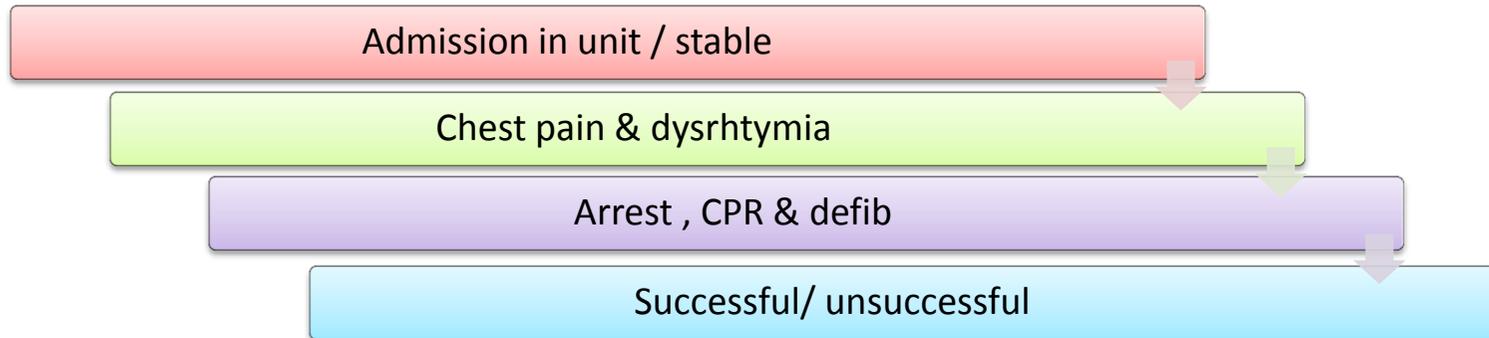
Outcomes for this simulation

1. The nurse should be able to care comprehensively for a patient with chest pain and an abnormal ECG.

PLANNING

	Male patient, Mr _____ (name) on ICU bed, transferred from ER
	ER nurse hands over
	Patient not receiving any oxygen and does not have ECG stickers on
Context/situation	IV inserted
	Semi-Fowlers position
	No urinary catheter insitu
	Vaculiter under pillow?
	Interpretation of ECG
	Pathophysiology of myocardial infarction
Prerequisite knowledge	Treatment of myocardial infarction
	Prevention and treatment of complications
	Patient/family information/education
	Airway insertion
	Mask ventilation with ambubag
Pre-requisite practical skills	Effective CPR and defibrillation
	Safe administration of IV drugs
Essential references	BLS Algorithm

EQUIPMENT & STOCK PREPARATION

EQUIPMENT		CONSUMABLES		DRUGS	
NO	**ITEM**	**NO**	**ITEM**	**NO**	**NAME**
1	Ambubag	3	ECG stickers	3	Morphine
1	Oxygen mask with connections	1	IV insertion, cannula, plaster, administration set, Saline/Dextrose	2	Phenergan
1	Oxygen cylinder			2	Dormicum
1	Defibrillator			5	Emergency drugs on emergency trolley
1	Emergency trolley			1	Potassium Chloride
1	Treatment trolley				
4	Airways, different sizes				
1	ECG cable				

Documents needed	1. Outcomes for simulation
	2. Check lists and ER file
	3. ER record care: BP160/105 mmHg, Pulse rate 120/min, Temp 36°C, Breathing rate 24/min
	4. Pain intensity: 8/10
	5. MONA administered
	6. Blood results (U & E, FBC, CK, CKMB, Trop T)
	7. Chest X-ray (incorrectly identified)
	8. ECG strip on arrival in ER – 12 lead ECG
	9. Stable when transferred to ICU
	10. Vertical strands printed.
	11. Drug register – Morphine and Potassium Chloride

MOULAGE

Description	Location
Insert IV line	Left arm
Pillow under head	Head
Semi fowlers position	
Perspiration on face	Face
Male patient	Clothes?
Other:	ECG on monitor. Elevated ST segment

PREPARATION OF STUDENTS AND HELPERS

NO	ROLES OF IMPIES & STUDENTS	INSTRUCTIONS
1	Daughter/son present	Very concerned and demanding
1	RN hands over	
1	IT to stream to lecture room	
1	Student	Scribe at flip chart
		Students to decide who will record and who will be the coordinator
4	Students	Providing care
		Communication allowed
		Lecturers to decide who
1	?RN	Phone doctor – telephone list

Instructions to participating students regarding the outcome for the simulation:

- Explain the purpose of simulation: not just to practise skills
- Have a video
- Have a discussion on the purpose of simulation
- Check list

Students should receive instructions in writing

Activity for non-participating students while simulation scenario is presented:

- Students to evaluate the footage for vertical strands

INITIAL CONDITION OF THE PATIENT

Pulse: 110 beats/min

Blood pressure: 150/90 mmHg

Respiration: 24 breaths/min

IMPLEMENTATION

Facilitator's key notes

1. Remember pre-check
2. Morphine, Oxygen, Nitrates, Aspirin
3. Content of algorithm
4. Sats probe not on the same arm as BP cuff
5. Situation, Background, Assessment findings, Recommendations

CLINICAL PROGRESSION OF PATIENT	PATIENT ASSESSMENT FINDINGS	NOTICING AND CLINICAL REASONING	PROVIDE INFORMATION/ LAB RESULTS IF REQUIRED	PROMPTS, QUESTIONS AND TEACHING POINTS
Authentic problem I	Vital signs: Pulse 102/min BP 143/92 mmHg SaO2 89% Breathing rate: 18/min Temp: 36.2°C Chest pain: 2/10	1. Welcome 2. Introduction 3. Patient identification 4. Incorrect X-ray 5. Listen to patient report 6. Connect to monitor and monitor vital signs 7. Notice tachycardia and compensation – monitor 8. Notice low SaO2 and low CO2 and poor perfusion. Connect Sats monitor 9. Check patency of IV- emergency drug route 10. Assess pain – indication of ischemia 11. Notice low Potassium – administer pot chlor 12. Share relevant information with family member present	ECG with elevated ST segment U & E, K+ 3.2 mmol/L (low) Other normal CK 586 mg/L (high) CKMB 25.24 (high) Trop T 2.46 (high) FBC normal	Did you notice? Vital signs Did you assess his pain level? Did you introduce everybody? Did you orientate/share information? What was the effect of the hypokalaemia?

Sim coordinator notes:

CLINICAL PROGRESSION OF PATIENT	PATIENT ASSESSMENT FINDINGS	NOTICING AND CLINICAL REASONING	PROVIDE INFORMATION/ LAB RESULTS IF REQUIRED	PROMPTS, QUESTIONS AND TEACHING POINTS
Authentic problem II	Acute pain 8/10 Anxious and restless Vital signs: Pulse 122/min BP 163/102 mmHg SaO2 93% Breathing: 24/min Temp: 36.2°C Sinus tachycardia to premature ventricular extra-systole	1. Notice acute pain – extension of myocardial infarction. Repeat ECG. Administer Morphine 2. Notice abnormal vital signs 3. Notice PVE – may be due to hypokalaemia, ventricular irritation, lignocaine will reduce irritation	12 lead ECG – ST segment elevated. PVE present similar to monitor.	How should the repeat ECG be identified? Should the repeat ECG be done? What is the cause of the PVE? How is PVE treated?

Sim coordinator notes:

CLINICAL PROGRESSION OF PATIENT	PATIENT ASSESSMENT FINDINGS	NOTICING AND CLINICAL REASONING	PROVIDE INFORMATION/ LAB RESULTS IF REQUIRED	PROMPTS, QUESTIONS AND TEACHING POINTS
Authentic problem III	R on T wave Ventricular fibrillation No breathing Absent pulse	1. Notice VF – heart not contracting, defibrillation required 2. Lower bed 3. Insert CPR back board 4. Hazards, Hallo, Help 5. Open airway and bag 100% oxygen 6. Assess carotid pulse 7. Compression 30:2 8. Defibrillation 200 joules 9. Compression 5 cycles 10. Remove oxygen when shocking 11. 1st drug Adrenaline (3-5 min) 12. Open chest and apply gel 13. Dry environment 14. "All clear" 15. Accurate documentation of procedure 16. SBAR communication with doctor		Who is the leader? Task allocation What is the name of the 1st drug that should be administered? Did you follow the algorithm correctly? Did you ensure the safety of the patient and your colleagues? What will you report to the doctor?

Sim coordinator notes:

GUIDED REFLECTION

Allocate vertical strands to student group

Student responsible (team leader)

1. Safety and identification

- Identification
- Infection control – standard/universal and aseptic techniques.
- Bed rails
- Suction
- Oxygen
- Bedside bell
- Verbal and nonverbal patient communication – appropriate/introduction
- Communicate effectively with all team members/delegation of tasks
- Read back to clarify orders
- Ask for assistance if required

2. Communication

- Polite and caring/orientate and inform patient and family
- Assertive/leadership
- Provide patient and family information/keep informed on what is happening
- Culture sensitivity
- Notice signs of change in condition (Assessment, history, physical assessment, management, diagnostic and lab results – complete according to condition)

3. Nursing care/clinical judgement process

- Exhibit clinical judgement/prioritise care
- Take appropriate action based on interpretation
- ? Failure to rescue

4. Professional behaviour

- Effective reflection
- Comprehensive care
- Maintain patient rights
- Introduce self
- Ensure privacy
- Adhere to ethical rules, legal issues, professional responsibilities
- Record keeping
- Schedule 6 & 7 medication management

NOTES FOR REFLECTION

Essential knowledge

Essential skills/corrective actions

Compiled by: Mrs XXXX

Date compiled: 2011

Revised by: Mrs XXXX

Date revised: 2012

NOTES

Teaching needs of students identified in the scenario that should be addressed in class

Learning of educators

Learning of simulation staff

SIMULATION DEVELOPMENT TOOL

Theme: Peri-operative care – Hypovolemic Shock

Programme	General Nursing Science
Module name	NUR316
Coordinator	Mrs XXXXX
Estimated time	Simulation 30 minutes Debriefing 90 minutes

AUTHENTIC PROBLEMS

Brief summary	A 34-year-old healthy man is donating a kidney to his brother. The patient must be prepared for the operation. The patient has developed some complications in theatre. He becomes hypovolemic. Pain medication, blood and other fluids should be administered.
Outcomes for this simulation	2. The nurse should be able to render comprehensive care to a patient receiving surgery and becomes hypovolemic.

```
┌─────────────────────────────────────────────────┐
│        Pre-op preparation of patient and          │
│                 handing over                      │
└─────────────────────────────────────────────────┘
          ┌───────────────────────────────────────────────┐
          │  Receive back from theatre, pressure sore, burn, │
          │           absent pulse in left leg               │
          └───────────────────────────────────────────────┘
               ┌─────────────────────────────────────────────┐
               │        Severe pain nausea and vomiting        │
               └─────────────────────────────────────────────┘
                    ┌─────────────────────────────────────────┐
                    │                Hypovolemia                │
                    └─────────────────────────────────────────┘
```
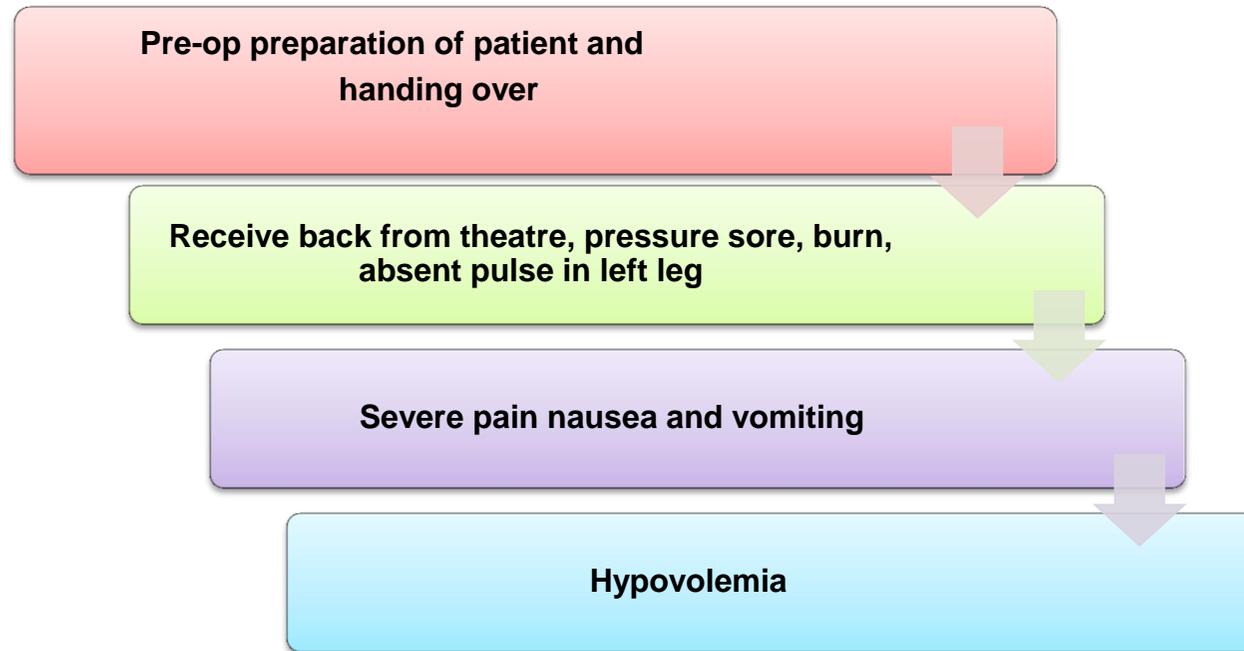
PLANNING

- Patient in ward in bed to and from theatre

- Central line with Ringers lactate

- IV Pethidine prescription

- Family present all the time

Context/situation

- Skin clammy and pale after surgery

- Urinary catheter with dark urine

- Breathing on room air

- Drug cupboard

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Outcomes: Clinical judgement appropriate for study year	• Always ABC • Prepare patient for theatre • Educate family and patient • Recognise complications of surgery (pressure area, absent pulse, bloody dressing) • Manage hypovolemic shock • Manage pain • Prevent aspiration
Prerequisite knowledge	• Preparation of patient for theatre • Hypovolemic shock • Complications of surgery • Pain management
Pre-requisite practical skills	• Measuring of central venous pressure • Management of infusions and pumps • Blood warming • Physical assessment skills • Monitoring and interpretation of vital signs • Obtaining telephonic prescriptions • Measuring the HB of a patient
Essential references	Phipps

EQUIPMENT & STOCK PREPARATION

EQUIPMENT		CONSUMABLES		DRUGS	
NO	**ITEM**	**NO**	**ITEM**	**NO**	**NAME**
2	Infusion pumps	2	Central line, IV needle, connector	1	Pethidine
1	Sphygmomanometer	1	Nasogastric bag	1	Presidex
1	Stethoscope	1	Ringers lactate	1	Maxalon
1	Oxygen mask and tubing	1	Maintelyte		
1	Oxygen cylinder	1	Voluven		
1	HB meter and test strips	1	Blood bags with etiquettes		
	Theatre clothes and green drapes	10	Alcohol swabs		
1	Trolley	1	Urine catheter and bag with 200ml urine		
1	Drip stand	1	Sharps bin		
			Linen savers		
			Identification band		
			Bed linen for theatre pack		

Documents needed

1. Patient file with:
   a. History (no conditions)
   b. Two theatre forms (one partially completed)
   c. Observation chart
   d. Prescription chart
   e. Telephonic prescription document
   f. Intake and output chart
   g. Patient progress report
2. Drug register
3. Blood administration book

MOULAGE

- Wound on the side of the patient
- Blood on bandage
- Blood in bed
- Clammy skin – post-operative
- Pressure area on ankle and burn area on opposite side of operation
- Dark urine
- Food plate on over bed trolley

PREPARATION OF STUDENTS AND HELPERS

NO	ROLES OF HELPERS & STUDENTS	INSTRUCTIONS
5	Students	Must determine their own roles: • doctor • Wife • Blood donor • Professional nurse
	Preparation	The patient has been admitted to the hospital as he will be donating a kidney for his brother. He should be prepared for the theatre and received in the ward on his return. The doctor. has not obtained consent for the surgery from the patient. The patient is very healthy and is an athlete. His wife is with him and she is somewhat concerned about him because she does not agree with the organ donation. You must comprehensively care for this patient.
		IMPLEMENTATION
	Facilitator's key notes	1. Remember pre-check 2. XXX to assist students in the role of professional nurse 3. Telephone calls 4. Monitoring sound off 5. Hide urine bag in bed

CLINICAL PROGRESSION OF PATIENT	PATIENT ASSESSMENT FINDINGS	MINIMAL BEHAVIOUR EXPECTED	PROVIDE INFORMATION/ LAB RESULTS IF REQUIRED	PROMPTS, QUESTIONS AND TEACHING POINTS
Authentic problem I **pre-operative**	Pulse 64 beats/min BP 150/80 mmHg Breathing 20/min SaO2 98%	1. Introduce self 2. Identify patient 3. Comfort patient and family 4. Obtain consent for operation 5. Hand patient over to theatre personnel	None	• Why is the patient hypertensive? • What is the patient's highest priority need?
Sim coordinator notes:				
Authentic problem II **Post-operative**	Pulse 105 beats/min BP 110/90 mmHg Breathing 27/min SaO2 92%	6. Politely ask family to leave the room 7. Assess vital signs and CVP 8. Physical assessment: notice burn and pressure area and absent pulse 9. Administer oxygen 10. Notice scanty urine output 11. Finger sample – Hb 12. Phone doctor - SBAR communication 13. Pain management – patient comfort 14. Obtain telephonic prescription 15. Keep family informed	Hb 6.3 g/dL	• What did you notice regarding the patient's vital signs? • What is the cause? • What is your opinion of his urinary output? • How effective was your communication? • What did you notice regarding the patient's physical condition?

- How should the patient's pain be managed during this hypovolemic stage?

Sim coordinator notes:

Authentic problem III	Pulse 130 beats/min	17. Obtain doctor's prescription	None
Severe pain and nausea	BP 80/55 mmHg	18. Explain to wife why the patient has to be NPO	
	Breathing 32/min	19. Administration of pain medication	
Patient is restless	SaO2 89%	20. Phone doctor if response is not satisfactory – to return to theatre	
	Wife wants patient to eat	21. Prepare for theatre	

Sim coordinator notes:

Authentic problem IV	Pulse 135 beats/min	1. Fluid therapy
	BP 86/60 mmHg	2. Administration of packed blood cells
	Breathing 32/min	3. Ensure safety – bedrails in upright position
	SaO2 89%	

Sim coordinator notes:

GUIDED REFLECTION

Incorporation of vertical strands

Pre-operative:

- Identification
- Patient received pre-medication (bedsides to be lifted)
- Pre-operative assessment of patient

1. **Patient safety**

Post-operative:

- Assessment of vital signs and wound area for bleeding
- Bedsides
- Do not offer food – aspiration
- Vital signs during administration of blood

2. **Identification**

- Pre- and post-operatively

3. **Infection control**

- Universal precautions
- Hand hygiene

4. **Communication**

- Assurance of wife and patient before and after operation
- Provide sufficient information and support

Correct administration of:

5. **Legal/ethical issues**

- Blood products
- Medication
- Scheduled drugs

	• Record keeping
	• Informed consent
	• Preventative care: pre-op preparation and education
	• Hypovolemic shock management through the administration of fluid
	• Curative:
	○ Maintaining circulation
	○ Perfusion and output
6. Comprehensive nursing care	○ Loss of consciousness
	• Manage:
	○ Hypovolemic shock
	○ Pain
	○ Electrolytes
	○ Anaemia
	• Advocacy
7. Exhibit transformational leadership characteristics	• Manage severe pain
	• Manage hypovolemic shock

NOTES FOR REFLECTION

	• Preparation of patient for theatre
	• Hypovolemic shock
Essential knowledge	• Complications of surgery
	• Pain management

Essential skills/corrective actions	• Measure CVP
	• Management of infusions
	• Warming of blood
	• Physical assessment skills
	• Monitoring and interpretation of vital data
	• Obtaining telephonic prescriptions
	• Hb meter
Clinical judgement	• Always ABC (airway, breathing and circulation)
	• Prepare patient for theatre
	• Educate the family of the patient
	• Recognise complications (pressure area, burn, absent pulse, bloody dressing)
	• Manage hypovolemic state
	• Manage pain
	• Prevent aspiration

Compiled by: **Mrs XXXX**

Date compiled: **2011**

NOTES FOR IMPROVEMENT OF THE SCENARIO

ADDENDUM B MODULE EVALUATION QUESTIONNAIRE

Survey Statistics: B3 evaluation of module first semester

The statistics are calculated based only on the attempts being used in the grading option (Last attempt, First attempt, Lowest Score, Highest Score or Average of Scores). If Average of Scores is the grading option, then all attempts are included in the statistics.

Name   B3 evaluation of module first semester

Attempts   32 (Total of 35 attempts for this assessment)

Question 1: Opinion Scale/Likert

- The quality of the module guide was satisfactory.
- Die kwaliteit van die module-handleiding was bevredigend.

Strongly Agree	31.25%
Agree	53.125%
Neither Agree nor Disagree	6.25%
Disagree	3.125%
Strongly Disagree	0%
Not applicable	0%
Unanswered	6.25%

Question 2: Opinion Scale/Likert

- The module guide guided me towards achieving my goals and the direction was clear.
- Die studie-gids het my gerig om my doelwitte te bereik en die aanduidings was duidelik.

Strongly Agree	31.25%
Agree	56.25%
Neither Agree nor Disagree	3.125%
Disagree	3.125%
Strongly Disagree	0%
Not applicable	0%
Unanswered	6.25%

Question 3: Opinion Scale/Likert

- A variety of teaching methods was used to present the content in class, e.g. group work and lecturing.
- 'n Verskeidenheid van onderrig-metodes is gebruik tydens die aanbieding van inhoud, bv. groep-werk en lesings.

Strongly Agree	59.375%
Agree	37.5%
Neither Agree nor Disagree	3.125%
Disagree	0%
Strongly Disagree	0%
Not applicable	0%
Unanswered	0%

Question 4: Short Answer

If you agreed that a variety of teaching methods was used, please indicate which methods you enjoyed the most.

Indien jy saamgestem het dat 'n verskeidenheid van onderrig metodes gebruik is, dui asb aan by watter metodes jy die meeste baat gevind het.

Unanswered Responses

0

Given Answers (Verbatim)

- Simulasie
- We got divided into different groups. This really helped me a lot because i rediscovered my strengths and weaknesses. These group activities were simply awesome.
- Lecturing with visual aids and work book activities.
- I really enjoyed when the lectures were presented on the PowerPoint presentation as slides, the CDs that were made for us are really helpful and helped us to have a better understanding.
- Die simulasie sessies was lekker en die groep opsommings PowerPoint presentations
- The simulation is the most I enjoyed.
- I enjoyed practical examples of the work we did as well as problem-solving with case studies. Visual Aids were also helpful and mad the work easier to remember.
- The simulation.
- The team working method because it was were i could share and get the ideas from other students and i could get help from other if i struggled with anything
- I enjoyed the group work the most and the simulation a lot cause it made me understand the theory much better.
- The group works were stimulating, it gave us time to go and do a bit of research.
- The simulations were also very stimulating.
- The use of the mind maps was creative and it helped me to understand the information better.

- Simulasie het baie gehelp en was lekker, maar ek hou nie van groepswerk nie.
- The simulation was awesome! Working in our groups and discussing the relevant topic was really informative and interesting seen others point of view.
- As spesifieke uitkomstes gegee word waarvolgens ek geevalueer kan word en natuurlik simulasies.

Question 5: Short Answer

- Please write any positive experiences you had with regard to the high fidelity simulation sessions held.
- Skryf enige positiewe ervarings neer wat jy tydens die hoëgetrouheidsimulasie sessies beleef het.

Unanswered Responses

2

Given Answers (Verbatim)

- Het my gewys wat ek nog nie ken nie. Meer selfversekerd gemaak.
- That was an interesting experience i ever had, one thing i like about the simulation is that it gives you the experience of being in the real situation, what you need to do, and it stimulates your critical thinking abilities.
- Assisted me understand content of the module better
- The simulation was good. It gives one the chance to experience the real situation that happens in real situations. It guides students and believe me, you will never forget what happened that day in the simulation.
- Leer my om vinnig te dink in 'n stres situasie.
- It gives us a clear reality of the real practice. The confidence builds up because we work with kind of real situations, so it really helps to know how to organise you members in the unit and help the patient.
- Gave a feel of the real setting and areas that need improvement and confidence
- It was an awesome experience. We really learnt a lot from it: it helped to better equip us with the necessary skills and knowledge we need when confronted with the similar situation in the hospital setting. It also helped me in a sense that it gave me

confidence to act part of the health care team, be able to help where I could. The feedback we received after each simulation was beneficial to us because we learnt from our mistakes and now know how to deal better and effectively in that situation.

- The simulation was motivating us because when you get in the real situation outside you are having exposure and experience of the situation.

- Ek het nie persoonlik deel geneem nie, maar dit was baie opvoedkundig om te kyk.

- The simulation sessions were very informative and it helped me to understand how important it is to think and act fast in an emergency situation.

- It helped me a lot to achieve my goals.

- Baie goeie manier om leerwerk toe te pas. Definitief 'n goeie manier om praktiese denkwyse te stimuleer.

- I realised that in practical level things work differently if you don't have a good theory, so simulation allowed me to fuse both theory and practical.

- Dit help jou om jou teorie saam met die prakties te bring en dit het ons baie beter laat verstaan en was gemakilk, omdat ons weet ons kan leer deur ons foute.

- Alles het baie daar uit geleer.

- It was very productive and very effective to me even though i haven't in a simulation session, because some of the things were made easier to understand in that way.

- Baie leer ondervinding.

- It gives you a chance to evaluate yourself, you test your knowledge on the theory that you did. I found it very stimulating.

- Dit leer ons om onafhanklik te dink en profesionele optrede te benader, dit leer my ook om die nodige kennis met insig te kan toepas.

- Skep 'n realiteitsbeeld. Maak die studente bewus van hoe hard hulle moet werk om die teorie en prakties te integreer.

- Sonder dit, maak mens die foute op regte pasiënte.

- Hmm, where do I begin? I had the opportunity of doing the CPR simulation and I was the daughter of the patient we used for the simulation. It was an awesome experience because it taught me a lot of things. What i realised is that, teamwork is very important in the situations like this. Being part of the simulation was eye opening and i now know what to next time if i come across the same situation. Keep your cool and be calm.

- Dit het my gehelp om prakties en teorie saam te laat smelt.

- Ek voel vaardig in my skill en nie meer so onseker nie

- Highly informative and educational.

- Uhm... ek't lekker gelag.

- Was amazing! Loved every second of it. I still remember the defib session like it was yesterday.

- It was very mind stimulating, it gives a feeling of how the emergency environment feels like and I think it is the best way to make students make critical decisions. It was great especially when we evaluated what we did right and wrong, it was casual and made me feel comfortable.

Question 6: Short Answer

- Please write any negative experiences you had with regard to the high fidelity simulation sessions.

- Skryf asb. enige negatiewe ervarings neer wat jy tydens die hoëgetrouheidsimulasie sessies ervaar het.

Unanswered Responses

0

Given Answers (Verbatim)

- Even though i didn't get the opportunity to be part of simulation but i didn't like it when they just pick names unexpectedly, at least if they tell you they day before to prepare for simulation would have been better. #

- Die kinders wat nie deel was van simulasie nie was bietjie verveeld.

- The negative experience is that it takes a long time and we sometimes loss concentration.

- Ek het nie deel geneem nie sou het geen negatiewe ervaring nie

- Dis stresvol. Die simulasie self vat lank en dan is die terugvoer nie effektief nie.

- There are no negative experiences just at first a filling of not being a competent nurse and at the time not knowing what to do, but we build the confidence.

- It was enjoyable as it integrated theory and practical very well. It was also good as it gave a real life situations and not text book situations in order to prepare us for what

we will experience and the critical thinking involved

- It is not really negative, but at times I felt stupid, like I did not know what to do.
- I haven't had the chance to use them so i don't have any experiences regarding the sessions.
- Ek het nie 'n kans gekry om met die simulasie te werk nie.
- Dit was moeilik om by te bly met wat gebeur, dalk het die groepe wat deelgeneem het, dit maklik gevind. ek het gesukkel. Ek kan min daarvan onthou, jou aandag is SO by wat gebeur dat die teorie verlore gaan en van die groepe het glad nie geweet wat aangaan nie. Dit het regtig vir my na tydmors gevoel vir ingelyking met die hoeveelheid inligting wat ek daarna mee weggestap het.
- I found there wasn't enough time for the feedback!
- I quaintly seen simulation as most fun thing i can do didn't see negative things...
- Not many things were negative, it just needed confidence from the students to perform the tasks and full preparation but sometimes it was time consuming.
- I've never participated in simulation; I think if we can all participate then it will be much helpful to all of us.
- Nie almal kry die kans om die verantwoordelike ervaring te leef nie omdat party slegs as 'n dogter in die senario is waar ander die suster in bevel is.
- I think the preparation time was very much limited in the sense of we were not really prepared and we are just given the scenario and do not know where to begin and what to do to help the patient.
- Min kennis
- We went to simulation without preparation so we felt out when we had to do the procedure, feeling like we know nothing.
- Het nog nie al die kennis om die regte besluite te kan neem nie.
- Dit was soms te veel rolle om tydens die simulasie te vervul. Die groepe moet kleiner wees.
- Thinking about the consequences of your actions is disturbing.
- Geen net 'n ongelooflike leer ervaring al maak jy tonne foute
- The simulation is frustrating you as a student you get confused and do not know what to do

Question 7: Short Answer

- Please write any recommendations that may be used to improve the high fidelity simulation session in your module.
- Skryf asb. enige voorstelle neer vir hoe om die hoëgetrouheidsimulasie sessies in jou module te verbeter.

Unanswered Responses

1

Given Answers (Verbatim)

- Om almal 'n kans te gee om die verantwoordelike rol te speel vir ervaring en om ktitiese denke te bevorder.
- The random selection is fine when choosing people to take part in the scenario, but it was not all of us who got the opportunity to part take in the scenario practically, so I think it would be best if all the students are given the chance to be part of the simulation practically, not just always answering the questions theoretically in the other room.
- I think the quality of the simulations is satisfactory and is excellent.
- Om meer simulasies aan te bied vir praktiese sessies.
- Meer tyd vir simulasie.
- I don't think that any improvement is necessary as the simulation sessions were well executed.
- Beter voorbereiding.
- Na die tyd 'n voorbeeld van hoe dit eintlik gedoen moet word wat vrylik beskikbaar is. ons het nie die agtergrond kennis nie, so dit stimuleer ons, maar nie om inligting op te neem nie. ons het reeds ondervinding in die kliniese setting: ons het 'n plek nodig waar die teorie ordentlik vasgelê word.
- Have more simulation sessions.
- Ek dink dit is perfek soos dit is en die sessie moet net op 'n gereelde basis plaasvind.
- Allow students to make appointment with the lectures to make use of the facilities when we don't have classes.
- Give students more practice sessions so that they can get to training in the

simulation.

- It must be introduced right from first year.
- It must not take long time.
- Include some refreshments for the simulations; the other simulation took longer than anticipated.
- The student must have groups divided according to the themes and practice sessions before going for the simulation so that they can get used to the simulation sessions
- The student must be prepared before simulation, so they know what to do.
- Make at least group of 10 students to participate and let them deal with the situation by themselves, and all the student must be encouraged to prepare before the simulation
- The way is done is fine and should be continued done in the same way
- More practice session for advance resuscitation.
- Maak die groepe dalk bietjie kleiner en meer duidelik oor wat van elke persoon verwag word, ons is maar nog nuwe ervare genoeg in "hoof rolle" nie, en weet nie altyd presies wat van elkeen verwag word nie.
- Almal meer betrokke te maak deur almal 'n kans te gee.
- Ons moet eers toets skryf oor die werk en dan in so 'n situasie geplaas word.

Question 8: Opinion Scale/Likert

- My critical thinking abilities were developed through the reflection held after the high fidelity simulation sessions.
- My kritiese denk vaardighede is ontwikkel deur die refleksie, wat na die hoëgetrouheidsimulasie sessies gedoen is.

Strongly Agree	59.375%
Agree	34.375%
Neither Agree nor Disagree	3.125%
Disagree	3.125%
Strongly Disagree	0%
Not applicable	0%
Unanswered	0%

Question 17: Opinion Scale/Likert

- Ample opportunity to practise and improve my clinical skills was available.
- Geleenthede om my kliniese vaardighede te oefen en te verbeter was volop.

Strongly Agree	40.625%
Agree	40.625%
Neither Agree nor Disagree	3.125%
Disagree	12.5%
Strongly Disagree	0%
Not applicable	0%
Unanswered	3.125%

Question 23: Opinion Scale/Likert

- The educators for both the theory and practical module are knowledgeable regarding the content taught.
- Die dosente wat beide die prakties en teorie fasiliteer is kundig ten opsigte van die inhoud wat aangebied word.

Strongly Agree	75%
Agree	21.875%
Neither Agree nor Disagree	3.125%
Disagree	0%
Strongly Disagree	0%
Not applicable	0%
Unanswered	0%

Question 24: Opinion Scale/Likert

- The educator's explanations of the content were understandable.
- Die dosente het die inhoud op 'n verstaanbare manier aangebied.

Strongly Agree	53.125%
Agree	43.75%
Neither Agree nor Disagree	3.125%
Disagree	0%
Strongly Disagree	0%
Not applicable	0%
Unanswered	0%

Question 25: Opinion Scale/Likert

- The educators in both the theory and practical module encouraged interaction in class through class discussion and questions.
- Beide die kliniese en teorie-dosente het deur middel van besprekings en vrae interaksie in die klas aangemoedig.

Strongly Agree	53.125%
Agree	43.75%
Neither Agree nor Disagree	3.125%
Disagree	3.125%
Strongly Disagree	0%
Not applicable	3.125%
Unanswered	3.125%

ADDENDUM C INFORMATION DOCUMENT & CONSENT

UNIVERSITY OF THE FREE STATE
FACULTY OF HEALTH SCIENCES
SCHOOL OF NURSING
Information and informed consent form for participating in Focus Group Interview

The learning experience of third-year Baccalaureate nursing students on high fidelity simulation used as a learning experience at the University of the Free State

RESEARCHER: Mrs A. Welman   (Cellular Number: XXX XXXX XXX)

Dear Third-year Nursing Student,

Research is described as a process through which the researcher would like to learn the answer to a question. The researcher of this study would like to determine the learning experience of third-year Baccalaureate nursing students on high fidelity simulation used as a learning strategy in their study programme.

You were exposed to two high fidelity simulation sessions, one of which presented the opportunity to manage a patient with chest pain and a myocardial infarction and the second on a patient suffering from hypovolemic shock after major surgery.

You are invited to participate in this study by taking part in a focus group interview. Participation in this research study is voluntary, and refusal to participate will involve no penalty or loss of benefits with regards to your academic classes, marks or treatment by your facilitators, the researcher or the University. You have a right to ask questions; refuse to give information and to withdraw from the study at any given time.

All data will be handled with strict confidentiality and will be retained in safekeeping. Absolute confidentiality cannot be guaranteed. Personal information may be disclosed if required by law. An organisation that may inspect and / or copy our research records for quality assurance of data analysis includes the Ethics Committee, Faculty of Health Sciences, University of the Free State (UFS).

One, audio-taped, focus group interview, facilitated by XXXXXX will be held. During the interview, you will share your learning experience with fellow students. The focus group interview will take place at a time, as far as possible, convenient for all participants, and not during your scheduled academic class periods. The estimated time period needed for the focus group interview is two hours. Travelling costs of the participants to and from the School of Nursing at the University will be paid by the researcher, subject to certain limits.

To enrich the research data, the programme evaluation completed by the students at the end of the first semester will be added as data relevant to this study.

The possible impact that this study may have on you, is that you may experience emotional stress when sharing experiences. It will also require time spent on the interview. The benefit of this study and your participation is that your inputs can be used to improve the third-year teaching programme and will assist the educators at the School to understand

the issues with regard to high fidelity simulation that you may regard as important.

Permission to proceed with the focus group interview has been obtained from the UFS – Vice-Rector: Teaching and Learning, Dean: Faculty of Health Sciences and the Head of the School of Nursing.

To report complaints or problems, please contact the Ethics committee of the Faculty of Health Sciences at the UFS on: 051 405 2821.

Please sign your consent with full knowledge of the nature and purpose of the procedures. A copy of this consent form will be given to you for safekeeping.

I, _____ am willing to participate in the focus group interview and consent to the use of the programme evaluations at the end of the first semester.

_____   _____
SIGNATURE OF PARTICIPANT   DATE

_____   _____
SIGNATURE OF WITNESS   DATE

I have discussed the information above with the participant. I am of the opinion that the participant understands the risks, benefits and expectations of this study.

_____   _____
SIGNATURE OF RESEARCHER   DATE

UNIVERSITEIT VAN DIE VRYSTAAT
FAKULTEIT GESONDHEIDSWETENSKAPPE
SKOOL VIR VERPLEEGKUNDE

Dokument vir ingeligte toestemming vir deelname aan fokus groep onderhoud

Die leer ervaring van derde jaar Baccalaureus graad verpleegkunde studente rondom die hoëgetrouheidsimulasie wat gebruik word as onderrig strategie aan die Universiteit van die Vrystaat

NAVORSER: Mev. A. Welman   (Selfoon nommer: XXX XXX XXXX)

Geagte Derde Jaar Verpleegkunde-student,

Navorsing word beskryf as 'n proses waartydens die navorser poog om die antwoord op 'n vraag vas te stel. Die navorser wil graag tydens hierdie studie uitvind wat studente se leer ervaring van hoëgetrouheidsimulasie wat as onderrig strategie in hulle program gebruik word, is.

Tydens jou studie was jy aan twee hoëgetrouheidsimulasie sessies blootgestel. Eerstens, 'n sessie waar jy die geleentheid gebied is om 'n pasiënt met borskas pyn en 'n miokardiale infarksie te hanteer, en tweedens, waar 'n pasiënt aan hipovolemiese skok gely het nada t hy major chirurgie ontvang het.

Jy word uitgenooi om aan hierdie navorsing studie deel te hê deur deel te neem aan 'n fokus-groep-onderhoud. Deelname aan hierdie studie is vrywillig en weiering sal geen straf of verlies aan voordele rondom jou akademiese klasse, punte of hantering deur jou fasiliteerders, die navorser of Universiteit, tot gevolg hê nie. Jy het die reg om vrae te vra, te weier om inligting te verskaf en jouself ter enige tyd aan die studie te onttrek.

Alle data sal streng vertroulik hanteer word en in veilige bewaring gestoor word. Volkome vertroulikheid kan nie gewaarborg word nie. Persoonlike inligting mag openbaar gemaak word indien deur die reg vereis. 'n Organisasie wat navorsings rekords kan kopieer / inspekteer, met die doel om die kwaliteit van data-analise vas te stel, sluit die Etiek komitee van die Fakulteit Gesondheidswetenskappe aan die Universiteit van die Vrystaat (UVS) in.

Een, band-opgeneemde fokus groep onderhoud sal deur XXXXXX gefasiliteer word. Jy sal tydens die onderhoud die geleentheid gegun word om jou studie ervaring met jou mede-studente te deel. Die fokus-groep-onderhoud sal tydens 'n gepaste tyd, wat sover moontlik al die deelnemers pas, plaasvind en sal ongeveer twee uur lank duur. Dit sal buite geskeduleerde akademiese klas periodes wees. Reis koste van deelnemers na en van die Skool vir Verpleegkunde by die Universiteit sal binne bepaalde perke deur die navorser betaal word.

Om data verryking te verseker, sal die program evaluasies wat aan die einde van die eerste semester deur die derde-jaar-studente voltooi is, ingesluit word as deel van die data relevant tot hierdie studie.

Moontlike gevolge van hierdie studie sluit die ervaring van emosionele stres tydens die deel van ervarings in, asook die tyd wat aan die onderhoud gespandeer word. Die voordeel van

hierdie studie en jou deelname daaraan is dat jou insette gebruik kan word om die derde jaar onderrig program te verbeter en sal die dosente by die Skool in staat stel om enige knelpunte, wat jy as belangrik ag, rondom hoëgetrouheidsimulasie te verstaan.

Toestemming om met die fokus groep onderhoud voort te gaan is vanaf die UVS – Vise Rektor: Onderrig en Leer, Dekaan: Fakulteit van Gesondheidswetenskappe en die Hoof van die Skool vir Verpleegkunde verkry.

Om probleme of klagtes te rapporteer, kontak gerus die Etiek-komitee van die Fakulteit van Gesondheidswetenskappe aan die UVS by 051 405 2821.

Teken asseblief die onderstaande toestemming met volledige kennis rondom die aard en doel van die toepaslike prosedures. Bewaar asseblief jou afskrif van hierdie toestemmings-dokument.

Ek, _____ is bereid om aan die fokus groep onderhoud deel te neem en verskaf toestemming dat die program evaluasies wat aan die einde van die eerste semester voltooi is, gebruik mag word.

_____   _____
HANDTEKENING VAN DEELNEMER   DATUM

_____   _____
HANDTEKENING VAN GETUIE   DATUM

Ek het die bogenoemde inligting met die deelnemer bespreek en is van mening dat die deelnemer die risiko's, voordele en verwagting rondom hierdie studie verstaan.

_____   _____
HANDTEKENING VAN NAVORSER   DATUM

ADDENDUM D PERMISSION ETHICS COMMITTEE

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

Direkteur: Fakulteitsadministrasie / Director: Faculty Administration
Fakulteit Gesondheidswetenskappe / Faculty of Health Sciences

Research Division
Internal Post Box G40   E-mail address: StraussHS@ufs.ac.za
☎(051) 4052812
Fax (051) 4444359

Ms H Strauss   2011-02-09

MS A WELMAN   REC Reference number: REC-230408-011
SCHOOL OF NURSING
FACULTY OF HEALTH SCIENCES
UFS

Dear Ms Welman

ECUFS NR 14/2011
PROJECT TITLE: THE LEARNING EXPERIENCE OF THIRD YEAR BACCALAUREATE DEGREE NURSING STUDENTS ON HIGH FIDELITY SIMULATION USED AS A TEACHING STRATEGY AT THE UNIVERSITY OF THE FREE STATE.

- You are hereby kindly informed that the Ethics Committee approved the above study at the meeting held on 8 February 2011.

- 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.

- 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 reference number in correspondence to the Ethics Committee secretariat.

Yours faithfully

....
FOR CHAIR: ETHICS COMMITTEE

Cc   Prof Magda Mulder

✉ 339, Bloemfontein 9300,RSA   ☎ (051) 405 2812   StraussHS@ufs.ac.za
Republiek van Suid-Afrika / Republic of South Africa

ADDENDUM E   PERMISSION VICE-RECTOR: ACADEMIC PLANNING

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

Kantoor van die Viserektor : Akademiese Beplanning
Office of the Vice-Rector : Academic Planning

20 January 2011

Prof M Mulder
School of Nursing
IL

Dear Prof Mulder

RE: REQUEST TO CONDUCT RESEARCH STUDY

Your letter dated 10 January 2011 request permission to do a research study refers.

Herewith I agree upon the research study with the title: "The learning experience of third year Baccalaureate degree nursing students on high fidelity simulation used as a teaching strategy at the University of the Free State".

I am looking forward to receive the results of this study.

Kind regards

Prof HR (Driekie) Hay
Vice Rector: Teaching and Learning

339, BLOEMFONTEIN 9300,   ☎ +27 (0)51 401 3773/3971,   📠 +27 (0)51 401 9600,   🖱 hayd.rd@ufs.ac.za,
web: www.ufs.ac.za, REPUBLIEK VAN SUID-AFRIKA / REPUBLIC OF SOUTH AFRICA

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ADDENDUM F   PERMISSION DEAN: FACULTY OF HEALTH SCIENCES   &   HEAD: UFS SCHOOL OF NURSING

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

Fakulteit Gesondheidswetenskappe/Faculty of Health Sciences
Skool vir Verpleegkunde/School of Nursing

Prof G. van Zyl
Dekaanskantoor: Gesondheidswetenskappe
Francois Retief gebou

7 Februarie 2011

Geagte Prof van Zyl,

Spesiale versoek om derdejaar graadstudente vir kwalitatiewe navorsing te gebruik deur Magister student: Mev A. Welman.

Die Bestuurskomitee van die Skool vir Verpleegkunde het aanbeveel dat toestemming verleen word vir die implementering van navorsing gedoen vir die studie: *The learning experience of third year Baccalaureate degree nursing students on high fidelity simulation used as a teaching strategy at the University of the Free State.*

Vriendelike groete

PROF M. MULDER
WAARNEMENDE HOOF: SKOOL VIR VERPLEEGKUNDE

Dekaan:
Fakulteit Gesondheidswetenskappe
Universiteit van die Vrystaat

2011 -02- 0 9

Dean: Faculty of Health Sciences
University of the Free State

UNIVERSITEIT VAN DIE VRYSTAAT
SKOOL VIR VERPLEEGKUNDE
0 7 -02- 2011
SCHOOL OF NURSING
UNIVERSITY OF THE FREE STATE

Goedgekeur
9/2/11

ADDENDUM G LIST OF VERTICAL STRANDS INCLUDED IN EACH SCENARIO

- Identification
- Communication
- Legal/ethical issues
- Safety (environment and patient)
- Comprehensive care
- Infection control
- Documentation and record keeping
- Patient and family education and support
- Transformational leadership characteristics

INTRODUCTION

- The current list is a good beginning but a list of more or less loosely related free nodes, themes need to be extrapolated in terms of the context of the key question as deduced from the transcripts: "Reflection on this learning experience".

- Students did reflect on two things: They reflected on the leaning experience itself and the critical ingredients/aspects or skills appreciated that they think is important or necessary.

- As you will see, some theoretical form/framework is developing that may indicate a cause-effect relationship – for example "Transformative".

LEARNING EXPERIENCE

- 3 overarching and strong themes in terms of learning experience suggested – one usually tries to lift the concepts to be more meaningful and encompassing:
  - Beforehand (pre): **Trepidation** – anxiety, fear (not the same things), unpreparedness, anticipation
  - Within (Intra): **Realism** – life-like or true to life, stress, detail of context, integration of theory and practice
  - Afterwards (Post): "**Impacting"** or impact upon (if you do not like the created word – impacting) (relates to tangible and intangible): stressful, stimulating, real, transformative valuing experience.
- See diagram for categories and sub-categories under each sub-theme.

CRITICAL ASPECTS OUTLINED/VALUED

I am outlining the seven overarching themes I think emerge from the data with some of examples – these examples could also be sub-themes under each theme, for example under leadership and teamwork a sub-theme would be respect, role clarity, etc.:

- **Leadership and Teamwork**: Alertness to others, respect, role clarity, integrated functioning [doing together], providing support to one another
- **Communication:** Team and patient: language, reporting
- **Ethical**: Sharing of information, confidentiality, the right to optimal care, helping and not harming (beneficence versus non-maleficence), erring (beautifully morally laden concept) - making mistakes
- **Focussed involvement:** Concentration, failure to notice**,**
- **Self- and group assessment**: Role of peer group, critical reflection, safety-in-group
- **Debriefing:** Walk-the-talk and talk-the-walk
- **Appreciation:** Value of facility and opportunities (degree and diploma programme and Schools within faculty comparison)
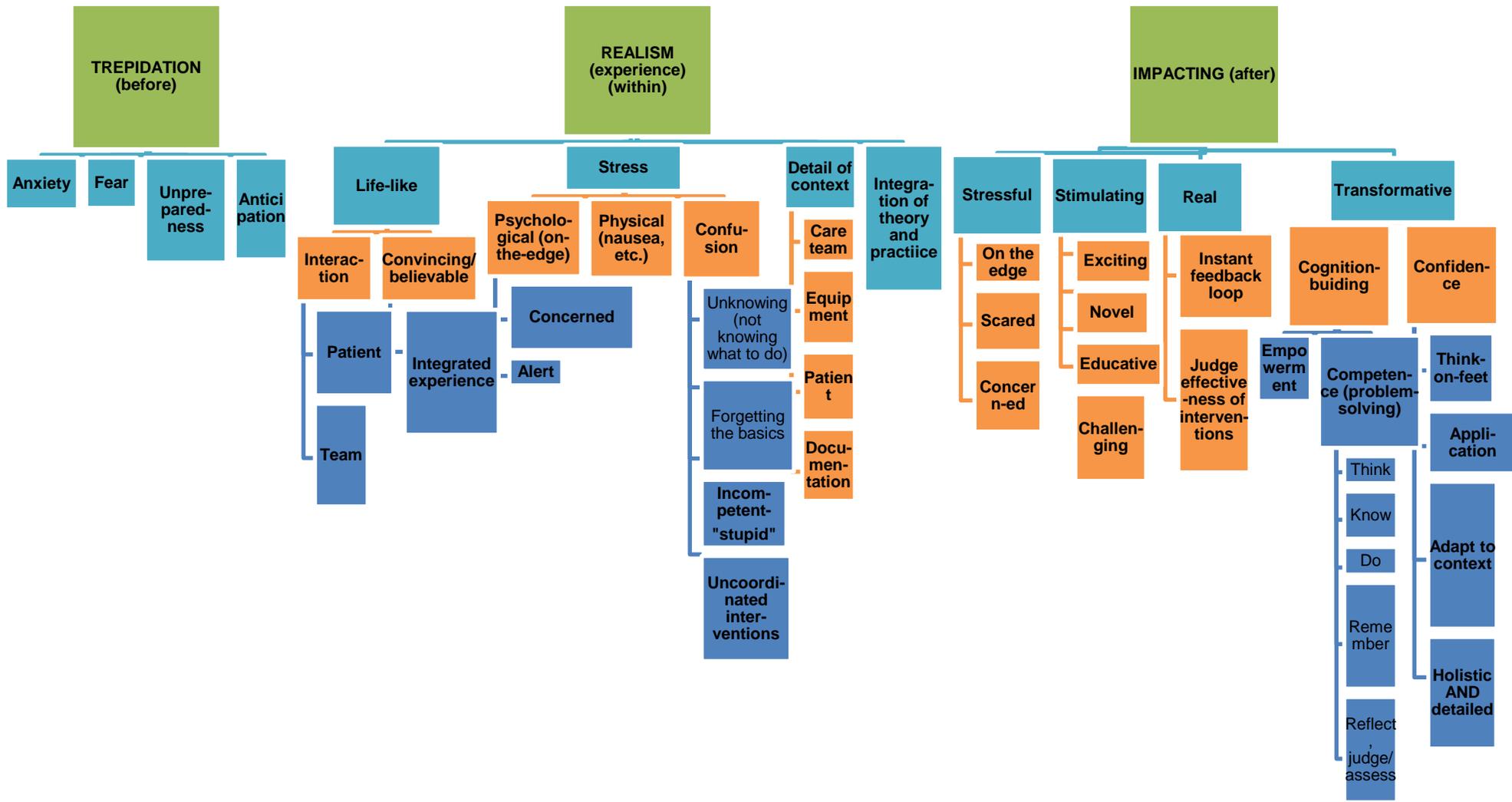
TX, ENJOYED THIS A LOT, so glad to see that the students are able to identify and experience what we hoped to achieve – congratulations!

Please see diagram that follows on page 3.

Good luck,
XXXX.

TREPIDATION (before)
- Anxiety
- Fear
- Unpreparedness
- Anticipation

REALISM (experience) (within)
- Life-like
  - Interaction
    - Patient
    - Team
  - Convincing/believable
    - Integrated experience
- Stress
  - Psychological (on-the-edge)
    - Concerned
    - Alert
  - Physical (nausea, etc.)
  - Confusion
    - Unknowing (not knowing what to do)
    - Forgetting the basics
    - Incompetent-"stupid"
    - Uncoordinated interventions
- Detail of context
  - Care team
  - Equipment
  - Patient
  - Documentation
- Integration of theory and practiice

IMPACTING (after)
- Stressful
  - On the edge
  - Scared
  - Concern-ed
- Stimulating
  - Exciting
  - Novel
  - Educative
  - Challenging
- Real
  - Instant feedback loop
  - Judge effectiveness of interventions
- Transformative
  - Cognition-buiding
    - Empowerment
    - Competence (problem-solving)
      - Think
      - Know
      - Do
      - Remember
      - Reflect, judge/assess
    - Think-on-feet
    - Application
    - Adapt to context
    - Holistic AND detailed
  - Confidence

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