

# **A Strategy for Meaningful Simulation Learning Experiences in a Postgraduate Paediatric Nursing Programme**

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## Declarations

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I, Cynthia Spies, declare that the thesis that I herewith submit for the doctoral degree **Doctor of Philosophy** at the University of the Free State, is my independent work, and that I have not previously submitted it for a qualification at another institution of higher education.

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.....

Cynthia Spies

31 January 2016

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## List of Acronyms and Abbreviations

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CAQDAS	Computer-Assisted Qualitative Data Analysis Software
CPR	Cardiopulmonary Resuscitation
FBA	Foreign Body Aspiration
ISBAR	Identify self, Situation, Background, Assessment, Recommendations
NGT	Nominal Group Technique
OED	Oxford English Dictionary
RSV	Respiratory Syncytial Virus

## Abstract

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Learning through simulation is a relatively young science in nursing education. Although the benefits of simulation as an effective learning strategy in nursing education are supported by extensive research on the subject, the development of meaningful simulation learning experiences can be challenging, especially to nurse educators who do not feel prepared for this type of educational approach. The purpose of this study was to develop a strategy for meaningful simulation learning experiences in a postgraduate paediatric nursing programme.

An educational action research design, based on a social constructivist paradigm, was used to answer the research question: *How can meaningful simulation learning experiences be achieved in the postgraduate paediatric nursing programme?* Through the process of three action cycles extending over a period of two years, a strategy was developed, refined and finalised, based on data gathered from two separate groups of paediatric nursing students. The first group of participants consisted of 21 students, and the second group of participants consisted of 18 students. Qualitative data were gathered by means of the nominal group technique, field/reflective notes, recording of debriefing sessions and focus group interviews. In the third cycle, in addition to qualitative data, quantitative data were gathered by means of a simulation evaluation questionnaire.

At completion of the two-year project, a final strategy for meaningful simulation learning experiences emerged, based on a synthesis of data gathered. Aspects relating to meaningful simulation learning experiences included a safe learning environment, authenticity, a responsive simulator, cognitive processes such as reflection-on-action, independent thinking, and meaningful knowledge construction. Furthermore, the students valued simulation learning experiences as opportunities to improve competence, psychomotor skills, self-confidence and teamwork. They learned to integrate theory and practice and experienced a paradigm shift that influenced their view of the conditions under which nursing care should be provided to children. A major hindrance to learning through simulation was the students' dependence on an educator and reluctance in taking ownership of their own learning. This finding related to a discovery made in the first action cycle, which was that nurse educators should be careful to assume that postgraduate nursing students, who are considered mature individuals, naturally have the characteristics of adult learners.

Apart from a strategy consisting of specific action items and expected outcomes upon their implementation, seven characteristics of meaningful simulation learning experiences were identified, namely constructively aligned instruction, challenging learning tasks, a non-

judgmental student-centred approach to students, collaboration through a community of learning, deliberate practice, an authentic learning environment, and relevant student preparation.

The strategy developed in this study endorses the use of constructivist learning theory and Kolb's experiential learning theory to achieve meaningful simulation learning experiences. The study contributes to the practice of simulation in nursing education because it gives nurse educators a theoretically and empirically founded plan for implementing simulation in a way that students find meaningful and conducive to learning. The paediatric nursing students experienced a paradigm shift in terms of their practice as healthcare providers to children, which translated into strengthened nursing values and renewed motivation to transfer their learning to the practice setting.

# Opsomming

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Leer deur simulاسie is 'n betreklik jong wetenskap in verpleegkunde-opleiding. Alhoewel die voordele van simulاسie as 'n doeltreffende leerstrategie in verpleegkunde-opleiding deur uitgebreide navorsing oor die onderwerp ondersteun word, kan die ontwikkeling van betekenisvolle simulاسie-leerervarings 'n uitdaging bied, veral aan opleiers van verpleegkundiges wat voel dat hulle nie voorbereid is om hierdie soort opvoedkundige benadering te volg nie. Die doel van hierdie studie was om 'n strategie te ontwikkel waardeur betekenisvolle simulاسie-leerervarings in 'n nagraadse kinderverpleegkundeprogram verwesenlik kan word.

Om die navorsingsvraag: *How can meaningful simulation learning experiences be achieved in the postgraduate paediatric nursing programme?* te beantwoord, is 'n opvoedkundige aksienavorsingsontwerp, gegrond op 'n sosiaal-konstruktivistiese paradigma, gebruik. Deur die proses van drie aksiesiklusse wat oor 'n tydperk van twee jaar gestrek het, is 'n strategie ontwikkel, verfyn en gefinaliseer, gebaseer op data wat van twee afsonderlike groepe studente in pediatriese verpleging ingesamel is. Die eerste groep deelnemers het uit 21 studente bestaan, en die tweede groep uit 18 studente. Kwalitatiewe data is ingesamel deur middel van die nominale groeptegniek, veld-/reflektiewe aantekeninge, die optekening van ontlontingsessies, en fokusgroeponderhoude. In die derde siklus is kwantitatiewe data ook bykomend tot die kwalitatiewe data deur middel van 'n simulاسie-evalueringsvraelys ingesamel.

By die voltooiing van die tweejaarprojek het 'n finale strategie vir betekenisvolle simulاسie-leerervarings na vore gekom, gebaseer op 'n sintese van die ingesamelde data. Aspekte wat verband hou met betekenisvolle simulاسie-leerervarings het ingesluit 'n veilige leeromgewing, egtheid, 'n responsiewe simulator, kognitiewe prosesse soos refleksie-op-aksie, selfstandige denke, en betekenisvolle kenniskonstruksie. Daarbenewens het die studente waarde geheg aan simulاسie-leerervarings as geleenthede om bevoegdheid, psigomotoriese vaardighede, selfvertroue en spanwerk te verbeter. Hulle het geleer om teorie en praktyk te integreer en het 'n paradigmaskuif ervaar wat hul siening van die omstandighede waaronder verpleegsorg aan kinders verskaf moet word, beïnvloed het. 'n Belangrike hindernis tot leer deur simulاسie was die studente se afhanklikheid van 'n opvoeder en huiwigheid om eienaarskap te neem van hul eie leer. Hierdie bevinding het verband gehou met 'n ontdekking wat in die eerste aksiesiklus gemaak is, naamlik dat die opleiers van verpleegkundiges huiwig moet wees

om bloot aan te neem dat nagraadse verpleegkundestudente, wat as volwasse persone beskou word, natuurlikerwys die hoedanighede het van volwasse leerders.

Benewens 'n strategie bestaande uit spesifieke aksie-items en verwagte uitkomst by die implementering daarvan, is sewe kenmerke van betekenisvolle simulasiel eerervarings geïdentifiseer, naamlik konstruktief-gerigte onderrig, uitdagende leertake, 'n nie-veroordelende student-gesentreerde benadering tot studente, medewerking binne 'n leergemeenskap, weloorwoë praktyk, 'n egte leeromgewing, en toepaslike voorbereiding van studente.

Die strategie wat in hierdie studie ontwikkel is, ondersteun die gebruik van die konstruktivistiese leerteorie en Kolb se ervaringsleerteorie ten einde betekenisvolle simulasiel eerervarings teweeg te bring. Die studie dra by tot die gebruik van simulasiel eerervarings in die opleiding van verpleegkundiges, want dit gee aan opleiers van verpleegkundiges 'n teoreties- en empiries-gefundeerde plan vir die implementering van simulasiel eerervarings wat studente as betekenisvol en bevorderlik vir leer beskou. Die pediatriese verpleegkundestudente het 'n paradigmaskuif ervaar met betrekking tot hul praktyk as verskaffers van gesondheidsorg aan kinders, wat gelei het tot verhoogde waardes ten opsigte van verpleging en 'n hernude motivering om hul leer oor te dra na die praktyk.

# Chapter 1

## Overview and Conceptualisation of the Study

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### 1.1 Introduction

Many countries worldwide are looking for better ways to educate their health professionals and organise their educational systems. Unfortunately, it seems that health education has not always kept pace with healthcare demands and changes in the delivery of health care, mainly because of fragmented, outdated, and static curricula that produce ill-equipped graduates (Lancet Commissions, 2010:1923). Foronda, Liu and Bauman (2013:e409) emphasise that educators have an obligation to ensure valid implementation of any curriculum so that meaningful transition from student to clinician is achieved. Consequently, effective health education can improve work quality and teamwork, but more importantly, reduce healthcare errors that arise from negligent behaviour (Buykx et al., 2011:687; Grossman & Salas, 2011:104).

Apart from challenges within the educational sector, South Africa is also experiencing several challenges with regard to health care and the providers thereof. An ongoing issue, particularly affecting health care in the public health sector, is a shortage of nurses (Breier, Wildschut & Mgqolozana, 2009:29,65). Even more disconcerting though, is the lack of expertise among nurses, particularly in areas where advanced practice is most needed. The practice of children's nursing represents one such a discipline where margins of error are small and risk of error has been shown to be high (Lindamood & Weinstock, 2011:23).

On government level, the South African Minister of Health, Dr Aaron Motsoaledi, and delegates amplified a concern for the health status of the country's children when they signed the Negotiated Service Delivery Agreement (NSDA) on 26 October 2010. The NSDA serves as a charter to which the Government has committed towards reaching 12 key strategic outcomes for 2010 to 2014 in the public sector. Four of the NSDA outcomes are health-related and they specifically aim at decreasing high maternal and child mortality rates (Jooste & Jasper, 2012:56). In this regard, it might be wise to heed the appeal of the Child Healthcare Problem Identification Programme (Child PIP) for quality training of healthcare providers. Since 2004, Child PIP has provided extensive data about the quality of care that children receive in the South African public health system. One of the goals of Child PIP is to identify modifiable factors related to cases where failure to meet specific standards of care contributed or may have contributed to a child's death. Aspects that need change and improvement are then highlighted (Stephen et al., 2011:23). According to the 2009 report

(Saving Children 2009), approximately one quarter (26%) of child deaths were avoidable. The report linked 54% of modifiable factors in all health sectors to clinical personnel and therefore recommended that health professionals – including nurses – are trained to deliver competent health care and have the ability to identify and manage those conditions that cause most childhood deaths (Stephen et al., 2011:17).

Due to the specialised nature of children’s nursing, it is expected that nurses who work with children (paediatric nurses) will function as knowledgeable and competent practitioners, able to make critical clinical decisions (Broussard, Myers & Lemoine, 2009:6). Therefore, it is essential that nurses employed in paediatric settings receive education and training that is not only aligned with South Africa’s current child health needs, but that will also advance their knowledge and skills so that they will be able to practise children’s nursing on an advanced level. At present, the School of Nursing at the University of the Free State (UFS School of Nursing) is one of three higher education institutions in South Africa that provide education to paediatric nurses at university level. At the UFS School of Nursing, the Advanced University Diploma in Child Health Nursing programme (hereafter referred to as the paediatric nursing programme) has been offered since 2000. This one-year paediatric nursing programme is offered to registered nurses that have obtained a four-year integrated nursing qualification and who have at least one year’s experience in paediatric settings. The programme is aimed at enabling registered nurses who care for children to function as clinical specialists in all areas of children’s health, to act as counsellors and consultants and thus to make a meaningful contribution to policy-making and the promotion of mother, infant, and child care.

As a nurse educator, I have been responsible for presenting and coordinating the paediatric nursing programme since its inception. I have gained extensive clinical experience as a paediatric nurse by working in paediatric wards since 1993 and obtained an advanced diploma in child health nursing in 1995. Since 1996 I have been a part-time lecturer at the UFS School of Nursing and in began coordinating and presenting the paediatric nursing programme in 2000. Through the years, it has been an ongoing endeavour on the one hand, to review and align course content with changing child healthcare needs and, on the other hand, to keep up to date with present-day teaching and learning strategies to ensure that programme outcomes are achieved in the best possible ways. The prospect of complementing existing learning activities such as case studies, case presentations and workplace learning by including immersive simulation as an experiential learning strategy was realised when the UFS School of Nursing inaugurated an advanced nursing education facility (the NEF) during 2009. The NEF is a carefully designed, technologically rich teaching and learning environment that provides students and nurse educators with direct access to multimedia and other resources to facilitate educational practice.

Besides advancing clinical skills development and providing facilities for lectures, and workshops, the NEF has a learning environment that was intentionally designed for simulation-based education. The simulation laboratory replicates a general hospital ward where students have access to four medium-fidelity patient simulators. In addition to the general ward setup, two separate venues represent adult and paediatric intensive care units (ICUs) respectively. Here, bed spaces are outfitted with patient monitoring devices that are capable of providing a range of physiological outputs including electrocardiogram (ECG), pulse oximetry, carbon dioxide (CO<sub>2</sub>) levels, heart and respiratory rates, and temperature. Students have access to oxygen delivery equipment, a suction apparatus, an emergency trolley, and a stock of medical patient care supplies. Depending on the desired learning activity, nurse educators can utilise one of four high-fidelity patient simulators in the ICU spaces. Of these, two resemble adult patients, one resembles a newborn infant, and one resembles a five-year-old child. The anatomical features of all these simulators can be adjusted to resemble either a male or a female patient. The simulators are capable of displaying features such as disordered vital signs, heart and lung sounds, as well as presenting a range of physical signs such as chest rising and falling, absent bowel sounds, tongue oedema, convulsions and pupil reaction to light.

In February 2011, following an extensive period of planning, the third-year undergraduate nursing students were the first participants in high-fidelity simulation learning experiences at the UFS School of Nursing. At the time, I was not only coordinating the paediatric nursing programme, but was also a co-facilitator in the third-year undergraduate programme and a member of the core team who designed and implemented simulation for the first time. These events stimulated an interest in using simulation as a teaching and learning strategy in the paediatric nursing programme as well.

I began implementing simulation as a teaching and learning strategy in the paediatric nursing programme in 2012. By the end of 2012, I attended a five-day simulation workshop at the UFS School of Nursing that was presented by four simulation experts from Drexel University (Philadelphia, USA). The workshop experience convinced me that simulation is multifaceted and involves much more than drafting and implementing scenarios. I became particularly interested in how students experience simulation as a learning opportunity. The workshop training as well as insights gained from my own ongoing reflection about simulation spurred a deepened motivation to create meaningful simulation learning experiences in the paediatric nursing programme. In addition, the integration of simulation into the paediatric nursing curriculum and discussions with other simulation educators inspired me to reflect on my own practice and to discover the best possible ways of using simulation in the paediatric nursing programme.

## 1.2 Background to the use of simulation in nursing education

Simulation in nursing education is not an entirely new concept for most nursing educators. The first static patient simulator, known as 'Mrs Chase', was used to teach clinical skills as early as 1930 (O'Donnell & Goode, 2008:242). However, it was only after the 1950s when swift advances in technology began to reshape the simulation landscape. In 1958 the introduction of the 'Resusci-Anne' patient simulator was well received in healthcare education because of its realistic appearance and function which sparked an interest in the use of patient simulators among medical and nursing educators alike (Harder, 2009:e170). Continued advances in technology saw the arrival of the sophisticated computer-controlled SimOne® in the late 1960s. This patient simulator displayed physiological features such as breathing and a heartbeat, and could respond to intravenously administered medication (Lampotang, 2008:52).

Further integration of physiological realism occurred with the development of more modern simulators in the 1970s and 1980s. However, simulator technology is only part of a wider picture. As time went by, educators became less interested in technical advances and by the mid-1980s began to focus on strategies related to teaching and learning in simulation use (Harder, 2009:e171). Extensive research supported the use of simulation as an effective learning strategy that fits into the rapidly changing world of nursing education and modern health care (Rothgeb, 2008:494). As a result, the use of simulation as a learner-centred, patient-focused learning strategy has become well-grounded in the educational and clinical healthcare environment (Gaba, 2007:126; Garrett, MacPhee & Jackson, 2010:309; Kneebone, 2005:549; Sanford, 2010:1006). The objective of conducting simulation has expanded to include learning that ranges from procedural and task instruction to case management scenarios that could have either an individual or team training focus (Groom, Henderson & Sittner, 2014:338).

Together with a growing interest in the use of simulation there has been a steady increase in terms of simulation research, especially in the USA, United Kingdom, Australia and the Nordic countries (Flo, Flaathen & Fagerström, 2013:139). As evidence accumulated, the benefits of simulation in nursing education became very clear. Simulation allows students to engage in active learning experiences with opportunities to learn by doing, to experiment, to solve problems, and to make decisions about health care in a context away from the patient's bedside (Vardi, 2008:99). Simulation allows for the refinement of performance through error correction and repetition – experiences that are difficult, if not unethical, in the clinical setting (Hauber, Cormier & Whyte IV, 2010:246; Issenberg & Scalese, 2007:73; Steadman & Matevosian, 2008:422). Furthermore, simulation is said to increase knowledge, improve

learner confidence (Cant & Cooper, 2010:3), develop clinical judgment (Lasater, 2007:496), and allow for interdisciplinary collaboration (Rothgeb, 2008:494). In terms of skills development, it was found that participants who engaged in simulation acquired skills faster than those who were trained through traditional educational approaches (Garrett et al., 2010:309). With regard to patient safety, Keuhster and Hall (2010:123) found that simulation facilitates teamwork and communication, both inter- and intra-professionally.

### **1.3 Problem identification**

As learning through simulation is a relatively young science in nursing education, continued research on this topic is necessary for its full potential to be realised (Harder, 2009:e172). While insufficient comparative data exist in South Africa, there is evidence that simulation-based education can enhance healthcare practice (Bland, Topping & Wood, 2011:664,668; Sittner, Hertzog & Fleck, 2013:e522). This should be good news for healthcare educators who use simulation in their programmes. However, the development of meaningful simulation learning experiences can be challenging, especially to healthcare educators who do not feel prepared for this type of educational approach (Jeffries & Rizzolo, 2006:12). According to Norton (2009:189), there is a tendency in educational sectors, including higher education, to adopt practice without testing it. It is therefore necessary to provide sufficient empirical evidence to conclude that a specific innovation has the desired benefits.

Fowler (2008:432) states that even though participation in simulation can be an enriching and valuable experience for students, meaningful learning of any kind depends on the quality of a learning experience. For example, disarranged preparation of simulation, or scenarios that do not mimic reality as closely as possible, could have a potentially negative effect on student learning and their experience of simulation (Alinier, 2011:9; Clapper, 2011:e77; Miller, Leadingham & Vance, 2010:38). Likewise, lack of direction and unclear participant roles can lead to increased anxiety, which can also interfere with students' ability to learn (Whitman & Backes, 2014:e286). Conversely, when students participate in positive learning experiences, they are more likely to retain what they have learned (Fink, 2013:7; Ota et al., 2006:5).

Although numerous studies have demonstrated the benefits of simulation and support its implementation in nursing education, very little in-depth qualitative data are considered. Literature is mainly based on limited self-report and learner perception of descriptive quantitative analyses (Cook, 2010:3; Foronda et al., 2013:e413). Bland et al. (2011:668) appeal for research that will not merely determine the effects of simulation, but will uncover its full potential as a learning strategy. Therefore, research that will explore simulation learning experiences and the aspects that render these experiences meaningful or not

meaningful would be a step in the right direction (Cook, 2010:2; Onello & Regan, 2013: online).

In the literature on simulation in nursing education, I found more studies reporting on the simulation experiences of undergraduate nursing students than those of practising registered nurses. Furthermore, the results of several studies (involving nursing and medical students) are based on one or two simulation training events (for example, Beddingfield et al., 2011:48; Fraser et al., 2012:1061; Hauber et al., 2010:243; Levett-Jones et al., 2011:382; Maas & Flood, 2011:e230). After initiating simulation in the paediatric nursing programme during 2012, I was not convinced that one or two simulation encounters benefitted the students in accordance with simulation's potential as an effective learning strategy. I reasoned that students who had never participated in simulation before needed time to get used to the environment and the type of learning presented through simulation before any meaningful learning could occur.

In conducting my research, I hoped to gain a broader understanding of how simulation should be implemented so that my postgraduate students could experience simulation in the most meaningful way. Thus, the research question is:

*How can meaningful simulation learning experiences be achieved in the postgraduate paediatric nursing programme?*

## **1.4 Research purpose**

In my effort to answer the research question, the purpose of this research was to develop a strategy for meaningful simulation learning experiences in the postgraduate paediatric nursing programme. It was, however, not the purpose of this study to provide evidence that simulation is a valuable learning strategy. It was also not necessary to debate whether nursing education can benefit from simulation. Rather, the focus of this study was on delivering simulation in the best possible way to ensure that the students have the benefit of meaningful simulation learning experiences.

### **1.4.1 Study objectives**

In an effort to reach the purpose of the study and answer the research question, I had the following objectives:

1. Describe the outcomes of actions implemented to achieve meaningful learning experiences.
2. Identify and describe processes that influenced the paediatric nursing students' simulation learning experiences.

3. Finalise a strategy for meaningful simulation learning experiences in the postgraduate paediatric nursing programme.

## **1.5 Theoretical framework**

It is not possible to practise effective education without one or more learning theories to guide the process of teaching and learning (Yilmaz, 2008:161). Harder (2009:e171) is of the opinion that the use of simulation in nursing education has evolved to the point where educators are no longer just considering the content of simulation, but are now discovering how theory guides the development of simulation scenarios. If scenario development is grounded in theory, simulation begins to be more than an activity, but rather an opportunity for students to move beyond performing psychomotor skills into developing critical thinking and high-level problem-solving skills. However, for simulation to foster student learning, the nurse educator must shift from a teaching paradigm to a learning paradigm and use a foundational learning theory to design simulation learning activities (Kaakinen & Arwood, 2009:1).

Although several learning theories such as social learning theory, self-efficacy theory and cognitive learning theory could be used to explain how nursing students gain knowledge with simulation experiences (Kaakinen & Arwood, 2009:4–5; Rutherford-Hemming, 2012:129), I considered three theories that could be applied to maximise the potential benefits of simulation as a teaching and learning strategy for the postgraduate paediatric nursing students. In the following section, I briefly outline the theories that orientated my work, namely adult learning theory, experiential learning theory, and constructivism as a learning theory.

### **1.5.1 Adult learning theory**

The use of simulation in nursing education embodies the principles of adult learning as defined by several educators who use simulation (Rutherford-Hemming, 2012:129). However, effective education of adults through simulation requires a sound understanding of adult learning theories and best practices to facilitate adult learning (Zigmont, Kappus & Sudikoff, 2011:48). The adult learner is perhaps best described by Malcolm Knowles, whose adult learning theory (1970) has influenced many educators who use simulation training for the improvement of health care (Clapper, 2010:e9). In contrast to the concept of pedagogy, Knowles popularised the concept of andragogy, which can be defined as the art and science of helping adults learn (Clapper, 2010:e7; Zigmont et al., 2011:48). The theory is based on several crucial assumptions about the characteristics of adult learners. According to Knowles, adult learners:

- have independent self-concepts and are led by self-directedness, not dependency;
- draw on their accumulated reservoir of experience as a rich resource for learning;
- have learning needs that are influenced by social roles;
- are problem-centred and want to apply new knowledge immediately;
- need to know why they have to learn something before participating in learning; and
- are motivated to learn by internal rather than external factors (see also Clapper, 2010:e8; Klaassen, Smith & Witt, 2011:87; Knowles, Holton & Swanson, 2005:64-68; Tennant, 2006:9).

Students who enrol for the paediatric nursing programme have already obtained either a basic diploma or a degree in nursing with relevant experience as registered nurses. I therefore regarded the paediatric nursing students as mature individuals with the characteristics of adult learners as described by Knowles, hence my motivation to include Knowles's adult learning theory in my theoretical framework.

### **1.5.2 Experiential learning theory**

David Kolb's experiential learning cycle is considered to be one of the main conceptual frameworks used for experiential learning in simulation training (Stocker, Burmester & Allen, 2014:2). Lisko and O'Dell (2010:107) affirm that Kolb's theory can be applied to a wide group of situations because it allows for adaptation and application in a variety of disciplines. The theory is respected for its validity and reliability and has been the subject of extensive follow-up research in educational settings.

Kolb emphasises the importance of experience in adult education. He describes learning as the process whereby knowledge is created through the transformation of an experience (Kolb, 1984:27). According to him, learning is explained by an experiential learning cycle that comprises four components, namely (1) a concrete experience, (2) reflective observation, (3) abstract conceptualisation, and finally, (4) active experimentation. Kolb explains that students process new knowledge from their own frame of reference, create new concepts and test these through active experimentation. By direct involvement in an experience, students gain information and construct knowledge. During reflective observation, the student obtains personal meaning of the experience. In abstract conceptualisation, the student identifies potential application of information gleaned through his or her experience. Finally, in active experimentation, the learner tests his or her ideas, which subsequently leads to new experiences and continuation of the learning cycle (Rutherford-Hemming, 2009:134; Zigmont et al., 2011:50).

I selected Kolb's theory of learning based on the close parallels that exist between experiential learning and the methodology of simulation-based education. As an active and engaging learning strategy, it is possible to capture each step of Kolb's learning cycle in simulation learning experiences (Halamek & Yaeger, 2008:338). By repeating simulation learning events as often as necessary, the learner continuously constructs and tests knowledge. Since experiential learning also interrelates well with the principles of constructivism as a learning theory, I included constructivism as a learning theory in my framework.

### **1.5.3 The principles of constructivism as a learning theory**

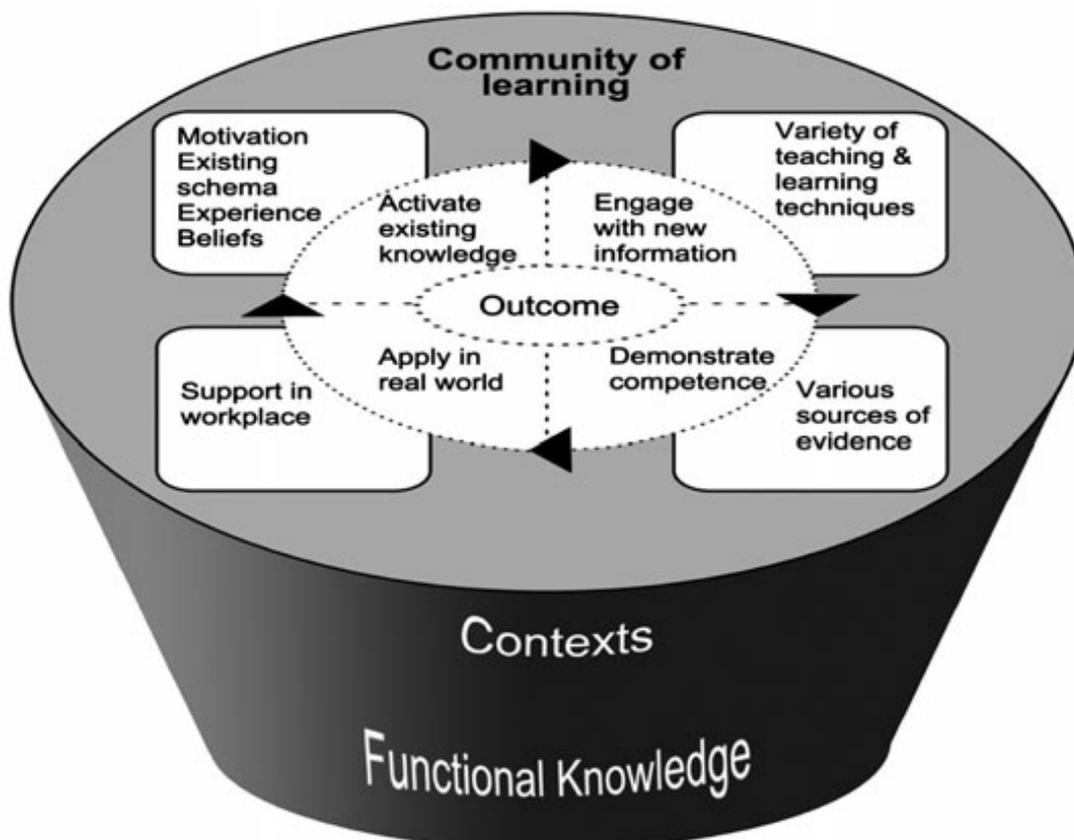
Constructivist learning theory originated from a larger constructivist epistemology that acknowledges multiple, socially constructed truths and perspectives. In education, the constructivist perspective posits that learning is an active process and that knowledge is not passively received from the world or educators but constructed by individuals or groups as they make sense of their experiential worlds (Hunter, 2008:354). The core element of constructivism is that students actively construct their own knowledge through learning experiences instead of relying solely on the information in the textbook or lectures from the educator (Biggs & Tang, 2011:22; Collins & Martin, 2010:197). Hence, learning is a process whereby students interpret concepts and principles by using existing knowledge to build new knowledge. The students activate prior knowledge and relate new information to knowledge they already possess and in so doing make meaning of subject matter as opposed to merely acquiring and accumulating information (Loyens & Gijbels, 2008:352). However, in order for students to construct knowledge, educators must create the sort of learning activities that will allow students to process new information and link it to existing mental frameworks through individual or social activity (Botma et al., 2015:503).

Simulation creates an environment for active learning to occur, either individually or for a group of students who work together. Knowledge is constructed when the student attaches meaning to the simulation experience and connects the new knowledge to a current or future situation with a patient (Rutherford-Hemming, 2009:134). In adherence to the principles of constructivism, I determined to provide problem-solving simulated scenarios that would direct the students toward a specific learning objective, yet afford them the freedom to access information sources independently, think critically and develop their own resolutions to problems. In this way, the student is not restricted to reaching the learning goals but the process will help them in developing clinical-judgment skills, and promote skills in seeking information, teamwork and collaboration (Parker & Myrick, 2009:327). I utilised a simulation development template that was uniquely designed by a team of educators at the UFS School

of Nursing, to structure and develop simulated scenarios. The underpinning principles of the template are scaffolding, authenticity and alignment of learning outcomes with learning activities.

## 1.6 Instructional design applied in the paediatric nursing programme

Educators at the UFS School of Nursing use a uniquely designed conceptual framework (see Figure 1.1) that is based on the principles of constructivism as a learning theory, constructive alignment, and the elements of effective learning opportunities as guidance for educational activities such as the development of curricula and themes for modules presented. The purpose of the framework is to promote transfer of learning (Botma et al., 2015:503). I used this framework to design educational instruction in the paediatric nursing programme and therefore deemed it appropriate in the context of implementing and exploring simulation learning experiences. In addition, I could interlink the principles of the framework with my theoretical orientation and simulation as a teaching and learning strategy.



Source: Adopted from Botma et al. (2015:503).

*Figure 1.1: Conceptual framework for educational design*

The framework consists of four steps, namely (1) the activation of existing knowledge which allows knowledge construction when new information is integrated into existing mental schemas, (2) engagement with new information during which deep learning is promoted as a result of a meaning-making process by the student, (3) the demonstration of competence which allows for novice nurses to progress to a stage of competence through activities that are designed to improve performance, and (4) application in the real world which means that the student should be able to transfer learning in the workplace. These steps are dependent on the achievement of learning outcomes appropriate to a student's training level, and on the premise that the learning takes place within a community of learning that helps the students in developing skills such as communication and critical thinking (Botma et al., 2015:503–506).

Since students entering the postgraduate paediatric nursing programme already have clinical experience in child healthcare settings, I assumed that the participating students would have existing knowledge in terms of child health care. Hence, the activation of existing knowledge could be achieved by activities such as group discussions or by deliberately asking the students to recount interesting experiences from their respective workplaces.

In the engagement phase, preparation for simulation learning experiences would take the form of activities such as lectures, workplace learning and skills training under the guidance of a preceptor, the facilitation of collaborative learning through group sessions, and completing workbook items. Learning activities would be aligned with simulation scenario topics and expected student outcomes appropriate to the level of advanced practitioners. By participating in groups of five to six members, the students would be expected to demonstrate competence during simulation learning experiences and allow opportunities for the development of advanced skills in a community of learning consisting of a group of adult learners.

Applying the principles and steps of the conceptual framework to the design and implementation of simulation may enable the paediatric nursing students to demonstrate their functional knowledge in different contexts by applying the content and skills that they have learned appropriately.

Based on the interconnections that exist between the conceptual framework for educational design, my theoretical framework and Fink's taxonomy of significant learning (Fink, 2013:35), I included the taxonomy as an explanation of meaningful simulation learning experiences. The taxonomy is based on the perspective that learning should result in some kind of lasting change in the student. However, for a lasting change to occur, learning itself must be significant (Fink, 2013:34).

The first category of significant learning is foundational knowledge and it is in close parallel with the second step of the conceptual framework (engage with new information). This category refers to knowledge construction when students learn to understand and remember specific information and ideas (Fink, 2013:34). Similarly, the second category of the taxonomy, namely application, links with the second step of the conceptual framework because in terms of significant learning, application means that students learn how to engage in various kinds of thinking and develop skills when they engage with learning material. The third category, integration, occurs when students are able to see and understand connections between different things. In the context of this study, their participation in simulation would afford them the kind of experiential learning that could help them to make connections between specific ideas and various learning experiences and in so doing demonstrate and develop competence. This category links well with the first component of Kolb's learning cycle during which students encounter a concrete learning experience such as a simulated scenario where they would be expected to demonstrate clinical skills such as the interpretation of blood gas results or the physical assessment of a patient with an underlying health problem.

The fourth category of significant learning relates to the human dimension, which means that when students learn about themselves and others, it enables them to function and interact more efficiently. In the context of simulation learning experiences, the scenarios are designed to allow groups of students to participate and they are therefore dependent on one another in the learning situation. As mature individuals, it is expected that they will display the characteristics of adult learners as described by Knowles when they participate in learning events during which they learn with and from each other.

The fifth category of significant learning implies that when students care about something, they have the need and energy for more learning. Since simulation sessions are designed to deal with real patient problems, the learning experience can change the degree to which students care about something that could in turn affect their values and beliefs. The last category is learning how to learn, which means that students develop insight into their own shortcomings as learners and can stimulate the development of self-direction and continuous learning (Fink, 2013:35–37). In the context of simulation, the debriefing sessions would be opportunities for the students to reflect and gain insight into their performance and hopefully discover areas that need change or improvement and reinforce the lessons learned during previous sessions. The debriefing sessions are linked with the second and third components of Kolb's learning cycle because it is during these sessions that reflective observation and abstract conceptualisation occur. Kolb's learning cycle concludes when the students get the opportunity to test their new knowledge in a subsequent simulation learning experience.

## 1.7 Study design

In order to develop a strategy for meaningful simulation learning experiences and gain a broader understanding of the learning experiences from the paediatric nursing students' perspective, I conducted action research. I regarded action research as a suitable research method since it would afford me the opportunity to draft a strategy and to refine its contents through a number of action cycles. The informants in the process of developing and refining the strategy would be the paediatric nursing students and I. Since the action cycles would span across two academic years, I could gain the input from two different groups of paediatric nursing students. I used several data collection techniques suitable for action research purposes. I describe my choice of methodology in the following chapter, which is followed by an account of the fieldwork that comprised my research.

## 1.8 Concept clarification

As the field of simulation in health care has evolved rapidly, so did the use of simulation terminology. Unfortunately, there seems to be a lack of consensus on the definitions of some concepts often used by nurse educators and researchers alike (McCaughey & Traynor, 2010:828; Parker & Myrick, 2009:323). In the following section, I clarify and define the concepts frequently used in this study.

### 1.8.1 Simulation

This concept is derived from the Latin verb *simulare*, which means 'to look or act like' (Merriam Webster, 2014: online). Simply stated, simulation is the act of imitating a specific situation or process by means of something suitably analogous for training purposes (Nel, 2010:65). Gaba's conceptual definition of simulation is most often quoted and he emphasises that "[s]imulation is a technique, not a technology, to replace or amplify real experiences with guided experiences, often immersive in nature, that evoke or replicate substantial aspects of the real world in a fully interactive fashion" (Gaba, 2007:126).

In the context of this study, simulation is not a technique that was used for task training or demonstrating and practising psychomotor skills. Rather, it was used as a teaching and learning strategy that was aimed at providing immersive learning experiences whereby students experience the task or the setting as they would if it were the real world. Immersive learning experiences imply emotional, cognitive and psychomotor engagement of the student. Therefore, full-bodied, computer-driven simulators that resemble either a new-born infant or a five-year-old child were used in the authentic environment described at the beginning of this chapter.

### **1.8.2 Simulation learning experience**

In context of this study, a simulation learning experience refers to a simulation encounter designed for a group of students who work together. A simulation learning experience consists of three stages, namely briefing, a simulated scenario, and a post-event debriefing session. During briefing, students are orientated regarding the clinical case, and every participant has a specific role assigned to him or her. Briefing is followed by the simulated case or scenario and a subsequent debriefing session that allows for feedback and reflection on the experience. Arafeh, Snyder Hansen & Nichols (2010:302) define debriefing as ‘the process whereby the healthcare team can re-examine the clinical encounter to foster the development of clinical reasoning, critical thinking, judgment skills, and communication through reflective learning processes’. During this group discussion, which is usually facilitated by the educator, feedback on the simulation is provided and students are given the opportunity to reflect actively on the experience. This process is closely linked to ‘reflective observation’ in Kolb’s learning cycle. It is considered an important phase in the simulation learning experience as it is where the learning and processing of new information occurs (Issenberg et al., 2005:21).

### **1.8.3 Meaningful learning experience**

According to Fink (2013:8), a meaningful learning experience has both a process and an outcome dimension. The process of a meaningful learning experience includes engagement and high energy. It means that students who experience a learning event as meaningful are engaged in their learning and, because of their eager participation, there is a high level of energy in the class. The outcome dimension of meaningful learning experiences refers to significant changes that occur in the students and that continue after the course is over. The lasting change occurs because the students valued what was learned.

### **1.8.4 Fidelity**

The degree to which the real world is reproduced or imitated is known as the fidelity of the simulation (Page, 2008:44). Usually, when simulation fidelity is addressed in literature, authors use the descriptors high, medium, or low (Page, 2008:44; Rothgeb, 2008:489). In literature, simulation is often referred to as ranging from low- to medium- to high-fidelity. However, the Oxford English Dictionary’s (OED, 2014: online), definition of fidelity, namely “[t]he degree of exactness with which something is copied or reproduced” does not capture the complexity of the concept when used in combination with simulation. This description may also prove inadequate if the full meaning of the descriptor is not clarified. Based on an in-depth literature review, authors Paige and Morin (2013:e481–e489) suggest that

simulation fidelity should be referred to as a multidimensional concept. According to them, simulation fidelity can best be described as a matrix consisting of three dimensions, namely physical, psychological, and conceptual. Additionally, each dimension has a level that ranges from low to medium to high. Simply stated, the closer a dimension is to reality, the higher the fidelity.

*The physical dimension* of fidelity covers equipment and environmental attributes. Equipment, for example, is characterised by the level of manikin technology, whereas environmental attributes are characterised by the appearance and layout of the simulated setting. *The psychological dimension* reflects a student's perception in terms of how believable the representation of reality is and links with how the student will then engage and experience the simulation (Paige & Morin, 2013:e485). The level of the learner's psychological engagement will be affected by the reality of events or tasks during the simulation encounter and whether the scenario reflects real situations as closely as possible. *The conceptual dimension* refers to how students connect theoretical concepts to actual events during the simulation encounter. For example, if the scenario is about managing a patient in a state of shock but the 'patient' displays a very high blood pressure and strong pulses, a student might become confused or might not interpret that a state of shock is often accompanied by low blood pressure and weak pulses. To prevent this negative transfer, the difference between the training device and the real situation should be clearly explained to students.

I support Paige and Morin's (2013) suggestion to describe simulation fidelity as a multidimensional concept. From the above-mentioned explanation of simulation fidelity, I deduced that high-fidelity simulation includes a full-bodied, computer-driven simulator (*high-level equipment*) in an environment that resembles a particular healthcare setting as closely as possible (*high-level environment*). Additionally, lifelike scenarios help students to experience optimal immersion where students have to, for example, apply their emotions, values, and beliefs during the learning experience (*high-level psychological engagement*). Finally, to achieve *high-level conceptual* fidelity, well-written scenarios link simulation activities with actual nursing problems such as a patient with respiratory dysfunction or burn injuries. Hence, students have opportunities to develop clinical reasoning skills when they have to connect a theoretical concept with its meaning to real-life situations.

### **1.8.5 Paediatric nursing student**

In the literature, nurses who care for children are often referred to as 'children's nurses' (Hilliard & O'Neill, 2009:2907; Randal & McTaggart, 2009:90) or 'paediatric nurses' (Broussard et al., 2009:4). I refer to qualified registered nurses who enrol for the paediatric

nursing programme at the UFS School of Nursing as 'paediatric nursing students' or otherwise 'students'. These two concepts may be used interchangeably with 'participant(s)' to denote their participation in this study.

### **1.8.6 Strategy**

A strategy can be described as a plan of action to achieve a particular long-term or overall aim. Synonyms of strategy include master plan, grand design, procedure, and approach (OED, 2014: online). In this study, I use the concept to denote my plan and approach to simulation in order to achieve the overall aim of meaningful simulation learning experiences in the postgraduate paediatric nursing programme. Strategies take on many forms and are used for varying purposes. I present the format of my strategy in the chapters dealing with the fieldwork.

## **1.9 Study outline**

In this chapter, I provided a brief background to the use of simulation in nursing education and explained how I became interested in the use and optimisation of simulation as a teaching and learning strategy in the postgraduate paediatric nursing programme. I described the research purpose and question, clarified concepts and explained my theoretical framework. In Chapter 2, I describe my research design and methodology in detail. It is followed by a description of the core fieldwork in Chapters 3, 4 and 5. In Chapter 6, I present a finalised strategy for meaningful simulation learning experiences. Then, in Chapter 7, I conclude the study by describing the relevance of findings and study limitations. I make final recommendations and give an account of my professional development.

# Chapter 2

## Action Research as a Form of Applied Educational Inquiry

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*You can learn action research only by doing it,  
not simply by learning about it.*

McNiff (2014:27)

### 2.1 Introduction

According to Mills (2007:6), the purpose of research in the field of education, regardless of the context, is to improve the quality of education that students receive. In this study, I used educational action research to address a concern that I identified regarding the use of simulation as a teaching and learning strategy in the paediatric nursing programme. Academics who study the practice area itself and who are not action researchers may be sceptical about any knowledge generated by action research. However, through my action research thesis, I endeavour to present evidence of my learning through reflection as well as my contribution to knowledge in both theory and practice. The information in this chapter is intended to provide a clear understanding of the motivation and style of my approach. As recommended by Zuber-Skerritt, Fletcher & Kearney (2015:224), I explain and justify my action research paradigm by describing my choice and use of qualitative research methods, which includes methodological rigor, data gathering and analysis, and standards of ethics in educational action research.

### 2.2 Action research

The origins of action research are broad, but Kurt Lewin, a German social psychologist, is often credited with the development of the idea of action research (Adelman, 1993:7; Cassel & Johnson, 2006:790; Creswell, 2012:577; Hein, 2009:98; Mills, 2007:5). In the late 1930s, Lewin and his students conducted quasi-experimental tests in factory and neighbourhood settings to demonstrate the greater gains in productivity through democratic participation rather than autocratic coercion (Adelman, 1993:7). Lewin showed that action research, as a means of systematic inquiry for all participants, could improve the social and living conditions of disadvantaged groups through the development of social relationships characterised by communication and cooperation (Cohen, Manion & Morrison, 2007:297; Lewin, 1946:34-46) rather than through experimental methods, which he found inadequate and unsatisfactory (Hein, 2009:98). Hence, action research has been defined as a research process that uses

collaboration and collective problem solving to change organisations and environments (Simms, 2013:2).

Action research originated during an era that focussed on empowerment and change, gathering momentum across contexts and cultures (Zuber-Skerritt & Fletcher, 2007:413). After fleeing Berlin in 1933, Lewin continued his efforts to establish action research programmes in the USA. Among Lewin's co-workers were George Counts, David Young, and educationalist John Dewey. After Lewin's death in 1947, action research continued to gain momentum and is currently an acceptable research method in the United Kingdom (UK), the USA and many other parts of the world (Adelman, 1993:8–15). Besides Lewin, other action researchers also point out that their grounding was influenced by scholars such as John Dewey (1960), Paul Freire (1970), Habermas (1971), Kemmis and McTaggart (1987), and Chris Argyris and Donald Schön (1978), who advocate for empowerment through practical action and reflection (Herr & Anderson, 2005:4,5,15).

Different views of action research abound within the literature. The web of theory that supports action research includes ideas about being critical, evaluative, systematic, strategic, participatory, collegial, collaborative, self-reflective about practice, empowering, emancipatory, and having theory inform practice and practice inform theory (Melrose, 2001:161). Hence, there are several terms in current use that describe research done either by or in collaboration with practitioners and/or community members. The most common ones are *action research*, *participatory action research*, *practitioner research*, *action science*, *collaborative action research*, *cooperative inquiry*, *educative research*, *appreciative inquiry*, *emancipatory praxis*, *community-based participatory action research*, and *teacher research* (Herr & Anderson, 2005:2). The different names exist because practitioners of action research draw from different worldviews and therefore believe that there are differences in the way that action research should be deployed and practised (Lincoln, 2001:124). For example, action researchers Levin and Greenwood draw on pragmatic philosophy, Kemmis and Carr on critical thinking and the practice of democracy, Fals Borda on liberationist thought, and Rowan on humanistic and transpersonal psychology (Reason & Bradbury, 2001:3).

McNiff and Whitehead (2002:15) explain that action research is a name given to a particular way whereby a practitioner researches his or her own practice to determine whether the practice needs improvement. Practitioner researchers will decide on an area of focus, take action to improve the situation and produce evidence to show in what way the practice has improved. Osterman, Furman and Sernak (2013:2) mention that action research is distinct in that it focusses on a problem of practice; is conducted by practitioners in their own

organisational settings; and aims at generating, implementing, and assessing an action plan to address the problem. In describing the main features of action research, Stern et al., (2014:2) explain that action research aims at improving social relations, leads to social action, relies on fact-finding, and connects theory and praxis. They point out that such a research process does not just mechanically spiral from one action cycle to the next, but includes phases of deep reflections and readjustments of the general idea that inspired its undertaking. Similarly, Zuber-Skerritt et al. (2015) emphasise that action research is more than just a research methodology. They describe it as follows (Zuber-Skerritt et al., 2015:102):

[It] is a way of engaging with groups of people to integrate theory and practice, research and development; to improve practice (action) and to create understanding and new knowledge (research) that is relevant, useful and contextualised, including local knowledge; to promote professional learning through critical reflection; and to achieve continuing growth, positive change and sustainable development.

Over the years, action research has gained acceptance in applied fields such as education, social work, nursing and public health (Herr & Anderson, 2005:25), and many more examples of how scholars explain and do action research exist. However, the primary focus of all these efforts, regardless of the context, is on enhancing the situations or lives of individuals. Hence, action research is a democratic and constructive method of research because it allows people to participate in the research process, which promotes equality among individuals (Mahani & Molki, 2012:212).

A recognised feature of action research is that it is designed to yield practical results that are immediately applicable to a specific situation or problem while some other research approaches may leave the practical application of findings as recommendations (Hien, 2009:99; Suter, 2006:153). In the field of education, action research provides an opportunity for educators to reflect on their own practice as a means of professional development, and to improve practice by taking action and to do so by participating in it (Creswell, 2012:577). McNiff, Lomax and Whitehead (2003:19) describe the concept of education as a process during which people develop in life-affirming ways as a result of educative relationships. To them, an educator is not a teacher or an instructor; they state that educators are people who help other people to grow. These features of action research (improving practice through the immediate application of findings, professional development through self-reflection and participation, and an opportunity to help the students grow by building trusting relationships with them) were of particular interest to me, and motivated me to select action research as an approach to my study.

## 2.3 Approaches to Educational Action Research

There are five major traditions of educational action research that have had an influence on the development of research in the educational systems of many countries. First, influenced by the work of Lewin, Stephen Corey was acknowledged as a principle promoter of action research in education in the USA during the 1950s. Later, in the 1960s and 1970s, the British teacher-as-researcher movement was supported by academics such as Lawrence Stenhouse and John Elliot who promoted educational action research by emphasising the perspective of teachers as researchers. Then, after having worked with Stenhouse, Stephen Kemmis and his colleagues became leading proponents of educational action research in Australia. The contemporary teacher-as-researcher movement developed by teachers in North America after 1980 was finally followed by the recent growth of research by college and university educators who inquire into their own educational practices (Zeichner, 2001:274).

Educational action research drew critical opposition from sceptics but ultimately gained footing and legitimacy in the past 20 to 25 years (Nolen & Vander Putten, 2007:401). Attitudes toward action research within academia are often complicated by a lack of conceptual clarity about action research as a research method in education (Osterman et al., 2013:4). Although some traditional researchers may argue that action research is too informal, other scholars are of the opinion that action research is particularly suitable for educational situations where educators aspire to bring about action in the form of change in their teaching and simultaneously develop an understanding that informs the change (Greenbank, 2007:98; Hien, 2009:98,109, Suter, 2006:152, Zambo, 2014:506). Currently, there are a wide variety of approaches to conceptualising, organising, and supporting educational action research.

Based on underlying rationales for conducting educational action research, practitioners approach the research differently by accepting one of three types of inquiry, namely technical, practical, or emancipatory action research (Greenbank, 2007:98; Kemmis, 2009:463; 469; Melrose, 2001:162; Zuber-Skerritt et al., 2015:118). Kemmis (2009:469) describes technical action research as a means to improve control over certain outcomes in a situation. In this type of action research, the end is known because the researcher will analyse existing practice and identify elements for change. Examples include finding ways to improve students' test scores, or implementing actions to keep students motivated to learn. There is a one-way relationship between the researcher and others involved in or affected by the research because it is the researcher who decides who participates, what is to be done, what sense is to be made of the observations, and what should be changed. Hence,

knowledge generated through this orientation takes on the form of causal explanations and instrumentation (Herr & Anderson, 2005:27). Zuber-Skerritt et al. (2015:118) note that the aim of technical action research is to improve the effectiveness of educational practice. Elliot (1994:134) emphasises that apart from experiencing definite improvement in his or her own practice, a teacher conducting technical action research must be able to provide the necessary evidence of claim pedagogical change in classrooms and schools.

Whereas technical action research is viewed as a short-term solution to problems, practical action research aims at improving the effectiveness of practice as well as the development of practitioners' understanding and interpretation of social situations (Cohen et al., 2007:302; Kemmis, 2009:469). It takes a more applied and contextualised approach to action research whereby practitioners' professional development is fostered through their capability as knowledge makers, rather than simply as knowledge users (Elliot, 1994:133; Mills, 2007:20). With regard to the researcher's role, Mills (2007:7,9) points out that practical action researchers have, to some degree, decision-making authority and can determine the nature of the research to be undertaken. However, it is important to note that the practical action researcher views participants as subjects (not objects) who are capable of speech and action, and as the persons who will live with the consequences of what has been done. Although the researcher might still be the one who decides which practices to explore or what changes are to be made, he or she remains open to the views and responses of others, which implies a reciprocal relationship between the researcher and those involved in and affected by the research (Kemmis, 2009:469; Melrose, 2001:162). Hence, the researcher engaged in practical action research employs interpretive methodologies in an effort understand a given situation and seeks to generate knowledge that informs and guides practical judgements (Herr & Anderson, 2005:27).

Emancipatory action research (also referred to as critical action research) has its roots in critical and postmodern theory and emphasises democracy, liberation (Mills, 2007:20) and the investigation of ideology and power within organisations and society (Herr & Anderson, 2005:7). Although it has the same objectives as practical action research, emancipatory action research is strongly guided by an interest in emancipating people and groups from irrationality, injustice and harm or suffering (Kemmis, 2009:469). The research is undertaken collectively, by people acting together to decide what to explore and what to change (Melrose, 2001:160). There is no chain of command between the researcher and the participants (Mahani & Molki, 2012:211). The emancipatory researcher not only treats the group as equals, but also leaves the group enabled to continue with the research without expert help. The researcher's role is that of a moderator who ensures that conditions necessary for organisational change are established and maintained (Zuber-Skerritt et al.,

2015:118). The anticipated outcome of emancipatory action research is a change in the way people think and talk about their world, the way they act in and on it, and in the ways they relate to others and to the environment (Herr & Anderson, 2005:27; Kemmis, 2009:472). Hence, emancipatory action research has an explicit agenda which is as political as it is educational (Cohen et al., 2007:302) and the participants aim to change their social world collectively, by thinking about it differently, acting differently, and relating to one another differently (Kemmis (2009:471).

According to Zuber-Skerritt et al. (2015:119), the three types of action research are developmental stages of which technical action research can be the point of entry with a gradual progress to a higher level. Depending on the research focus and purpose, the action researcher will select the type of action research most suitable to address an immediate situation or problem. It is therefore acceptable for one action research project to begin as technical, and progress to be emancipatory action research (Melrose, 2001:162).

It was not my purpose to perform a one-way investigation into my own educational practice to find short-term solutions to problems (as in the case with technical action research), but rather to conduct an investigation whereby I could improve the overall effectiveness of my practice. This approach would benefit not only me but also the students who would directly gain from the knowledge generated during the research process. Therefore, the type of educational action research performed in this study was practical in nature because, although I was the one deciding which practices to explore, I remained open to the views and responses of the 3 students and incorporated their suggestions for improving practice.

## **2.4 Paradigmatic assumptions and perspectives**

As articulated earlier, there are different ways to understand and define action research. Cassell and Johnson (2006:785) explain that the evident ambiguity surrounding the term 'action research' can be linked to competing conceptions of 'science' that inspire different forms of action research praxis. This is because different combinations of assumptions about ontology and epistemology constitute the perceived disagreeing understandings of science, which in turn influences the way that any research is conducted (Burns & Grove, 2009:10; Nieuwenhuis, 2007:70; Speziale & Carpenter, 2007:8). In other words, the research process is ultimately guided by the particular conception that a researcher forms regarding the relationship between the subject (the knower) and the object (what is known) (Bailey, 1997:18; Mouton, 2001:138). In terms of action research, Cassell and Johnson (2006:806) argue that "even a cursory review of the philosophy of science would also show how any epistemological and ontological stance is always contentious: there is no incontestable

scheme of ontological and epistemological standards which may be developed to govern action research".

From the literature it seems that there is no definite paradigmatic scheme that fits all types of action research. Hence, in the following section, I explain my own paradigmatic assumptions and perspectives and how these influenced the way in which I positioned myself as a practitioner of educational action research.

#### **2.4.1 Ontological assumptions**

Based on my view about human behaviour and my belief that reality is socially constructed, my worldview is that of social constructivism, a view that is often combined with interpretivism (Creswell, 2009:8; Mouton, 2001:141; Mustafa, 2011:25). The social constructivist holds the assumption that individuals seek understanding of the world in which they live and work and develop subjective meanings of their lived experiences (Bryman, 2008:15,16,388; Creswell, 2009:8). Since these meanings are varied and multiple, the researcher attempts to understand the complex world of lived experiences from the point of view of those who live in it (Nieuwenhuis, 2007:55).

Therefore, in contrast with a positivist worldview, I do not perceive the social world as made up of relatively fixed phenomena and physical laws and that research participants are objects who can be studied from the outside (Bryman, 2008:692). I also do not believe that knowledge and truth exist outside the mind of the individual (Peters, 2000:167). I view the social world as an entity made up of actual people who shape their lived world by the unique way in which they interact with each other and as a result construct reality (Bryman, 2008:692; Mertens, 2010:18; Schwant, 2000:197). The implication of this belief is that human experiences can be understood from within and that as a researcher, I am not separated from the research (Nieuwenhuis, 2007:4). Therefore, as an educator doing research from a constructivist point of view, I assume that realities can be altered and reconstructed through the process of action research (Lincoln, 2001:129).

Action research is intended to influence some part of the world, however small or large (Dick, 2002:166). Hence, I believe that the context in which the research takes place affects the whole process and needs to be taken into account. In the context of this study, I perceived the social world as the educational practice environment, namely the UFS School of Nursing. Based on the assumption that reality is socially constructed, I was determined to understand the students' learning experiences through my encounters with them in the academic setting. Additionally, I endeavoured to build an understanding of my own lived world as a nurse educator. As a teacher researcher, I viewed myself as being in a reciprocal relationship with

the students, colleagues and the environment of my practice. I share the opinion of Kemmis (2009:469) that the action researcher views participants as individuals capable of speech and action who will live with the consequences of the research outcome. Although I acknowledged that I was the one who would mainly decide which practices to explore or what changes were to be made, I determined to remain open to the students' views and responses. In contrast with an outsider approach, I positioned myself as an insider researcher who conducted the research 'with' the students and not 'on' them. Therefore, my focal research question was formulated not only to address an issue in my educational practice that I wanted to understand more clearly (Herr & Anderson, 2005:73); I also believed that through the process of action research, an improvement of my practice could be achieved which would ultimately benefit students in the paediatric nursing programme.

#### **2.4.2 Epistemological assumptions**

Based on the view that reality is a product of subjective experience, researchers drawing from a social constructivist paradigm are often influenced by the philosophy of interpretivism, which respects differences between people and asserts that meaning should be investigated from a participant's point of view (Bryman, 2008:16; Schwandt, 2000:197). Consequently, they adopt more personal and interactive modes of data collection (Mertens, 2010:19) and aim to understand data in terms of the meanings of human behaviour (McNiff & Whitehead, 2006:40). For positivist researchers, however, the goal of knowledge generation is simply to enable descriptions, explanations and predictions of phenomena; therefore, a key approach to scientific method is experimentation, whereby natural laws are discerned through direct manipulation and observation (Henning, Van Rensburg & Smit, 2004:18). In contrast, social constructivists are sensitive to the role of context and will construct knowledge by looking at different places and at different things in order to understand and describe people's intentions, values and meaning making.

Baumfield, Hall & Wall (2013:1) note that action research does not simply mean finding an answer to an original research question; rather, it is a process of research through which knowledge is created based on inquiries conducted within specific and often practical contexts. The knowledge is created through action and at the point of application (Koshy, Koshy & Waterman, 2011:3). Knowledge construction transpires through everyday activities that require cooperation with others. Hence, through my involvement with the students in the academic setting, I acknowledged them as co-creators of knowledge based on their unique experiences within the learning environment. I viewed them as independent, mature learners with the ability direct their own learning and make decisions based on the characteristics of adult learning. Based on my selected theoretical framework as described in Chapter 1, I

assumed that knowledge would be constructed by means of experiential learning and constructivism as applied to educational practice.

### **2.4.3 Methodological implications**

According to McNiff and Whitehead (2005:3), the fundamental goals of action research are to improve practice and to generate new theory. Mills (2007:10) is of the opinion that action research encourages educators to be continuous learners in the classroom and in their practice and thus ensure professional growth. This view is supported by Kemmis (2009:463,469) who states that action research is aimed at changing practitioners' practices, their understanding of their practices and the conditions in which they practise. Methods used to answer research questions within a social constructivist framework are unstructured and data are analysed to capture 'insider' knowledge (Henning et al., 2004:20).

Based on my constructivist worldview, I adopted practical action research instead of technical action research as an approach to my study because I attempted to understand the context within which the inquiry occurred, and subsequently to improve my educational practice. Apart from resonating well with my worldview, the underlying assumptions of practical action research provided a framework that allowed me to use predominantly qualitative methods of data gathering in my pursuit to understand and interpret the students' learning experiences. At the same time, my position as an insider researcher, and therefore my deep involvement with and reflection on the students' learning experiences, could answer my quest to improve my own educational practice (Herr & Anderson, 2005:33; Zeni, 1998:10).

In conclusion, I acknowledge that action research links well with a participatory or critical worldview as proposed by numerous practitioners of action research. This worldview arose during the 1980s and 1990s from individuals who felt that postpositive assumptions did not fit marginalised individuals in society or issues of social justice that needed to be addressed (Creswell, 2009:9). Thus, research driven by this worldview contains an action agenda for reform that may change the lives of the participants, the researcher, and the institutions in which individuals work or live. The researcher often becomes the 'voice' of those who are in need of social upliftment or emancipation. Since my research purpose was to address a local, practical problem, I could not work within the critical action research paradigm because I did not view my research as one where I aimed to empower, transform and emancipate individuals from situations that constrain their self-development and self-determination. Nor did I endeavour to extend the boundaries of collaboration between schools, universities, colleges, and the community (Keiny & Orland-Barak, 2009:166) as proposed by some practitioners of educational action research (Zuber-Skerritt et al., 2015:120).

## **2.5 Defending knowledge claims of educational action research**

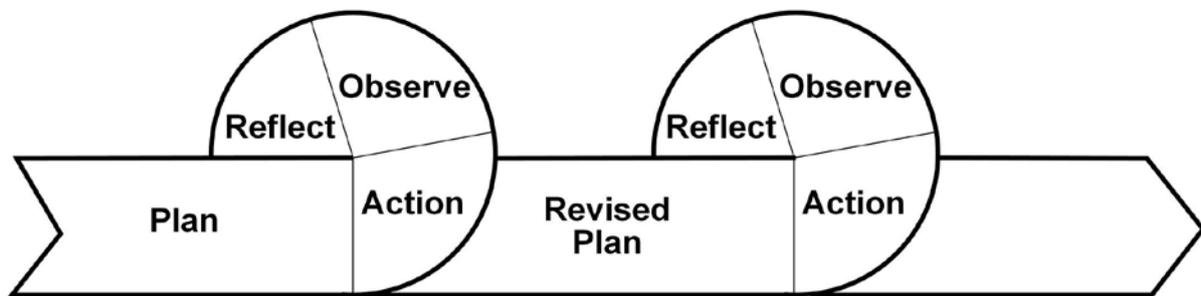
During the cyclical process that alternates action with critical reflection, the action takes the form of change, improvement or implementation in one's workplace. As articulated earlier, the research consists of learning and understanding, and has a capacity to respond to the demands of the informants and the situation in a way which most other paradigms cannot. Hien (2009:99) and Suter (2006:153) endorse this view and mention that a recognised strength of action research is that findings are easily translated into practice while some other research approaches may leave the practical application of findings as recommendations. Mahani and Molki (2012:212) argue that action research empowers educators to question and challenge traditional guidelines and methods of instruction, which enables them to take authoritative steps toward evolving their professional abilities. The knowledge that is created and shared with others gives educators an influential voice to influence decisions regarding their educational setting.

For Stringer (2004:10), the strength of action research performed by educator researchers lies in the systematic execution of carefully articulated processes of inquiry. This means that the educator researcher carefully designs a research project based on the issue to be investigated, gathers data from a variety of sources, analyses the data to identify vital issues, communicates the outcome of the project to relevant audiences and uses the outcomes of the project to create solutions to the issue investigated. According to Wells (2009:52) and Zuber-Skerritt et al. (2015:122), research by educators into their own teaching practice has proven to be more appropriate and effective than educational research conducted by specialist educational researchers and then applied by educators. Elliot (1994:133) states that "[a]s action researchers, teachers are knowledge generators rather than appliers of knowledge generated by outsiders". Therefore, practitioners are in a position to offer unique insights into knowledge construction about practice, better insights than academic researchers who merely study or observe practice. McNiff et al. (2003:22) contend that the outcome of the action research should be the practitioner's changed understanding of his or her practice together with an understanding of how the change occurred. For this reason, it is nearly impossible for the action researcher not to develop on a personal and professional level while investigating a problem area about which the researcher feels passionate.

## **2.6 The process of action research**

Central to the process of action research is the action research cycle comprising planning, action, observation and reflection, and revising plans to enter a new cycle (see Figure 2.1). These steps or cycles require the action researcher to develop a deeper understanding of a problem and to use the new understanding to design an appropriate action plan. With

determined focus on the problem, the research cycle continues as the researcher implements the planned change and systematically assesses actions and the effects of his or her efforts (McNiff & Whitehead, 2002:92; Melrose, 2001:162; Osterman et al. 2013:2).



Source: Author's own (2016).

*Figure 2.1: The process of action research reflected by action cycles*

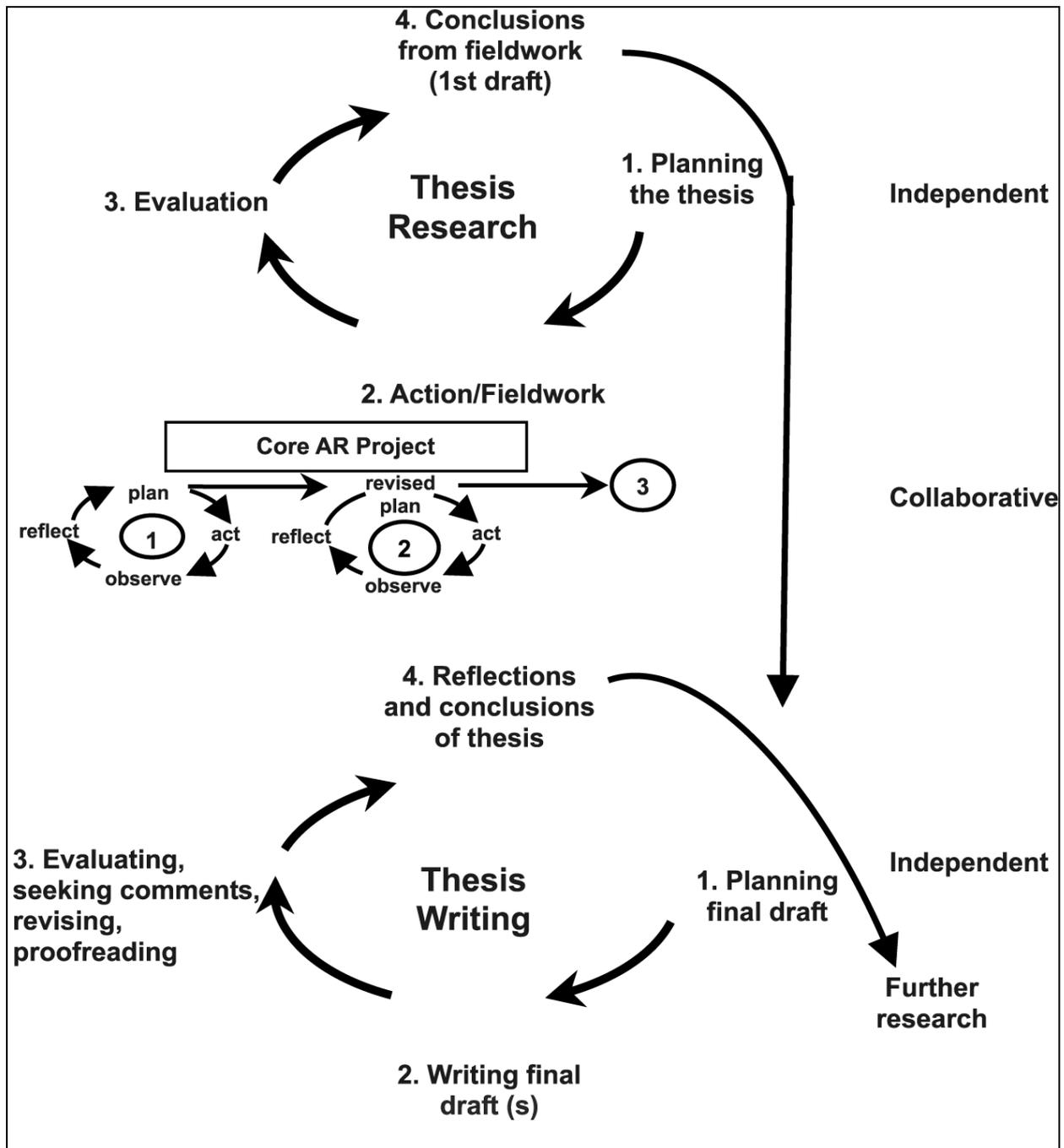
The flexible spiral process of action research allows for action (change and improvement) and research (understanding and knowledge). Methodical progression through each step of the cycle allows a systematic change in practice by using whatever on-the-ground evidence one can obtain and then using the evidence to judge whether the changes are in the right direction by employing critical reflection before the next action (Biggs & Tang, 2011:5; Dick, 2002:159; Stern et al., 2014:2).

Mills (2007:15-18) describes how researchers have developed specific models or guidelines for action research based on the context of its application. Although the models are presented in different ways, they all share some common elements, namely a sense of purpose based on a problem or area of focus (problem identification), observation or monitoring of practice (collection of data), analysis and interpretation of data (reflection), and some form of action that invariably spirals the researcher back into the process repeatedly (development of an action plan).

### **2.6.1 The action research process used in this study**

Apart from being sceptical about knowledge generation through action research, traditional scientific researchers may not always agree that action research is suitable for postgraduate research. This doubt may stem from unfamiliarity or even hostility that some university academics have towards the underlying ontology and epistemology of action research (Herr & Anderson, 2005:52; Osterman, 2013:4; Zuber-Skerritt & Fletcher, 2007:414). However, Dick, a reputable author of educational action research, notes that the dual outcomes of action research make it particularly suitable for postgraduates who wish to improve their own work practice while they pursue a postgraduate qualification (Dick, 2002:159). In an attempt to assist PhD candidates in writing their thesis, Zuber-Skerritt and Perry (2002:177)

developed a conceptual model that is useful for an action research thesis and is illustrated by Figure 2.2.



Source: Adopted from Zuber-Skerritt and Perry (2002:177).

**Figure 2.2: Conceptual model for an action research PhD thesis**

As illustrated by Figure 2.2, the process begins by planning the thesis, which is followed by the actual fieldwork or the core action research project. The fieldwork stage consists of two or three action cycles where the researcher has the responsibility, at the beginning of each cycle, to facilitate the process of team planning, acting (implementing the plan), observing

(evaluating and documenting the innovations, interventions and evidence of success or failure) and to conclude by reflecting on the process. Analysis of data from the first cycle may result in a revised and improved plan of action, which leads into the second cycle. For thesis writing the researcher does not only focus on the core action research project but proceeds to analyse and evaluate the whole project independently from the team. Although the framework is based on the process of emancipatory action research, I found its logical format useful in planning and organising my action research and thesis writing.

As recommended by Zuber-Skerritt and Perry's model, I began my study by planning the thesis. In Chapter 1, I described the conceptualisation phase and elaborated on aspects such as the study context, my theoretical framework, problem identification, purpose and the focal research question. In this second chapter, I deal with the concept and process of action research, my worldview and consequent methodological implications. Chapter 3, 4 and 5 give a detailed account of the fieldwork. In the concluding chapters, I describe the final evaluation and reflection on the fieldwork and on my experience of the whole research process and indicate my contribution to knowledge.

## **2.6.2 The research methods used in this study**

In this section, I describe the research methods used in the study. It involves the selection of participants, forms of data collection and data analysis. However, due to the developing nature of action research (Herr & Anderson, 2005:70,76), I anticipated some shifts in terms of my research question, objectives and methods as data gathering and analysis proceeded. Hence, I provide only a summary here and not a detailed description as I did in the chapters dealing with the actual fieldwork (Chapters 3, 4 & 5).

### **2.6.2.1 Selection of participants**

An important initial step in the planning stage of action research is to identify all participants and then determine how the research will proceed (Speziale & Carpenter, 2007:337). In order to gather meaningful data, the participants should be selected based on their first-hand experience with a phenomenon of interest (Polit & Beck, 2006:41,333,511; Speziale & Carpenter, 2007:29). As a result, participants are selected based on the researcher's judgement about who will be most representative and informative to the research question (Bryman, 2008:415). Hence, besides viewing myself as a participant in this study, I invited the paediatric nursing students who enrolled for the one-year child health nursing programme in 2013 and 2014 to participate in the research. Since I intended to create numerous opportunities for the students to participate in simulation as a learning strategy, they would be able to provide rich information about their simulation learning experiences.

### 2.6.2.2 Data collection techniques

Although action researchers can use both quantitative and qualitative data collection methods, they predominantly make use of qualitative research methods (Badger, 2000:202; Melrose, 2001:163; Zuber-Skerritt & Fletcher, 2007:418). Since practical action research is situated in an interpretive paradigm, the data collection techniques that I used during the fieldwork stage of this study were predominantly, but not exclusively, qualitative in nature:

- **Action Cycle 1:** The nominal group technique and field/reflective notes.
- **Action Cycle 2:** The nominal group technique, recordings of debriefing sessions, and field/reflective notes.
- **Action Cycle 3:** Focus groups, field/reflective notes, and a simulation evaluation questionnaire that was a quantitative data collection technique.

In keeping with Melrose's (2001:169) recommendation, I decided to use more than one method of data collection to enhance rigor through methodological triangulation. Based on my role as an insider researcher, I selected the above-mentioned techniques because they were realistically doable, given the context and other demands that I had at work. In my view, these techniques would support reflective thinking during the research process, which is essential if any enduring change is to be effected (Norton, 2009:23; Speziale & Carpenter, 2007:340). I describe each technique together with its corresponding purpose, advantages, and disadvantages in detail in my account of the fieldwork. I also motivate why I used different data gathering methods in respective action research cycles.

### 2.6.2.2 Data analysis

Table 2.1 is a summary of how the collected data were analysed. I provide a thorough description of my analysis techniques in my account of the fieldwork.

**Table 2.1: Data collection methods and analysis techniques**

Data collection methods	Data analysis techniques	Rationale for analysis techniques
<b>Nominal group technique (NGT)</b>	Qualitative content analysis and quantitative ranking of data	Used in combination it enhances the interpretation of significant findings
<b>Focus groups</b>	Content analysis by means of first and second cycle coding	(a) Allows for systematic reduction of data (b) Allows for the possibility to analyse data further (e.g. describing data and using inferential quantitative procedures)
<b>Audio-recordings of debriefing sessions</b>	Content analysis by means of first and second cycle coding	As discussed for focus groups
<b>Field/reflective notes</b>		(a) Validates important points made by the participants (b) Facilitates appropriate emphasis on emerging themes
<b>Simulation evaluation instrument</b>	Descriptive statistics (frequencies, percentages and total scores)	Provides values that describe the characteristics of a sample or population

Sources: Leech & Onwuegbuzie (2007:561,564,596); Miles, Huberman & Saldaña (2014:86-93); Mills (2007:59); Polit & Beck, (2006:320,497); Salkind (2008:8); Speziale & Carpenter (2007:43).

### 2.6.3 Methodological rigor

Melrose (2001:165) and Greenwood and Levin (2000:96) contend that, depending on their beliefs about rigor, it is the audience to whom the outcomes of action research are presented who determine its credibility, validity and reliability. Because action research is so intimately involved in people's lives and work, it is necessarily an emergent process (Herr & Anderson, 2005:70; Reason, 2006:189) which often renders unpredictable results or conclusions (Dick, 2002:160; Melrose, 2001:164). Hence, the researcher and participants, their relationship and the research setting, are all subject to development and change (Frankel & Devers, 2000:253). Nevertheless, for researchers who undertake action research as an academic endeavour it is crucial to present an accurate, scientific, and unerring project (Zuber-Skerritt & Fletcher, 2007:431).

Herr and Anderson (2005:49) point out that the terms 'validity' and 'trustworthiness' are often used to describe good action research. However, they argue that these terms are inadequate because neither one acknowledges the action-orientated outcomes of action research. Nevertheless, Dick (2002:163) notes that although the sources of rigor may be different to those that characterise other research styles, they are no less effective and that action research can be rigorous without surrendering action outcomes. According to Nakkeeran and Zodpey (2012:10), the fundamental requirement to maintain rigor is that the researcher

remains reflexive and explicit about each stage and component of the research process rather than assuming that they are unproblematic. In an effort to meet the requirements of a rigorous action research study in the context of my educational practice, I did not only draw on guidelines for rigorous action research but also on conventional qualitative research. I describe these in the section below.

### **2.6.3.1 Repetition of action cycles and prolonged engagement**

According to some action research experts, adequate rigor is developed if the project proceeds through a number of cycles in which the early cycles are used to help decide how to conduct the later cycles (Dick, 2002:163; Melrose, 2001:166). Critical reflection in each cycle allows the action (or change/improvement) to be integrated with the research (or building understanding about the process and the practice). In order to present an accurate and unerring project, both Tracey (2010:841), and Nakkeeran and Zodpey (2012:7) recommend that the researcher spend as much time as necessary in the field to gather sufficient meaningful data. There are no set rules about how much time spent is enough; the issue is rather whether the data will substantiate significant claims (Creswell & Miller, 2000:125; McNiff & Whitehead, 2002:103). Therefore, the significance of cycle repetition and prolonged engagement is that it enables the researcher to build relationships of trust with participants that usually result in a more thorough probing and understanding of the situation under investigation (Melrose, 2001:166; Stringer, 2004:57).

The fieldwork phase of this study included three action cycles, which spanned a period of two years. The first action cycle commenced in 2013 and lasted until the end of that year. The second action cycle lasted for the first six months of 2014 and the third cycle spanned over the last six months of the same year. At the end of each cycle, critical reflection on the outcomes of actions taken led to revised action plans and re-implementation until I was satisfied that the purpose and objectives of my study had been achieved. I persistently observed the students' performances in the simulation environment. Additionally, the students and I had numerous discussions about their simulation learning experiences during debriefing sessions. Consequently, through continuous interaction with them, I not only developed trusting relationships, but also gained deeper insight and understanding of their simulation learning experiences. As a result, I became more confident that I had interpreted emerging data as a true reflection of their experiences.

### **2.6.3.2 Credibility**

Credibility is based on the notion that gathered and analysed data are free from error or misrepresentation and are thus trustworthy or reliable (Bryman, 2008:516; De Vos et al.,

2005:346; Polit & Beck, 2004:430). It is therefore imperative that the researcher take steps to demonstrate that the data can be trusted and that the findings are worth paying attention to (Babbie & Mouton, 2007:276). Credibility can be enhanced by activities such as prolonged engagement with participants, different forms of triangulation (e.g. data, time, and method), and member checks to test information by soliciting reactions of participants to the researcher's interpretation of data (Creswell & Miller, 2000:124; Schwandt, 2007:19). Other criteria include plausibility of conclusions (Creswell & Miller, 2000:128; Miles et al., 2014:278; Tracy, 2010:842), thick, detailed descriptions of the setting, the participants, and the research process, and evidence of an audit trial (Creswell & Miller, 2000:128; Tracy, 2010:843). I attempted to enhance credibility through triangulation, thick description, member checks, and an audit trial. Each of these techniques is described in more detail below.

### **TRIANGULATION:**

Triangulation is used as a common strategy to ensure the quality of data collected and the validity of inferences (Creswell & Miller, 2000:124; Miles et al., 2014:117; Polit & Beck, 2004:36). Triangulation can be achieved by activities such as using more than one method to collect data on the same phenomenon (Kember, 2000:54; Melrose, 2001:169; Suter, 2006:12). Methodological triangulation was possible because I used more than one data collection technique during respective cycles.

Although data were collected from one group of paediatric nursing students during 2013, and from a new intake of paediatric nursing students in 2014, the students were exposed to a similar research context and focus and enabled me to perform source triangulation (Polit & Beck, 2004:727).

Data on the same phenomenon can be collected from different vantage points or time periods during the research, which helps to broaden the scope for triangulation and capture possible variations in emerging data (Nakkeeran & Zodpey, 2012:8). In this regard, data were collected and analysed over a period of two years during three action research cycles.

Investigator triangulation enhances the validity of findings because two or more different researchers interpret and cross-check data (Lincoln & Guba, 1986:18; Polit & Beck, 2004:721). To determine the plausibility and consistency of my findings, I requested independent researchers with a background in qualitative research methodology to review whether my interpretations of data fitted well with the research question (Baumfield et al., 2013:25). In addition, I continuously referred to my theoretical framework and research from the field of education and simulation to justify findings. Finally, the inclusion of an experienced qualitative supervisor with extensive knowledge on action research as well as qualitative research added to the credibility (Melrose, 2001:165).

**THICK DESCRIPTION:**

Due to the emergent nature of action research, thick description of the research is imperative. This is because thick description and strong reflection about emerging data enhance the transferability of a study (Babbie & Mouton, 2007:277; Burns & Grove, 2009:521; De Vos et al., 2004:346; Polit & Beck, 2010:435). Hence, in my account of the three action cycles, I have attempted to provide as much as possible detail about the fieldwork to give the reader a clear picture of how I planned and executed each step of the research process (Baumfield et al., 2013:109,138; Creswell & Miller, 2000:129).

**MEMBER CHECKS:**

To enhance credibility, a researcher will carry out member checking by returning to participants to determine whether they agree with the accuracy of data interpretation (Babbie & Mouton, 2007:277; Creswell & Miller, 2000:125; Nakkeeran & Zodpey, 2012:8; Tracey, 2010:844). One of the limitations in my study is that I did not practise member checking throughout the whole research process. The one instance where I did employ member checking was at the conclusion of the second action cycle when I returned to the students to verify my interpretation of the suggestions they provided during a nominal group discussion. However, member checking is inherent in the nominal group technique and is applied at the point when the group facilitator ensures that all the participants are in agreement with the meanings of the suggestions made by them. This step is described in detail in the respective action research cycles.

Since the other sets of data were collected at the end of the students' academic year, it meant that I did not have access to the students after they had written their final examinations because many of them had already returned to their homes, which were situated in other provinces.

**AUDIT TRIAL:**

In establishing an audit trial, researchers provide clear documentation of all research decisions and activities by means of journaling, keeping a research log and recording data analysis procedures. Researchers can provide evidence of the audit trial either throughout the account or in the appendices (Creswell & Miller, 2000:128; Mills, 2001:17). Nakkeeran and Zodpey (2012:8) recommend a systematic archiving of documentation such as field notes, analytical notes, and transcriptions of interviews. All of these documents should be as complete as possible and systematically arranged to simplify a re-assessment of inferences and interpretations if necessary. This means that if the project should be audited, there will be congruence between two or more independent persons about the data's accuracy, relevance and meaning (Polit & Beck, 2004:435; Speziale & Carpenter, 2007:49).

I developed an audit trail by systematically collecting materials and documentation throughout the study process. I used my personal computer to organise and manage the high volumes of qualitative data by developing corresponding files for different sets of documents. I used suitable Computer-Assisted Qualitative Data Analysis Software (CAQDAS) to organise the analysis and integration of debriefing and focus group data. All these documents are available on request and with permission from the ethics committee that approved the research.

### **2.6.3.3 Transferability**

The extent to which the findings of a study can be transferred to other settings or groups is referred to as transferability (Baumfield et al., 2013:138; Polit & Beck, 2004:435; Speziale & Carpenter, 2007:49). Tracey (2010:844) uses the term 'resonance' to refer to a researcher's ability to meaningfully reverberate and affect an audience. Among the criteria that Tracy mentions, resonance can be achieved through transferability. Although the responsibility for demonstrating transferability in qualitative studies lies with those who wish to apply the results to their contexts (Babbie & Mouton, 2007:277; Polit & Beck, 2010:1453), the burden to prove transferability is still on the primary researcher (Polit & Beck, 2004:436). Thick, detailed descriptions contribute to the trustworthiness by enabling other audiences to understand the nature and the context of the study (Stringer, 2004:59).

I acknowledge that another action research study about simulation and students' learning experiences might not deliver the exact same results. Nonetheless, as articulated earlier, I have attempted to describe the research process with enough detail so that others might consider its application in their contexts.

### **2.6.3.4 Catalytic validity**

As a mark of quality in action research, catalytic validity is enhanced when the research process reorients, focusses and energises participants toward knowing reality in order to transform it (Herr & Anderson, 2005:56; Bradbury & Reason, 2001:448). To attain this outcome, the researcher must be open to reorient their view of reality as well as the view of their role in the research.

I strove towards catalytic validity by keeping both field and reflective notes throughout the research process. Through this method, I monitored how the research influenced me and changed my view of education and adult learning. In the concluding chapter, I provide a detailed description of how my own as well as the students' thinking and consequent behaviour changed as a result of doing educational action research.

### **2.6.3.5 Outcome validity**

Outcome validity is enhanced when there is evidence that the actions taken led to a resolution of the problem identified by the researcher at the beginning of the research (Herr & Anderson, 2005:55). However, outcome validity does not simply refer to solving an initial research problem or question. It also means that what was learned through the process can be applied to a subsequent research cycle (Mills, 2007:91). In my account of the respective action cycles, I provide evidence of how action outcomes led to the reframing of ideas and the application of revised action plans to address new areas of concern. In the concluding chapter, I show how the outcome of the fieldwork led to a new set of questions and areas of concern that could be applied to subsequent action research.

### **2.6.3.6 Personal bias in the conduct of action research**

In an intimate activity such as action research, it can be a challenge to stay objective and open to findings and reflect on what we see (Mills, 2007:97). Hence, I determined to self-disclose my assumptions, beliefs, and biases (Creswell, 2000:127). I strove towards cultivating a habit of self-reflexivity (Tracy, 2010:841) and determined not to allow personal values to sway the conduct of the research or conclusion of findings (Bryman, 2008:379). I attempted to refrain from only reviewing literature that would support my findings in order to promote my thesis. In the concluding chapter, I show how research findings challenged my concept about mature learners and my own educational practice. It evoked strong emotions in me and although it was difficult at times, I had to translate my interpersonal thoughts into more theoretical ones.

Miles et al. (2014:298) recommend the use of more than one method of data collection as a way to limit bias. Apart from following this recommendation, I showed my field notes to a colleague for review and had numerous discussions with other critical friends to ensure that I was still focussed on my initial purpose.

## **2.7 Ethical considerations**

Due to the dynamic nature of action research, it was not always possible to predict every possible ethical challenge during the course of my study. Since each action cycle had its own ethical considerations, I describe in detail how I upheld ethical standards in the chapters dealing with the fieldwork. I used the three basic principles set forth in the Belmont report (1978) as an analytical framework to resolve possible ethical problems that may have developed in the course of the research.

- **Respect for persons:** I acknowledged that the students were self-directed individuals who could deliberate about personal goals and decisions (Burns & Grove, 2009:189). In respect of their self-directedness, I was committed to allowing them to make their own judgments and act accordingly. I determined to inform them of ethical issues that may have arisen during the course of the study (Speziale & Carpenter, 2007:344). This meant that I would keep the students informed of ongoing developments so that they could consider whether to participate or not in the research process.

A concern often raised when teachers propose studying their students is that the students' autonomy is diminished to some extent (Herr & Anderson, 2005:115; Nolen & Vander Putten, 2007:403; Zeni, 1998:15). Ruth (1997:14) warns that teachers who conduct action research can easily fall into the trap of using the ends to justify the means. It is therefore essential to clarify who decides on what is to be changed and how, and who will benefit from the changes.

By virtue of my position as a nurse educator, it could thus be easy for me to extend my power as a lecturer through personal contact with the students and through persuasion. Hence, I carefully guarded against using my position to encourage participation. To minimise the risk of coercing the students to participate, I requested a colleague, who was not participating in the project but who had reliable research knowledge, to explain the research to the students. Although the benefits of participation may have been very clear and convincing, I acknowledged individuals' democratic values and determined to treat those students who chose not to participate in the same fair manner as those who did (Baumfield et al., 2013:34; Nolen & Vander Putten, 2007:403).

- **Beneficence:** According to Polit and Beck (2006:87), beneficence is one of the most fundamental ethical principles in research. It obligates researchers to minimise harm and to maximise benefits toward participants. Although physical harm to participants may not have been an issue in this study, the psychological consequences, especially regarding students in learning environments, might have been subtle and thus required close attention and sensitivity (Norton, 2009:107). The in-depth exploration into issues surrounding the students' learning and performance might have posed a threat or embarrassment to some. Therefore, I took care not to overburden students with data collection. I applied a systematic approach and stayed sensitive and respectful to all the participants' responses. I determined to use my professional judgment to detect and reduce potentially harmful risks.
- **Justice:** Justice demands that all participants be treated fairly and equally (Burns & Grove, 2009:188). I upheld this standard through an equitable selection of participants

without favouring one above the other and by allowing all participants to be actively involved in reaching the purpose of the study. I treated the students as an end and not simply as a means to an end.

To complement the above-mentioned fundamental principles, I included the following requirements:

- **Informed consent:** Voluntary informed consent depends upon there being enough clear information for a participant to decide whether he or she wants to participate or not (Baumfield et al., 2013:34). However, due to the evolving nature of action research, I could not always predict the course of the study. I therefore viewed consent as an ongoing, transactional process, referred to as 'process consent' (Polit & Beck, 2006:93; Speziale & Carpenter, 2007:343). I determined to renegotiate and reconfirm consent for participation and data gathering. All information was conveyed both verbally and in writing. I developed and provided students with detailed information sheets that stipulated the purpose of the research and explained their role as participants (see Appendix C).
- **Anonymity and confidentiality:** The fundamental principles of anonymity and confidentiality are not always easy to uphold in action research (Nolen & Vander Putten, 2007:403). Failure to maintain the security of data that may identify individual participants could occur at various stages of the research (Baumfield et al., 2013:35). However, I determined not to reveal information that was of a compromising nature in my account of the research, and in respect of sensitive information, I would gain permission from the originator to use it. To protect the students' identity, I used pseudonyms when I made field or reflective notes or when recorded data were transcribed (Baumfield et al., 2013:35; Zeni, 1998:16). All recorded data and documentation were stored on my personal computer that is password protected and on an external hard drive that was stored in a safe location.

It is standard practice at the UFS School of Nursing for all students who participate in simulation sessions to sign a declaration whereby they agree to keep information regarding all participants and details of specific simulation encounters confidential. It is also stipulated in the declaration that they give educators permission to use the simulation encounters for quality improvement of education strategies and research. However, in respect for the students, I determined not to include data from such footage in case a student or students indicated that they were uncomfortable that I do so.

- **Assessment of risks and benefits:** The research proposal was submitted to the Ethics Committee of the UFS Faculty of Health Sciences for verification that the study conforms to the ethical principles of social research. The letter of the committee's approval and ethics number is attached as Appendix A.

## 2.8 Conclusion

In conclusion, my determination to uphold sound ethical standards was based on sincerity, respect, and self-reflexivity. I intended to be transparent and honest about my biases, aims, achievements, and mistakes. I respected the meanings that the students linked to their own learning experiences and therefore determined to guard against imposing my insights on them or to interpret responses only from my point of view and excluding theirs. By fostering trusting relationships with the students, I carefully positioned myself as a co-constructor of knowledge and the understandings arrived at. As a self-reflexive researcher and educator, I was determined to continuously observe the impact of the research on my relationship with the students and to be sensitive to their reactions and requirements during the entire research process.

In this chapter, I gave an account of my approach to educational action research and explained how my ontological and epistemological positions influenced my research method. I described how I intended to ensure a rigorous project and how I determined to uphold the standards of sound, ethical action research. In the following three chapters (Chapters 3, 4 and 5) I give an account of the fieldwork and provide detailed descriptions of my research method.

# Chapter 3

## Action Cycle 1 (2013)

### Developing and Implementing a Strategy for Meaningful Simulation Learning Experiences

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#### 3.1 Introduction

This chapter, along with the next two chapters, is an account of the core action research project. In accordance with Zuber-Skerritt and Perry's conceptual model of an action research thesis (see Chapter 2), this stage of the research process represents the fieldwork. The fieldwork follows thesis planning and includes two or three action cycles. As explained in Chapter 2, each cycle comprises a planning phase, action, observation, and reflection all of which lead to a revised plan and the implementation thereof (see 2.6.1).

The purpose of my study was to develop a strategy that will result in meaningful simulation learning experiences for students in a postgraduate paediatric nursing programme. My general action plan for Cycle 1 included two action steps: (1) develop a strategy, and (2) implement the strategy in the 2013 academic year. In order to measure the outcomes of my actions, I planned to involve the 2013 intake of paediatric nursing students as key informants of simulation learning experiences. Their contribution, as well as other sources of data, would be used to inform future planning and refinement of the strategy. By describing this first cycle of the research, I attempted to answer the fundamental research question, namely:

***How can meaningful simulation learning experiences be achieved in a postgraduate paediatric nursing programme?***

#### 3.2 The first action cycle

The fieldwork commenced with the identification of an area of concern followed by the development of a general action plan to address my concern (McNiff & Whitehead, 2002:72; Stringer, 2004:48).

##### 3.2.1 Identifying an area of concern

Realising the full potential of simulation lies in the planning, execution, and follow-up of students' learning experiences (Jeffries, 2005:97). Following the implementation of the first high-fidelity simulation sessions at the UFS School of Nursing in 2011, suggestions to refine the practical execution of simulation were gathered from four nurse educators and one

member of the simulation team by means of three consecutive nominal group meetings. These educators and simulation team member had been involved with implementing simulation in the undergraduate nursing programme since 2011. Except for the simulation team member, none of the nurse educators had previous training or exposure to simulation. However, all the educators, as well as the simulation team member, had extensive experience in the clinical as well as theoretical content of the students in mention. The results of all three nominal groups revealed various shortcomings in terms of simulation execution. In particular, results suggested better planning and communication among simulation team members, better student and environment preparation, and the development of realistic scenarios.

By the time that I began using simulation in the paediatric nursing programme in 2012, some of the above-mentioned suggestions had been implemented, but I was of the opinion that more work was necessary to discover the best simulation practice in the paediatric nursing programme. At the time, I was implementing simulation based on intuitive thinking and basic teaching and learning principles as described by Jeffries (2008:72). However, according to Vardi (2008:104), a solid execution plan lays the foundation for sound simulation learning experiences. More importantly, Jeffries (2005:98) mentions that it is the educator who brings the plan to life and determines the nature of the learning experience. Although the 2012 group of paediatric nursing students gave positive feedback about their simulation experiences by means of a standard end-of-the-year evaluation instrument, the instrument did not determine which aspects of simulation encounters the students found meaningful or not. Since simulation practice at the UFS School of Nursing, and particularly in the paediatric nursing programme, was still in its infancy, I was hesitant to conclude that the simulations were already structured in the best possible way to provide the students with meaningful learning encounters. Therefore, my main concern at this stage was that I did not have a completed, well-developed plan to provide paediatric nursing students with meaningful simulation learning experiences. To address my concern, I decided to develop and implement a strategy that could guide my use of simulation, but more importantly, that would lay a foundation for sound simulation practice, resulting in meaningful learning experiences in the paediatric nursing programme.

### **3.2.2 First action step: Develop a strategy for meaningful simulation learning experiences**

According to Mills (2007:26), reconnaissance is an important step in the action research process that usually follows the identification of an area of concern. During this time, the researcher gathers preliminary information and takes time to understand the nature and the context of the research. For me, reconnaissance was a time for strategic planning. It was a

process during which I reviewed literature on simulation and students' simulation learning experiences. I also reflected on my own educational practice and contemplated the best possible ways to implement simulation in the paediatric nursing programme. The following section is an account of how I planned the strategy, the selection of participants, and the collection and analysis of data.

### **3.2.2.1 Planning and developing the strategy**

The process of drafting the strategy document took approximately three months. As a point of departure, I identified the key topics that I wanted to include in the strategy. The topics that I had identified were based mainly on a review of relevant simulation literature and related to activities that would directly or indirectly influence a student's simulation learning experience. Additionally, my experience of previous simulation use, as well as discussions with members of our simulation team, served to guide me where necessary. I planned to implement and refine the strategy over a period of two academic years (2013–2014).

Table 3.1 presents the strategy document that I had developed and planned to implement in 2013. The strategy consisted of three consecutive phases, each representing essential components that I deemed necessary for meaningful simulation learning experiences.

The first and second phases related to scenario design, and student orientation and preparation. The third phase constituted the number of simulation sessions to be implemented and the three stages of a simulation learning experience, namely briefing, simulated scenario, and debriefing. To provide context, the strategy (see Table 3.1) reflects a comparison between action items that I implemented in 2012 and those planned for 2013. Changes or additional action items planned for 2013 are printed in bold in the table. The action items referred to in the following section relate to those planned for 2013 and not those of 2012. Where necessary, motivation(s) for particular action items planned for 2013 are provided.

**Table 3.1: Strategy for meaningful simulation learning experiences in the paediatric nursing programme**

Phase 1: Scenario design		
2012	2013	
Action item	Action item	Motivation
1. Develop scenario: Foreign body aspiration 2. Develop scenario: Hot liquid burn injury	1. <b>Revise scenario: Foreign body aspiration</b> 2. <b>Revise scenario: Hot liquid burn injury</b>	<i>Literature:</i> Beauchesne and Douglas (2011:29); Jeffries (2005:100); Garrett et al. (2010:310); Glavin (2008:122); Hollard et al. (2008:140); Nehring and Lashley (2010:413); Paige and Morin (2013:e481-e489); Vardi (2008:100)
3. Include the simulation team in the design of scenarios	3. <b>Develop new scenario: Bronchiolitis (RSV)</b> 4. <b>Develop new scenario: Asthma</b> 5. <b>Develop new scenario: Electrical burn injury</b>	<i>Literature:</i> Garrett et al. (2010:312)
	6. Include the simulation team in the design of scenarios	<i>Literature:</i> Huang and Dongilli (2008:12,16); Jeffries (2005:98) Standard practice at the UFS School of Nursing
Phase 2: Student orientation and preparation for simulation		
2012	2013	
Action item	Action item	Motivation
1. Provide a general orientation to the simulation venue and the high-fidelity simulators	1. Present an <b>introductory lecture</b> on the principles of simulation	<i>My reflection:</i> General orientation to the environment is insufficient preparation for students who are new to simulation
	2. Orientate students to the simulation venue, equipment and high-fidelity simulators	<i>Literature:</i> Garrett et al. (2010:312)
2. Provide information regarding the upcoming simulated scenarios: scenario topic theoretical content psychomotor skills required (e.g. physical examination of children)	3. Provide information regarding the upcoming simulated scenarios: scenario topic theoretical content psychomotor skills required (e.g. physical examination of children) 4. <b>Provide students with reading material and references to relevant literature</b>	<i>Literature:</i> Arthur et al. (2013:136); Garrett et al. (2010:312)

		5. Link course content to simulated scenarios by means of lectures, journal club meetings, demonstrations and practising of skills	<i>Literature:</i> Joyce, Weil and Calhoun (2009)
		<b>6. Encourage students to practise skills in the clinical setting prior to simulation sessions</b>	<i>My reflection:</i> Students should not use simulation sessions to practise psychomotor skills but to master skills beforehand and use them during simulated scenarios.
	3. Allow students to select a group of four to a maximum of five students per group	<b>7. Randomly assign four to five students per group</b>	<i>Literature:</i> Polit and Beck (2004:169) <i>My reflection:</i> Keep groups as small as possible to allow equal participation during scenarios
	4. Students reselect a group prior to each simulation session	<b>8. Keep group members the same throughout the academic year</b>	<i>My reflection:</i> Allow group members to get used to each other and learn to work together as a team <i>Literature:</i> Jeffries (2005:99)
<b>Phase 3: Execution of simulation sessions</b>			
Number of sessions	<b>Action item</b>	<b>Action item</b>	<b>Motivation</b>
	1. Implement two sessions in the first semester 2. Implement two sessions in the second semester	1. Implement <b>three</b> sessions in the first semester 2. Implement <b>three</b> sessions in the second semester	<i>My reflection:</i> To increase opportunities for repetition and experiential learning
Briefing	<b>Action item</b>	<b>Action item</b>	<b>Motivation</b>
	1. Students sign a declaration of confidentiality (once off)	1. Students sign a declaration of confidentiality (once off)	Standard procedure at the UFS School of Nursing
	2. Assign and clarify appropriate participant roles	2. Assign and clarify appropriate participant roles	<i>Literature:</i> Jeffries (2005:98)
	3. Brief students regarding scenario objectives and time allowed for completion	3. Brief students regarding scenario objectives and time allowed for completion	<i>Literature:</i> Vardi (2008:105)
	4. Sensitise students that simulated scenarios are videotaped and that their actions are observed by members of the simulation team	4. Sensitise students that simulated scenarios are videotaped and that their actions are observed by members of the simulation team	Videotaping scenarios is standard procedure at the UFS School of Nursing
		5. Emphasise that simulation is a learning opportunity and not used for formal assessment	<i>Literature:</i> Biggs and Tang (2011:27) Simulation is not used for formal assessment at the UFS School of Nursing

Simulated scenario	Action item	Action item	Motivation
	1. Implement the foreign body scenario twice during first semester	1. Implement the foreign body scenario once in the first semester	<i>My reflection:</i> Repeat scenario based on its relevance in the paediatric programme
	2. Implement the hot liquid burn injury scenario twice in the second semester	<b>2. Implement the RSV-infection scenario once in the first semester</b>	New scenario
	3. Allow 20–25 minutes for a simulated scenario	<b>3. Implement the asthma scenario once in the first semester</b>	New scenario
		4. Implement the hot liquid burn injury scenario twice in the second semester	<i>My reflection:</i> Repeat scenario based on its relevance in the paediatric programme
		5. Implement the electrical burn injury once in the second semester	<i>My reflection:</i> Repeat scenario based on its relevance in the paediatric programme
		6. Allow 20–25 minutes for a simulated scenario	<i>Literature:</i> Jeffries (2008:72)
Debriefing	Action item	Action item	Motivation
	1. Conduct debriefing within ten minutes after completion of the simulated scenario	1. Conduct debriefing within ten minutes or as soon as possible after completion of the simulated scenario	<i>Literature:</i> Flanagan (2008:157)
	2. Conduct debriefing in a venue other than the simulated scenario	2. Conduct debriefing in a venue other than the simulated scenario	<i>Literature:</i> Arthur et al. (2013:1360)
	3. Explain the purpose of the debriefing at the beginning of the session	3. Explain the purpose of the debriefing at the beginning of the session	<i>Literature:</i> Zigmont et al. (2011:53)
	4. Identify students' emotional responses to the simulation	4. Identify students' emotional responses to the simulation <b>before facilitating reflection-on-action</b>	<i>Literature:</i> Dreifuerst (2005:111)
	5. Provide feedback on students' performance of the scenario	<b>5. Use guiding questions to facilitate reflection-on-action</b>	<i>Literature:</i> Dreifuerst, (2009:109); Dufrene and Young, (2014:375); Dreifuerst, (2009:111-112); Glavin, (2008:123); Lake (2008:135)
	6. Allow a group discussion of students' experience of the simulated scenario		
7. Schedule 30–45 minutes for debriefing	6. Schedule 30–45 minutes for debriefing	<i>My reflection:</i> Previous sessions did not take much longer than the 30–45 minutes scheduled for debriefing	

### **(a) Developing Phase 1: Scenario design**

The objective for Phase 1 was to use a simulation development template to design scenarios suitable for high-fidelity simulation learning experiences. In 2012, I used the development template and developed two original scenarios. Although predesigned scenarios were available electronically or in book format, few prewritten scenarios suitable for advanced paediatric nursing practice existed (Beauchesne & Douglas, 2011:29). Since I wanted the scenarios customised for the objectives of the paediatric nursing programme, I made use of our own uniquely designed simulation development template. The template was developed by a team of nurse educators at the UFS School of Nursing and is based on the principles of constructivist learning theory as explained in Chapter 1. It was specifically designed to provide nurse educators who use simulation with guidance to effectively plan and implement simulation learning events. I found the template efficient because it incorporated all the aspects necessary for a simulated scenario whereby specific learning outcomes could be achieved. It provided students with experiential learning to transfer didactic knowledge and clinical judgment to a simulated environment. An example of the template is provided as Appendix B.

The two scenarios that I developed in 2012 reflected disease presentations from two themes in the paediatric nursing programme, namely respiratory disorders in children and burn injuries in children. At that time, I selected the themes based on their relevance to the prevailing causes of childhood deaths and injuries in South Africa. The scenario topic that I selected for each theme was (a) foreign body aspiration and (b) hot liquid burn injury. Hot liquid injuries could include injuries sustained by for example hot water, hot oils and other liquid substances that may cause burn injuries. Burn injury care would be applied according to the type of injury sustained. According to the literature on simulation, it is important to select the correct topic for a simulation (Glavin, 2008:119; Holland, Sadler & Nunn, 2008:140). Therefore, I considered the feasibility of creating simulated scenarios that could closely resemble real clinical cases. For example, due to the limitations of the patient simulator, it would be difficult to resemble other priority diseases such as malnutrition or severe dehydration realistically.

- **Action items 1 and 2:** According to the first two action items of Phase 1, I planned to review the two previously designed scenarios to ensure that they were realistic (Beauchesne & Douglas, 2011:29; Garrett et al., 2010:310; Vardi, 2008:100). As explained in Chapter 1, lifelike scenarios would likely assist students in experiencing optimal immersion where they can apply their emotions, values and beliefs during the learning experience (Paige & Morin, 2013:e481-e489). In addition, I intended to ensure that

scenario objectives were still aligned with theme content and the expected programme outcomes for 2013 (Glavin, 2008:122; Holland et al., 2008:140; Jeffries, 2005:100; Nehring & Lashley, 2010:413). According to the literature on simulation, well-written scenarios will ensure that the simulation activity represents actual nursing problems (Paige & Morin, 2013:e481-e489), making it easier for students to suspend disbelief and immerse themselves in the learning opportunity (Holland et al., 2008:139).

- **Action items 3 to 5:** According to Garrett et al. (2010:312), key principles are better learned when they are emphasised in slightly different scenarios with similar psychomotor skills and complexity levels. Therefore, in addition to the existing foreign body scenario, I planned to design two new scenarios for the theme on respiratory disorders for the first semester of 2013. The first new scenario would relate to an infant with bronchiolitis caused by the respiratory syncytial virus (RSV-infection), and the second new scenario would relate to a preschool child with asthma. To add variety to the theme on burn injuries, I planned to include an electrical burn injury scenario together with the existing hot liquid burn injury scenario. I would again use our simulation development template to ensure that scenarios are well-planned and aligned with theme and programme objectives.
- **Action item 6:** Although I had accepted responsibility to plan and design scenarios, I would discuss developed scenarios with our simulation coordinator to enhance scenario validity and feasibility. Since successful use of simulation is a team effort (Huang & Dongilli, 2008:12,16; Jeffries, 2005:98), I would also seek the advice of other team members who would be responsible for preparatory and technical aspects on the day of implementing the simulation sessions.

## **(b) Developing Phase 2: Student orientation and preparation**

The objective of Phase 2 was to orientate and prepare students for simulation according to sound simulation and education practice. The orientation and preparation of students included two aspects: the first related to an orientation to the simulation environment and the second to preparing students for simulation learning experiences.

### **ORIENTATION TO THE SIMULATION ENVIRONMENT**

In 2012 the students had a once-off general orientation to the simulation venue and a demonstration of the high-fidelity simulator's function and capabilities. I encouraged them to return to the venue to familiarise themselves with the environment and equipment. However, as time went by I realised that they were not making use of my invitation.

- **Action items 1 and 2:** To improve on the initial once-off general orientation, I planned a more structured approach to orientation in 2013. Since simulation is a new experience to most students, orientation would commence with an introductory lecture about the principles of simulation and its use as a learning opportunity. Students would then be introduced to the simulation environment. In particular, the function of the high-fidelity simulator and equipment used during scenarios would be demonstrated. Garrett et al. (2010:312) endorse the necessity of allowing time for students to acquaint themselves with the equipment and the physical layout of the venue because it may alleviate some of their anxiety and, according to Arthur, Levett-Jones & Kable (2013:1360), improve their learning.

### **PREPARING STUDENTS FOR SIMULATION LEARNING EXPERIENCES**

In 2012, I gave students information about upcoming simulation events, which included the scenario topic, the theoretical content related to the scenario, and clinical skills required for the scenario. According to Arthur et al. (2013:1360), preparation in the form of lectures and skills training provides the scaffold that assists students in reaching their learning outcomes in simulation. Likewise, Garrett et al. (2010:312) emphasise the importance of providing students with the theoretical content concerning a simulated scenario before they participate in a session.

- **Action items 3 to 6:** In adherence to recommendations about the inclusion of lectures and skills training before simulated scenarios, I planned to adjust student preparation in 2013 by not only providing appropriate reading material and references to relevant literature, but to ensure that lecture material was aligned with scenario objectives in accordance with the scenario development template. For example, accompanying lectures and skills associated with respiratory disorders would be concluded before the students participated in the related scenario. New skills that were required for a scenario (e.g. physical examination, interpreting arterial blood gases, interpreting chest X-rays) would be demonstrated first, and then students would be encouraged to practise these skills in the clinical setting and skills laboratory prior to simulation sessions.
- **Action items 7 and 8:** In 2012, students were requested to form groups of four to a maximum of five students for simulation sessions. For each session, they compiled new groups that comprised different members. For 2013, I decided that I would randomly assign students to a group. Since students come from different clinical settings and may have different skill sets, I decided to use randomisation in an attempt to equalise groups (Polit & Beck, 2004:169). I would keep groups small to allow equal participation during scenarios. For consistency, I would keep group members in the same group throughout

the year. I was of the opinion that group members should get used to each other and to work as members of the same team, similar to the clinical environment. It would also afford them an opportunity for collaborative learning where students work together to solve problems and share in the decision-making process (Jeffries, 2005:99).

### **(c) Developing Phase 3: Execution of simulation sessions**

The objectives of Phase 3 of the strategy were firstly to plan and schedule the number of simulation sessions for 2013, and secondly to implement and facilitate the simulation learning experiences which comprised the briefing, simulated scenario, and debriefing stages.

#### **PLAN AND SCHEDULE THE NUMBER OF SIMULATION SESSIONS**

The 2012 group of paediatric nursing students had four simulation learning experiences. The foreign body aspiration scenario was used twice during the first semester of 2012. Likewise, the hot liquid burn injury scenario was used twice during the second semester.

- **Action items 1 and 2:** I decided to increase simulation learning opportunities in 2013. At the time of planning the strategy, I could not find literature that supported precisely how many simulation sessions constitute meaningful learning experiences. I decided to add one additional session for the first semester in 2013, and one additional session for the second semester in 2013, bringing the total number of sessions to six. The development and execution of simulation learning experiences is a time-consuming and laborious task. At the time of simulation implementation in the paediatric programme, I was the only full-time lecturer responsible for lectures and clinical training. I was hesitant to include more than the six planned sessions because it might not have been feasible to manage my usual workload as well as more than six simulation sessions.

#### **THREE STAGES OF A SIMULATION LEARNING EXPERIENCE**

Briefing is the first stage of a simulation learning experience and the commencement of students' actual engagement with simulation. It is therefore an opportunity to explain and clarify the simulation session to the students.

- **Action items 1 to 4:** As shown in Table 3.1, I did not plan any changes or additions for briefing in 2013. As in 2012, I would request students to sign a declaration of confidentiality whereby they agree to keep information regarding all participants and details of specific simulation encounters confidential. The signing of this declaration is standard procedure for anyone who participates in simulation at the UFS School of Nursing. Hereafter I would explain the scenario objectives, clarify participant roles, and explain the time allowed for

the scenario (Jeffries, 2005:98; Vardi, 2008:105). I would take care to sensitise students that it is standard procedure at the UFS School of Nursing to video-record all simulation sessions and that their actions are observed by members of the simulation team. Video footage would be stored on an external hard drive for later retrieval, if necessary.

- **Action item 5:** From my experience in 2012, it was evident that students perceived simulation as a form of assessment and not so much as a learning opportunity where they would be allowed to make mistakes without being penalised. In an effort to change this perception and encourage a positive learning atmosphere (Biggs & Tang, 2011:27), I decided that I would repeatedly emphasise that simulation is used as a learning opportunity and not for formal assessment purposes. Although simulation allows for the formal assessment and evaluation of students' performance (Edgecombe et al., 2013:4), it is not standard simulation practice at the UFS School of Nursing as simulation is only used as learning opportunities.

The second stage of a simulation learning experience involves the implementation of simulated scenarios. For the sake of feasibility, simulation learning experiences would be scheduled once every three to four weeks during a semester.

- **Action items 1 to 6:** The foreign body aspiration scenario would be used once during the first semester. Likewise, the RSV-infection and asthma scenarios would be implemented only once, resulting in three sessions for the first semester. In the second semester, the hot liquid burn injury scenario would be implemented twice and the electrical burn injury once, resulting in three sessions for the second semester. The time allowed for completing a scenario (20–25 minutes per session) would be left unchanged. Jeffries (2008:72) recommends that the time limit should be set and that a scenario should not proceed beyond that limit, even if students do not complete all given tasks.

The third stage of a simulation learning experience is debriefing. In 2012, I was still a novice at debriefing and experienced it as the most challenging activity of simulation. According to several simulation experts, skilful debriefing is the most important tool by which to assist students to learn from experiences as it is where the learning and processing of new information occurs (Dreifuerst, 2009:110; Issenberg et al., 2005:21; Mayville, 2011:35). Although many debriefing strategies exist, the process of debriefing has not been adequately studied, neither has it been standardised (Arafeh et al., 2010:305).

In 2012, I did not strictly adhere to a specific structure or model regarding the debriefing process. In terms of timing and location, I knew that debriefing should preferably take place as soon possible after the simulated scenario while events and emotions are fresh in the students' minds (Flanagan, 2008:157). Furthermore, the debriefing should take place in a

location other than the simulation venue so that the focus can move from a state of action to a state of reflection (Arthur et al., 2013:1360). I commenced the debriefings by explaining that the purpose of the session was self-reflection and learning, not assessment (Zigmont et al., 2011:53). As simulation can be a stressful event for students who have never experienced this type of learning (Rudolph et al., 2007:361), I assisted students in identifying and expressing their emotional responses to the simulation before I proceeded with feedback about their scenario performance (Dreifuerst, 2009:111) and whether scenario objectives had been achieved. A group discussion on how the students had experienced the session followed. The sessions were concluded by ensuring that the students were satisfied that all issues had been discussed and resolved. Time scheduled for debriefing was between 30 and 45 minutes.

- **Action items 1 to 5:** I planned to follow action steps 1 to 3 again in 2013. In contrast to what I had done in 2012, I decided to use a set of guiding questions to assist me with the facilitation of reflection-on-action during debriefing instead of merely facilitating a discussion about scenario events. Reflection is an attribute of debriefing that is considered a significant tool to facilitate learning from a simulation experience (Dreifuerst, 2009:109; Dufrene & Young, 2014:375; Garrett et al., 2010:312). Hence, I decided to use the following guiding questions to allow a chronological review of the simulation experience, while at the same time facilitating reflection: (a) *What and how are you feeling after the simulation experience?* (b) *What did you do well during the scenario?* (c) *What would you do differently next time?* and (d) *How do you feel after the debriefing?* (adapted from Dreifuerst, 2009:111-112; Dufrene & Young, 2014:375; Glavin, 2008:123; Lake, 2008:135). As in 2012, I would still schedule 30 to 45 minutes per debriefing session.

By the end of January 2013, the first component of my general action plan for Cycle 1 (developing the strategy) had been completed and was ready for implementation. The following section gives an account of how I planned the data collection and analysis that would follow strategy implementation. As a point of departure, I include a description of the research participants, and methods for collecting and analysing data.

### **3.2.2.2 Describing the participants**

In view of constructivism as my epistemological position, I accept that students actively construct their own knowledge through learning experiences rather than relying solely on the information in the textbook or lectures from the educator (Biggs & Tang, 2011:22; Collins & Martin, 2010:197). Because students make meaning out of their own experiences, as the paediatric nursing students would by participating in simulation, I viewed them as key informants of how the strategy influenced their experience of simulation. As explained in

Chapter 2, I view the students as adult learners, capable of taking responsibility for their own learning. As registered nurses who have worked in child healthcare settings for at least one year prior to their studies, I value and respect their clinical and life experiences and do not view myself as superior to them.

Apart from having the students as informants, I viewed myself as being responsible to the students whose learning experiences I planned to investigate. Therefore, instead of being an outsider, studying the students from a distance, I would be a participant who took an insider approach to the research (Zeni, 1998:10).

### **3.2.2.3 Planning the collection and analysis of data**

Although action researchers can use both quantitative and qualitative data collection methods, qualitative data gathering methods are utilised more often (Badger, 2000:202; Melrose, 2001:163; Zuber-Skerritt & Fletcher, 2007:418). However, it is essential for data collection methods to be appropriate for action research (Melrose, 2001:168) and meaningful in terms of answering the research question. After a review of literature, I found Mills's taxonomy of action research qualitative data collection techniques useful for planning my data collection (Mills, 2007:57-73). Mills describes three categories of data collection (experiencing, enquiring and examining), each with its own specific technique. From Mills's taxonomy, I chose to 'enquire' by means of the nominal group technique (NGT). In addition, I would 'examine' the situation by writing down observations, dilemmas and reflections from my interactions with the students during simulation learning experiences. The following section is a description of my selected data collection methods and the purpose thereof.

#### **(a) The nominal group technique**

The NGT is a valuable technique for balanced data collection in action research (Cohen et al., 2007:309). The technique often serves as an initial exploration of people's views in order to capture essential features and identify problem areas about a certain issue (Potter, Gordon & Hamer, 2004:126,127). In this phase of my research, it would therefore be useful to use NGT in gathering data about the influence of the strategy on the paediatric nursing students' simulation learning experiences. Vardi (2008:109) mentions that student perceptions can be extremely important and helpful when thinking about how to improve learning from the students' point of view. Through the NGT, the students could provide suggestions on how to make their learning experiences more meaningful if necessary.

One of the NGT's most valuable advantages is that every participant has an equal opportunity to contribute towards idea generation and problem-solving (Gallagher et al., 1993:76). In contrast, discussions in group-orientated techniques such as brainstorming or

focus groups may be dominated by more extroverted and articulate participants, resulting in diminished opportunity for full participation from every group member (Gibson & Soanes, 2000:461). Not only is the NGT cost-effective and time-efficient, but valuable information that accurately reflects participants' thoughts can be gathered in a single meeting (Potter et al., 2004:126,127). Participants prioritise information in response to an issue through a voting process. It is the opinions and the needs of the participants that count, not so much the perceptions of the researcher. A disadvantage of the NGT is that it is difficult to implement effectively with large audiences – the suggested group size being five to nine participants (Potter et al., 2004:126). Therefore, an experienced group facilitator would have to plan the meeting carefully if the expected 15 to 21 paediatric nursing students agreed to participate.

Since the 2013 intake of paediatric nursing students might not have had any previous experience of simulation in a higher education setting, I realised that collecting data from them after one or two simulation sessions might not render meaningful results. Therefore, I planned to conduct the NGT at the end of 2013, after the students had completed all the planned simulation sessions.

The analysis of data from the NGT can be carried out using a combination of qualitative and quantitative methods. For example, inductive content analysis of data enables verification of information collected during the meeting, whereas the quantitative analysis of data is concluded by the scoring and ranking (prioritising) of participants' ideas at the end of the meeting (Potter et al., 2004:128). Used in combination, it enhances the interpretation of significant findings (Leech & Onwuegbuzie, 2007:561,564,596; Polit & Beck, 2006:320,497).

### **(b) Field notes**

According to Mills (2007:57,58) and Stringer (2004:81), teacher researchers who conduct action research have numerous opportunities to observe and record what happens in the teaching environment. I planned to write down all my reflections and interactions with the students as they participated in simulation. I would focus mainly on ideas for refining the strategy towards the achievement of meaningful simulation learning experiences. My field notes could be used as an important addition during nominal group data analysis. They could also serve to confirm important points made by the participants and facilitate appropriate emphasis on students' priority suggestions (Speziale & Carpenter, 2007:43).

A limitation of making field notes is that teachers might not always have the time to record observations in a systematic way during learning activities. The continuous jotting down of field notes also poses the risk of making participants feel self-conscious (Mills, 2007:59). Since I decided to use field notes, I planned to follow Bryman's (2008:417) and Stringer's

(2004:82) advice that the observer should return to completing the field notes as soon as possible after an event since long delays might cause loss of significant data.

### **3.2.3 Second action step: Implement the strategy**

The following section is an account of how I implemented the strategy. As a point of departure, I explain how the strategy was implemented by referring to the action items described within each consecutive phase (see Table 3.1).

#### **3.2.3.1 Implementing Phase 1: Scenario design**

- **Action items 1 and 2:** By the end of January 2013, I had completed my revision of the simulated scenarios that were used in 2012. No changes were made to the foreign body aspiration scenario. The hot liquid burn injury had minor changes regarding scenario outcomes. Overall, the scenarios were realistic and scenario objectives captured the main principles of nursing children with respiratory disorders or burn injuries.
- **Action items 3 to 6:** I used the simulation development template to design two new scenarios (bronchiolitis and asthma) for the first semester of 2013 and one new scenario (electrical burn injury) for the second semester. Following the completion of scenario development, I submitted them to our simulation coordinator for scrutiny. Adjustments were made as necessary.

Table 3.2 is a summary of all the simulated scenarios planned for the first and second semesters of 2013. The topic, scenario tasks, and specific knowledge and skills required for each scenario are included. Documentation of the scenario on foreign body aspiration is provided as an example of a completed scenario (see Appendix E).

**Table 3.2: Scenario tasks, and specific skills and knowledge required for simulation learning experiences 2013**

<b>FIRST SEMESTER 2013</b> <b>RESPIRATORY DISORDERS IN CHILDREN</b>		
<b>Theme outcome:</b> <i>Render holistic, comprehensive nursing care to infants and children with respiratory-related conditions according to best practice guidelines</i>		
Session 1	Scenario tasks	Specific skills and knowledge required for the scenario
Foreign body aspiration	1. Admit the patient to the ward	<ul style="list-style-type: none"> <li>• Principles of nursing children with underlying respiratory disorders</li> <li>• Physical examination of the thorax and lungs</li> <li>• Interpretation of arterial blood gases</li> <li>• Interpretation of chest X-ray</li> <li>• Nursing process – develop a specific nursing care plan for the patient</li> <li>• ISBAR communication</li> <li>• Correct procedure to obtain a telephonic prescription for medication</li> <li>• Correct administration of medications</li> </ul>
	2. Assess the patient's respiratory status	
	3. Demonstrate appropriate nursing interventions in the care of a patient experiencing respiratory distress	
	4. Implement care plan	
Session 2	Scenario tasks	Specific skills and knowledge required for the scenario
RSV-infection Bronchiolitis	1. Assess the patient's respiratory status	<ul style="list-style-type: none"> <li>• Principles of nursing children with underlying respiratory disorders</li> <li>• Physical examination of the chest and lungs</li> <li>• Interpretation of arterial blood gases</li> <li>• Interpretation of chest X-rays</li> <li>• Nursing process – develop a specific nursing care plan for the patient</li> <li>• ISBAR communication</li> <li>• Infection control specific to patient's condition</li> </ul>
	2. Inform physician about the patient's condition	
	3. Plan nursing care based on all assessment findings	
	4. Implement care plan	
Session 3	Scenario tasks	Specific skills and knowledge required for the scenario
Asthma	1. Assess the patient's respiratory status	<ul style="list-style-type: none"> <li>• Principles of nursing children with underlying respiratory disorders</li> <li>• Physical examination of the chest and lungs</li> <li>• Interpretation of arterial blood gases</li> <li>• Interpretation of chest X-ray</li> <li>• Nursing process – develop a specific nursing care plan for the patient</li> <li>• ISBAR communication</li> <li>• Basic life support of infants and children (CPR)</li> </ul>
	2. Inform physician about the patient's condition	
	3. Plan nursing care based on all assessment findings	
	4. Implement care plan	

**SECOND SEMESTER 2013**

**BURN INJURIES IN CHILDREN**

**Theme outcome:**

*Render holistic comprehensive nursing care to infants and children with burn injuries according to burn injury protocol*

<b>Session 4</b>	<b>Scenario tasks</b>	<b>Specific skills and knowledge required for the scenario</b>
Hot liquid burn injury	1. Determine the extent and severity of the burn injuries	<ul style="list-style-type: none"> <li>• Principles of nursing children with burn injuries</li> <li>• Interpretation of arterial blood gases</li> <li>• Interpretation of chest X-ray</li> <li>• Nursing process – develop a specific nursing care plan for the patient</li> <li>• Calculation of daily fluid requirements</li> <li>• ISBAR communication</li> <li>• Pain assessment of infants and children</li> </ul>
	2. Calculate the patient's daily fluid requirements and set fluid administration to correct drop rate per hour	
	3. Administer the prescribed pain medication to the patient	
	4. Report findings to the physician	
<b>Session 5</b>	<b>Scenario tasks</b>	<b>Specific skills and knowledge required for the scenario</b>
Hot liquid burn injury	1. Determine the extent and severity of the burn injuries	<ul style="list-style-type: none"> <li>• Principles of nursing children with hot liquid burn injuries</li> <li>• Pain assessment of infants and children</li> <li>• Interpretation of arterial blood gases</li> <li>• Interpretation of chest X-ray</li> <li>• Nursing process – develop a specific nursing care plan for the patient</li> <li>• Calculation of daily fluid requirements</li> <li>• ISBAR communication</li> </ul>
	2. Calculate the patient's daily fluid requirements and set fluid administration to correct drop rate per hour	
	3. Assess the severity of the patient's pain	
	4. Administer/order pain medication	
	5. Implement nursing care based on all assessment findings	
<b>Session 6</b>	<b>Scenario tasks</b>	<b>Specific skills and knowledge required for the scenario</b>
Electrical burn injury	1. Determine the extent and severity of the burn injuries	<ul style="list-style-type: none"> <li>• Principles of nursing children with burn injuries</li> <li>• Pain assessment of infants and children</li> <li>• Interpretation of arterial blood gases</li> <li>• Interpretation of chest X-ray</li> <li>• Nursing process – develop a specific nursing care plan for the patient</li> <li>• Calculation of daily fluid requirements</li> <li>• ISBAR communication</li> <li>• Basic life support of infants and children (CPR)</li> </ul>
	2. Calculate the patient's daily fluid requirements and set fluid administration to correct drop rate per hour	
	3. Assess the severity of the patient's pain	
	4. Administer/order pain medication	
	5. Implement nursing care based on all assessment findings	

### **3.2.3.2 Implementing Phase 2: Student orientation and preparation**

At the beginning of 2013, I had a discussion with the 21 students who had registered for the paediatric nursing programme and shared the idea that they would participate in simulation as one of their learning activities. I explained to the group that I would like to use their simulation learning experiences as opportunities to conduct research that could possibly result in the improvement of the way that simulation was delivered and in so doing, create meaningful simulation learning experiences. Since it was the students who would be involved in the learning experience, I was interested to understand the process of learning through simulation from their point of view also and not only my own. I explained to them that although participation in simulation was compulsory in terms of their learning programme, they had the right to decline participation in any structured data collection methods (e.g. the NGT). I reassured them that non-participation in the NGT would not affect my relationship with them or their studies negatively. In compliance with ethical standards, I emphasised that they had the right to consent or decline at any time during the project. They had an opportunity to ask questions about the research and to clarify possible misconceptions. I explained the purpose of the field notes and reassured the students that I would always use pseudonyms if and when I had to refer to them in my notes (Zeni, 1998:15). At this stage, none of the students indicated an unwillingness to participate in the research.

#### **ORIENTATION TO THE SIMULATION ENVIRONMENT**

- **Action items 1 and 2:** In adherence to the action items in the strategy, our simulation coordinator presented an introductory lecture regarding simulation as a learning opportunity during a scheduled simulation orientation session in February 2013. The students were then accompanied to the simulation venue where they were orientated to the environment and equipment. The coordinator demonstrated the features of the patient simulator at the same time. The lecture and orientation was a once-off occurrence, but students were invited to return to the venue to familiarise themselves with the environment and equipment.

#### **PREPARING STUDENTS FOR SIMULATION LEARNING EXPERIENCES**

- **Action items 3 to 6:** The students received a detailed timetable indicating the six scheduled simulation sessions, three in the first semester and three in the second semester. Lectures and skills training specific to upcoming scenarios were completed at least one week prior to the scheduled simulation sessions. I provided students with preparatory reading material and references to relevant additional sources. Under the supervision of a preceptor in clinical settings, the students practised new skills required for

a specific scenario, such as physical assessment and the interpretation of blood gases and X-rays.

- **Action items 7 and 8:** Students were randomly assigned to one of five simulation groups, which consisted of four or a maximum of five members each. Studies have shown that groups of four or five are ideal for simulation (Beauchesne & Douglas, 2011:30). To allow group members to get used to each other while working together as a team, the students and I decided that members would stay with their initial group throughout the academic year.

### **3.2.3.3 Implementing Phase 3: Execution of simulation sessions**

- **Action items 1 and 2:** Sessions were scheduled to be conducted once every four to five weeks during a semester. As planned, the students participated in three simulation sessions during the first semester and three during the second semester.

## **THREE STAGES OF A SIMULATION LEARNING EXPERIENCE**

### **(a) Briefing**

- **Action items 1 to 5:** Prior to the students' first simulation session, they signed a declaration of confidentiality. Consistent with good simulation practice, I assigned and clearly explained the students' roles each time before a simulated scenario (Beauchesne & Douglas, 2011:29). Roles that students were expected to assume, such as 'sister in charge' and 'professional nurse 1, 2 or 3', were familiar to them. Distinct roles were rotated for subsequent scenarios to allow equal exposure for all students.

Students were briefed regarding scenario objectives and time allowed to complete a scenario. They were sensitised that the simulated scenarios would be video-taped and that members of the simulation team and I would be observing them from the control room. I repeatedly reminded them that simulation was a learning opportunity and not a means of formal assessment.

### **(b) Simulated scenarios**

Scenarios could not have been properly implemented without preparatory efforts from the simulation coordinator and technical team. Since the details of preparing the simulation venue for scenarios were not the focus of my study, I will refrain from describing 'behind the scenes' efforts. I do, however, acknowledge the importance of proper technical and environment preparation prior to running scenarios.

Scenarios were implemented according to developed scenario documentation. Since the documentation is available as appendices, I will not describe the detail of scenario implementation here. The sessions were conducted in the venue that represents a paediatric ICU (see Chapter 1). I used this venue because it had the necessary equipment and medical supplies to create a realistic clinical environment for the students. However, since the scenarios were not written for cases representing children who needed intensive care, I removed items such as the mechanical ventilator and the defibrillator to create an area that resembled a single cubicle in a children's ward. The simulator of choice for each scenario was based on the age of the child needed to create a realistic patient in a healthcare environment. While the students participated in the scenario, members of the simulation team and I observed their actions from the control room. The students did not receive any direct guidance from me or a facilitator during the simulated scenarios. However, telephonic connection between the ward space and the control room made it possible for students to communicate with a member of the team who assumed the role of a physician. The students were informed that they would have access to this person at all times during the scenario.

- **Action item 1:** The first simulated scenario represented a child with a foreign body aspiration where the foreign body caused some degree of right-sided bronchial obstruction. In such a case the child may present with a wheeze, continuous coughing, increased work of breathing, and asymmetric breath sounds. If left untreated, foreign body aspiration can lead to acute respiratory distress, recurrent pneumonia, and even death (Prabhudesai, Singh & Nathani, 2008:50). Some of the key differential diagnoses of foreign body aspiration include asthma, pneumonia and bronchitis, some of which can cause respiratory distress. Therefore, a nurse must be able to recognise the signs and symptoms of respiratory distress and intervene to alleviate the discomfort experienced by these patients. I used the simulator representing a five-year-old child for this scenario.
- **Action item 2:** The second simulated scenario represented a child with bronchiolitis that was caused by the RSV. This type of infection is a frequent cause for hospitalisation in children less than one-year old (Hueckel & Wilson, 2007:1352) and requires thorough respiratory system assessment, oxygen saturation monitoring and vigilant observation for early signs and treatment of increasing respiratory distress to prevent respiratory failure. For this scenario, I used the simulator representing an infant.
- **Action item 3:** Asthma is the commonest chronic children's disease in developed and developing countries (Levin & Weinberg, 2012:420). A critical component of the nursing management of asthma is the identification of life-threatening attacks that bear the risk of suffocation related to airway obstruction. By the time that the students participated in the

asthma scenario, they had had cardiopulmonary resuscitation (CPR) training. Therefore, in addition to specific learning outcomes, this scenario provided the students with an opportunity to implement basic life support skills.

- **Action items 4 to 5:** Second semester scenarios related to burn injuries. Burn injuries, and in particular hot liquid burn injuries, are common among children in South Africa due to factors such as crowded living in informal dwellings and less space for safe kitchen and sleeping spaces (Parbhoo, Louw & Grimmer-Somers, 2010:1). It was possible to mimic realistic burn injuries on the patient simulator through a specific make-up technique commonly referred to as moulage. The scenarios were useful in revising nursing care specific to children with burn injuries; for example, the calculation of daily fluid requirements, pain assessment and family-centred care in instances where one of the students assumed the role of the patient's mother or caregiver.
- **Action item 6:** The time allowed for completion of a scenario was 20 to 25 minutes. As recommended by Jeffries (2008:72), no extra time were allowed if students did not complete all the given tasks.

### (c) Debriefing

- **Action items 1 to 6:** Debriefing sessions were conducted within 10 minutes after a scenario ended and in a venue other than the simulated scenario. The process of debriefing started with an explanation that the purpose of the debriefing was self-reflection and learning, not assessment. Hereafter, I helped each student to identify his/her emotional response to the simulation and we discussed it. This was followed by questions to assist students with reflection-on-action: *What did you do well during the scenario? What would you do differently next time? and How do you feel after the debriefing?* The tone of debriefing was deliberately positive, and I attempted to use open-ended questions to promote a non-judgmental atmosphere that is conducive to sharing. Time scheduled for the debriefing sessions was 30 to 45 minutes, but was extended with a few minutes when some sessions took longer.

### 3.2.4 Monitoring and observing

The following section is an account of data collection and analysis. At the end of the section, I describe the evidence that not only indicated various shortcomings in the strategy but also inspired me to reconsider my educational practice and the manner in which I approach adult learners.

### 3.2.4.1 Collection and analysis of the data

Data collection during this stage consisted of making observational notes (field notes) during and after simulation sessions. All students who participate in simulation at the UFS School of Nursing sign a consent form whereby they agree to uphold confidentiality and give permission that data generated from the learning experiences may be used for research purposes. However, no data may be used except when linked to a research project approved by the Ethics Committee of the UFS. The field notes were thus included in terms of this study's approval as well as the students' consent and knowledge that data generated from their learning experiences will be included as a source of information. In an effort to protect the identity of the students, I used pseudonyms in my field notes (Zeni, 1998:15). In addition to field notes, I used the NGT to obtain the students' ideas about their simulation learning experiences.

I acknowledged that students usually perceive educators as figures of authority (Mahani & Molki, 2012:212; Norton, 2009:35). Since I wanted the students to participate voluntarily in the NGT without feeling coerced (Zeni, 1998:15), and to mitigate the Hawthorne effect of the lecturer-student relationship (Burns & Grove, 2009:36), a colleague from the UFS School of Nursing, who is an experienced NGT facilitator, applied comprehensive sampling and invited all 21 paediatric nursing students to join the nominal group meeting. This facilitator was not involved in the students' simulation experiences or in any of their academic activities during the year. My absence might also have given the students the opportunity to give honest replies without feeling threatened or embarrassed.

The NGT was conducted approximately one month after the students had their sixth and last simulation session. Eighteen paediatric nursing students (seventeen females and one male) with ages ranging from 24 to 60 years, agreed to participate. The students signed a consent form that provided detailed information about the purpose of the research and their role as participants. The signed consent forms were stored in a safe place and are available for scrutiny. Appendix C is an example of the consent form. The NGT facilitator followed the five steps of conducting a nominal group as described by Potter et al. (2004:128):

- (a) **Introduction and explanation:** The facilitator opened the meeting by welcoming participants and then explained the principles of the NGT.
- (b) **Silent generation of ideas:** In order to obtain data that related to participants' simulation learning experiences, the facilitator made the following focal request:

*Write down suggestions to improve your learning during a simulation experience.*

In an effort to gather the students' suggestions about each separate stage of a simulation learning experience (briefing, simulated scenario, and debriefing), the facilitator reminded them that a simulation learning experience involves those three stages and requested participants to make suggestions about each stage of simulation separately. Participants individually wrote down what came to mind when considering the request. The facilitator allowed 15 minutes for this step.

- (c) **Sharing ideas:** Participants shared the ideas they had generated. A round robin collection of suggestions followed, one at a time with no debate at this stage, until all the suggestions were captured on a flip chart. From the beginning, suggestions were categorised according to the stage of the simulation learning experience that it represented.
- (d) **Group discussion:** The facilitator led the subsequent discussion and clarification of the participants' suggestions. Phrasing of suggestions was fine-tuned as needed. Participants clustered and numbered suggestions that were similar in meaning. As a means of member checking, and important in enhancing credibility (Mills, 2007:86; Stringer, 2004:59), the facilitator made sure that all the participants were in agreement with the meanings of each cluster of suggestions and that suggestions were appropriate to the separate stages of simulation.
- (e) **Voting and ranking:** Participants were requested to select five suggestions from each stage of a simulation learning experience (briefing, simulated scenario, and debriefing) that he/she considered as most important from the list on the flip chart and to write it down on separate small paper slips. Hereafter participants were requested to prioritise the selected suggestions privately by numbering them in the following way: 5 = most important; 4 = second most important; 3 = third most important; 2 = fourth most important; and 1 = least important. After participants had prioritised and numbered their suggestions accordingly, they displayed their ranking slips on the flip chart next to the appropriate suggestions. Finally, the facilitator tallied all the votes and displayed the results on the flip chart in full view of all participants.

The participants generated and prioritised 26 suggestions. Before I began the process of interpretation, I spent time with the facilitator to validate the students' priorities by carefully recalculating their votes and ensuring that all the suggestions were captured and placed under the correct headings. We reflected on the students' ideas in order to clarify the meanings of certain suggestions.

Table 3.3 is a summary of all the suggestions according to the three stages of a simulation learning experience, as well as the inclusion of excerpts from my field notes to substantiate nominal group data where applicable. The field notes were written during or soon after each simulation session. Ten suggestions related to briefing, nine to the simulated scenarios and seven to debriefing. The voting score (X) and the number of participants who voted for a suggestion (n) appear next to each suggestion. The suggestions and field notes were recorded verbatim.

**Table 3.3: Summary of nominal group results and excerpts from the field notes**

Focal request: <i>Write down suggestions to improve your learning during a simulation experience</i>					
Briefing		Simulated scenario		Debriefing	
Suggestions	*Voting score	Suggestions	Voting score	Suggestions	Voting score
<p>1. Visit the simulation room and environment beforehand</p> <p><i>F/n: Students seem very stressed and anxious before entering the simulation area</i></p>	71 (n=18)	<p>1. More time for actual simulation session</p> <p><i>F/n: Students did not complete documents and did not record patient progress thoroughly</i></p>	51 (n=14)	<p>1. Debriefing should be included – it helps to improve the next sessions</p> <p><i>F/n: At first students did not know what to expect of the debriefing but they grew more comfortable with the process as time went along</i></p>	51 (n=16)
<p>2. Check if equipment is in working condition</p> <p><i>F/n: Simulator malfunction caused some confusion – students thought that the patient was dying and began CPR</i></p> <p><i>F/n: The technical problems during scenarios are frustrating</i></p>	53 (n=18)	<p>2. Provide enough time to read and understand the scenario</p> <p><i>F/n: On several occasions, students seemed hesitant to proceed with the scenario</i></p>	48 (n=16)	<p>2. Show the videos to the students sometime after the simulation – it should be optional to watch the videos</p> <p><i>F/n: We often encountered technical challenges with video streaming and recording of events</i></p>	47 (n=16)
<p>3. Enough time to prepare self before the time – know the topics a week before the simulation session</p>	43 (n=14)	<p>3. Equipment and stationery must be more or less like real situation</p>	42 (n=13)	<p>3. Inform group about the results of the debriefing (summarise)</p>	45 (n=15)
<p>4. Each member of the simulation group should know beforehand which role he/she will play and what is expected of each role</p>	32 (n=12)	<p>4. More time to complete client records – grace period to complete documents</p> <p><i>F/n: Students' documentation is often incomplete</i></p> <p><i>F/n: Perhaps revise the number of tasks that students must complete – tasks perhaps too overwhelming?</i></p>	41 (n=14)	<p>4. Debriefing should be done in the simulation venue to alert the memory</p>	36 (n=12)
<p>5. Practice session before the simulation to ease tension</p> <p><i>F/n: Sometimes the students seemed 'lost' in the scenario – do they prepare for sessions? Should they perhaps practise more before sessions?</i></p>	31 (n=12)	<p>5. Time to prepare yourself as a group in the simulation room before it commences</p>	33 (n=12)	<p>5. Do not ask about the feelings of the student directly after the session</p> <p><i>F/n: Some students revealed apparent discomfort when we asked them to disclose their emotions directly after the simulation session</i></p>	28 (n=9)

6. Look at the group diversity – some quick and others take longer	12 (n=5)	6. Facilitator should spot-check (verify) that all equipment is there before students enter	32 (n=13)	6. Do debriefing individually and then the group - it can lead to student be in tears (or in writing) <i>F/n: Perhaps students felt uncomfortable with my debriefing style – reconsider?</i>	26 (n=9)
7. Remove unnecessary equipment and make sure that the necessary equipment is available for the simulation session	11 (n=6)	7. In the beginning the cameras must be off – first simulation <i>F/n: Students said that they were uncomfortable because of the cameras – they knew they were being "watched"</i>	10 (n=3)	7. Debriefing should be conducted by the lecturer only <i>F/n: Students seemed uncomfortable when educators other than myself were present during debriefing</i>	22 (n=8)
8. Provide a handout of what is going to happen on the simulation day	9 (n=3)	8. Step-by-step guidance during the simulation – (group felt inclined to remove this statement, but some actually voted for it)	7 (n=2)		
9. Do not postpone a simulation	5 (n=1)	9. Spectators must be less – only one lecturer <i>F/n: Students indicated that they felt uncomfortable because I was observing their actions</i>	6 (n=3)		
10. Put the topics of the simulations in the module guide and time-table	2 (n=1)				

\*n = 18; n = number of participants who voted for a suggestion; F/n = excerpts from my field notes

Although I remained open to the students' views and responses, I realised that it would not have been feasible to address every suggestion thoroughly. In order to manage and adapt the strategy according to the students' highest priorities, I have selected suggestions with a voting score of 40 and above as priority suggestions. This selection resulted in a list of ten priority suggestions and is summarised in Table 3.4.

**Table 3.4: List of selected ten priority suggestions**

Briefing		Simulated scenario		Debriefing	
Suggestions	Voting score	Suggestions	Voting score	Suggestions	Voting score
1. Visit the simulation room and environment beforehand	71 (n=18)	1. More time for actual simulation session	51 (n=14)	1. Debriefing should be included – it helps to improve the next sessions	51 (n=16)
2. Check if equipment is in working condition	53 (n=18)	2. Provide enough time to read and understand the scenario	48 (n=16)	2. Show the videos to the students sometime after the simulation – it should be optional to watch the videos	47 (n=16)
3. Enough time to prepare self before the time – know the topics a week before the simulation session	43 (n=14)	3. Equipment and stationery must be more or less like real situation	42 (n=13)	3. Inform group about the results of the debriefing (summarise)	45 (n=15)
		4. More time to complete client records – grace period to complete documents	41 (n=14)		

### 3.2.4.2 Interpretation of the ten priority suggestions

During the interpretation of data, I had to remind myself constantly that the focus of this study was to develop a strategy for meaningful simulation learning experiences in the paediatric nursing programme. However, since I could not predict where the data would lead me, I also had to be open to the fact that the focus of the research might change or be refined (McNiff & Whitehead, 2002:93; Melrose, 2001:168). In the following section, I describe the priority suggestions in more detail. To present the findings systematically, I discuss the priority suggestions under the headings of briefing, simulated scenario, and debriefing.

#### SUGGESTIONS UNDER BRIEFING

From the ten suggestions related to briefing, three had a voting score higher than 40:

1. *Visit the simulation room and environment beforehand.*
2. *Check if equipment is in working condition.*
3. *Enough time to prepare self before the time – know the topics a week before the simulation session.*

The first suggestion had the highest voting score (71) out of all 26 suggestions and was prioritised by all the students (n=18). From this, I deduced that the students were not entirely satisfied with how they were orientated for simulation learning experiences. This finding concerned me because as mentioned earlier, student preparation and orientation may influence the quality of simulation learning experiences. Structured orientation and adequate briefing are not only key aspects of creating the scaffold to support the simulation learning experience, but these processes also alleviate students' anxiety and improve their learning (Arthur et al.,2013:1360; Page-Cutrara, 2014:137). My field notes confirmed that the students experienced high levels of anxiety immediately before simulated scenarios. One entry from my diary reads:

*Students seem very stressed and anxious before entering the simulation area.*

Although briefing plays a vital part in familiarising students with the simulation environment, there is another aspect to be considered: Page-Cutrara (2014:136,137) points out that briefing is a component of the simulation process that can facilitate effective learning and that the content of briefing might even predict the overall simulation learning experience. I realised that a brief orientation to the simulation environment was not adequate, especially if students had never dealt with simulation. In our case, they had not experienced high-fidelity simulation before. The idea that effective preparation can alleviate some anxiety is confirmed by Meyer et al. (2014:392) who found that participants who were adequately prepared for simulation felt less anxious than those who were not prepared. The paediatric nursing students possibly felt anxious because they were underprepared, but they might also have been apprehensive knowing that they would be observed during simulated scenarios (Meyer et al., 2014:385). Nevertheless, I had to consider how to best structure future student preparation and orientation prior to simulation.

In the second suggestion under briefing, the students requested that equipment should be checked and that it should be in working condition. A possible explanation for this suggestion is that the students became confused when technical problems caused the patient simulator to malfunction during a number of simulated scenarios. These occurrences and the resultant confusion were recorded in my field notes:

*Simulator malfunction caused some confusion – students thought that the patient was dying and began CPR.*

*We often encountered technical challenges with video streaming and recording of events.*

*The technical problems during scenarios are frustrating.*

In my view this technical imperfection demonstrated the obvious limitations of simulation and that it does influence a student's experience of simulation to some extent. Technical difficulties were not unique to our situation as other authors also mention that it leads to wasted time and student frustration (Aebersold, Tschannen & Bathish, 2012:e473; Spinner-Gelfars, 2013:100).

The students' third suggestion under briefing was that they be given more time to prepare themselves for simulation. This suggestion implies that students viewed the briefing stage as a period long before simulation learning experiences whereas it is actually the period immediately prior to a simulated scenario. This misunderstanding might have occurred because the NGT facilitator did not clarify the meaning of briefing. Nevertheless, considering preparatory efforts as mentioned in Table 3.1, I interpreted their suggestion as a lack of intrinsic motivation and consequent weak intent to prepare for learning experiences. Individuals with strong intent to learn will be motivated to do so and will consequently exert effort during learning activities (Biggs & Tang, 2011:36; Joseph, 2013:100; Phipps, Prieto & Ndinguri 2013:14). An extract from my field notes revealed my disappointment that the students did not spend time on preparing for simulations:

*Sometimes the students seemed 'lost' in the scenario. Do they prepare for sessions? Should they perhaps practise more before sessions?*

In a way, their suggestion implied a dependence on me as their facilitator instead of taking ownership and responsibility for their own learning.

## **SUGGESTIONS UNDER SIMULATED SCENARIO**

From the nine suggestions under simulated scenario, four had a voting score higher than 40:

- 1. More time for actual simulation session.*
- 2. Provide enough time to read and understand the scenario.*
- 3. Equipment and stationery must be more or less like the real situation.*
- 4. More time to complete client records – grace period to complete documents.*

Suggestions 1, 2 and 4 refer to time allowed for the students to complete activities during a simulated scenario. The scenarios were designed so that learners would be able to reach outcomes within a reasonable amount of time, which was between 20 and 25 minutes. Nevertheless, students requested more time to reach learning outcomes. Bearing in mind

that the students were novices in simulation, I initially wondered whether I had expected too much from them. Two field notes substantiated my concern:

*Students' documentation is often incomplete.*

*Perhaps revise the number of tasks that students must complete – tasks perhaps too overwhelming?*

Gravett (2005:6) mentions that the average older adult needs more time to think and react than the average younger person does and therefore needs more time to learn new material. However, the suggestions were made after six simulation learning experiences and I contemplated whether the students were not rather lacking time management and teamwork skills.

The third request under simulated scenario again related to equipment. Students suggested that equipment and documents should resemble those used in the clinical setting. Although this requirement for sameness could indicate that students found it difficult to adapt to new situations, their perception in terms of how believable the representation of reality is, links with how they will engage with and experience the simulation (Berragan, 2011:660; Paige & Morin, 2013:e485). Therefore, based on this request, as well as the request that equipment should be in working order, I could not ignore the fact that equipment played an important role in how the paediatric nursing students experienced simulation.

### **SUGGESTIONS UNDER DEBRIEFING**

From the seven suggestions under simulated scenario, three had a voting score higher than 40:

1. *Debriefing should be included – it helps to improve the next sessions.*
2. *Show the video to the students sometime after the simulation – it should be optional to watch the videos.*
3. *Inform group about the results of the debriefing (summarise).*

The first suggestion is in agreement with results from a study by Kelly, Hager and Gallagher (2014:99) where students found debriefing a valuable component of simulation. Both Shannon (2003:266) and Jeffries (2005:97) state that the quality of an experience is not necessarily related to its length or its intensity, but rather that the experience is accompanied by feedback. In contrast, Gaba (2007:130) states that it is possible for a person to learn a great deal from just the simulation experience itself, without any additional feedback. He does, however, acknowledge that feedback following complex simulation learning experiences (as in our case), maximises learning. Although I gave feedback during the debriefing, it seemed that students did not find it adequate. Gaba (2007:130) describes a typical form of feedback as a "detailed postsimulation debriefing session, often using audio-

video recordings of the scenario". Participants in the study by Meyer et al. (2014:387) described the use of videos during debriefing as uncomfortable but effective. This idea confirmed the necessity to allow time for video playback during future debriefings, something that I needed to consider.

Based on my initial interpretation of the students' ten priority suggestions, I discovered at least four central ideas that could inform the adjustment of certain aspects of the strategy. Firstly, it was clear that the students did not feel adequately orientated for simulation. Secondly, the students requested extended time for simulated scenarios. A third central idea reflected the importance of equipment as an element of realism in simulation. The last idea related to shortfalls in the debriefing process. However, these ideas were not the only significant insights that emerged during Cycle 1 of the research. Through a rigorous process of reflection and a review of all the priority suggestions (see Table 3.3), an unforeseen issue arose that triggered self-examination of my educational practice and would prove to influence the way that I work with adult learners in the future. In the following section I describe my interpretation of all 26 suggestions made by the students.

### **3.2.4.3 Interpretation of all twenty-six suggestions**

Students who enter postgraduate education are usually between 24 and 64 years of age and are considered more mature than most undergraduate students. Apart from being older and more mature, the students usually share a few social attributes. For example, they are financially independent, they are in full-time employment, they have dependants, and they study part-time. As professional nurses, the paediatric nursing students do not only share these attributes, they also bring clinical as well as life experiences to the educational environment. From this perspective, I viewed the paediatric nursing students as mature adult learners, capable of being independent and taking responsibility for their own learning.

As stated earlier (see Chapter 1), Zigmont et al. (2011:48) advise that effective education of adults through simulation requires a sound understanding of adult learning and best practices to facilitate adult learning. Over the years, research on adult learning has culminated in numerous lists of adult learner characteristics, depending on the research design or theoretical orientation of the researchers (Gravett, 2005:8; Merriam, 2001:4). Until the mid-twentieth century, many insights about adult learning were extrapolated from research with children or research that placed adults under the same conditions as children (Knowles et al., 2005:18,35; Merriam, 2001:5). When educators of adults began to consider whether adult learning could be distinguished from learning in childhood, a knowledge base unique to adult education emerged. This new way of thinking about adult learning was pioneered by Eduard C. Lindeman (1926) and it strongly influenced the educational

philosophy of John Dewey (1859–1952). Since then, efforts have been made to formulate a theory that considers what we know from experience and research about the unique characteristics of adult learners. During a span of five decades, influences from social science disciplines such as psychology, developmental psychology, sociology and social psychology, and philosophy resulted in a conceptual framework of adult learning (Knowles et al., 2005:142). In South Africa, as in North America, adult learning is generally (not exclusively) associated with Malcolm Knowles's theory of the specific conditions and principles for adult learning (Gravett, 2005:70). His assertions helped many educators of adults to understand the importance of involving adults in the educational process (Hiemstra, 2003:6), rather than maintaining a traditional teacher-centred pedagogical approach (Merriam, 2001:5). Knowles proposed six characteristics that describe the adult learner in relation to his conceptualisation of adult education – also known as andragogy. As described in Chapter 1, the educator who uses Knowles's theory of adult learning can assume that adult learners:

- have independent self-concepts and are led by self-directedness, not dependency;
- draw on their accumulated reservoir of experience as a rich resource for learning;
- have learning needs that are influenced by social roles;
- are problem-centred and want to apply new knowledge immediately;
- need to know why they have to learn something before participating in learning; and
- are motivated to learn by internal rather than external factors (cf. Clapper, 2010:e8; Klaassen et al., 2011:87; Knowles et al., 2005:64-68; Tennant, 2006:9).

These six core characteristics or principles provide a sound foundation for planning adult learning experiences and influence many educators who use simulation training (Clapper, 2010:e9). Although I did not apply Knowles's theory to plan the action items in my strategy, I found his theory a useful measure by which to evaluate the students' suggestions in the context of expected adult learner conduct. Through a process of deductive, interpretive analysis of the students' 26 priority suggestions (see Table 3.3), I searched for phrases or words that either confirmed or contradicted adult learner behaviour. In agreement with two co-interpreters, I arranged participants' suggestions that specifically related to adult learner conduct into two broad categories, namely (1) suggestions supporting adult learner conduct, and (2) suggestions in contrast to adult learner conduct.

### **SUGGESTIONS SUPPORTING ADULT LEARNER CONDUCT**

Out of the 26 suggestions, three confirmed adult learner conduct by the paediatric nursing students. I associated the following two suggestions with Knowles's view that adult learners are problem-centred and that they have a need to apply new knowledge immediately:

1. *Debriefing should be included – it helps to improve the next sessions.*
2. *Show the video to the students sometime after the simulation – it should be optional to watch the videos.*

Since most learning from simulation events usually takes place during debriefing, I concluded that the students' eagerness to engage in debriefing and to review recordings of the simulation events revealed a desire for deeper learning. The students demonstrated a need to evaluate performance outcomes by requesting access to video recordings of simulation events. These suggestions could also be linked to the principle that adult learners need immediate and frequent feedback as they progress through learning events (Collins & Martin, 2010:199).

The third suggestion illustrated that adults are unique and bring different roles and experiences to the educational environment (Knowles et al., 2005:66):

3. *Look at the group diversity – some quick and others take longer.*

Given that the ages of the paediatric nursing students ranged from 24 to 60 years, the suggestion links well with Gravett's (2005:6) statement that the average older adult needs more time to think and react than the average younger person does and therefore the former needs more time to learn new material.

### **SUGGESTIONS IN CONTRAST TO ADULT LEARNER BEHAVIOUR**

While I found the aforementioned suggestions encouraging, several suggestions were in contrast to some of the characteristics associated with expected adult learner behaviour as depicted by Knowles. Several of the students' suggestions demonstrated dependent behaviour, which was in contrast with behaviour of adults with independent self-concepts who wants be treated by others as being responsible for and capable of directing their own learning:

1. *Give enough time to prepare oneself before the time – know the topics a week before the time.*
2. *Put the topics of the simulations in the module guide and timetable.*
3. *Provide a handout of what is going to happen on the simulation day.*
4. *Debriefing should be conducted by the lecturer only.*
5. *Facilitator should spot-check (verify) that all equipment are there before students enter.*
6. *Provide step-by-step guidance during the simulation.*

As mentioned, the students' study guides contained a detailed timetable indicating the scheduled simulation sessions. As mentioned earlier, we discussed the topics, content and preparation requirements for specific simulation sessions approximately one to two weeks

prior to simulation events. I provided the students with relevant reading material and references to additional sources that could assist in their preparation. They were requested to practise any skills that were associated with the theoretical theme in the presence of a preceptor in the clinical areas. Nevertheless, the above-mentioned requests by students again suggested a weak intent to self-prepare and that they expected more input from me as their educator. A possible reason for this dependent behaviour could be that some students may have been socialised to regard themselves as passive recipients of knowledge who expect to be taught by an all-providing educator. It is possible that students were used to teacher-directed education where the educator takes full responsibility for making decisions about learning content, and how and when it will be learned (Knowles et al., 2005:61). Consequently, when they are expected to take responsibility for their own learning, they seem unprepared to perform on their own (Ákerlind & Trevitt, 1999:97). From this viewpoint, the paediatric nursing students' conduct could not entirely be associated with Knowles's notion that adults have strong internal motivation to learn.

In agreement with Knowles's view that maturity brings accumulated experience that becomes an increasingly rich resource for learning, some authors acknowledge adult students' ability to draw from their accumulated experience as one of the hallmarks of adult learning (Fasokun, Katahoire & Oduaran, 2005:24). Since mature students usually have extensive experience in their field of study, I expected that the paediatric nursing students would use it as a resource for learning. Given that the simulations were conducted in an environment that represented clinical situations in more than one way, there were ample opportunities for students to establish a common base of experience. Hence, I expected the students to pool their resources, interact with and learn from each other, and perform in more or less the same manner as they would in the workplace. However, after six scheduled simulations as well as discussions about each experience during debriefing, the following suggestions made me reconsider their ability to apply previous knowledge and skills in the simulation environment:

7. *Remove unnecessary equipment and make sure that the necessary equipment is available that will be used in the simulation session.*
8. *Equipment and stationery must be more or less like in the real situation.*
9. *Visit the simulation room and environment beforehand.*
10. *Practice session before the simulation to ease tension.*

During briefing, specific roles, which corresponded with participants' current or previous professional roles, were assigned to each member. Students worked in teams of four or five and were given specific roles that were rotated for subsequent scenarios. Given that students worked in clinical settings together with other professional nurses, I did not spend

much time to explain the assigned roles of 'sister-in-charge' or 'professional nurse', because I assumed that students would know how to perform in roles that were familiar to them. Nevertheless, the following suggestion led me to conclude that students found role identification a challenge:

*11. Each member of the simulation group [participant] should know beforehand which role he/she will play and what is expected of each role.*

Equally unexpected was a lack of time management skills:

*12. Provide enough time to read and understand the scenario.*

*13. More time to complete client records – grace period to complete documents.*

*14. Provide more time for the actual simulation session.*

Based on Knowles's theory of adult learning and its application to the paediatric nursing students' suggestions, I found convincing evidence that the students did not always display expected adult learner behaviour. Data revealed their dependence on me as their educator, reluctance to take responsibility for their learning, a lack of internal motivation to learn, and an inability to draw on previous experience as a resource for learning.

### **3.2.5 Reflection on the outcome of the first and second action steps**

In reflecting on the outcome of the actions taken in Cycle 1, I used some of the findings discussed in the previous sections. In view of the aim of the study, which was to develop a strategy for meaningful simulation learning experiences in the paediatric nursing programme, I felt that there was indeed room for improvement. The students' ten priority suggestions confirmed that some features of simulation were not yet optimal, which might influence the students' experience of simulation and the quality of their learning. Additionally, a review of the students' conduct in terms of expected adult learner behaviour rendered unexpected but important evidence about them as adult learners. As I reflected on my expectations of mature postgraduate students in relation to the findings, I realised that I would have to consider ways to assist the students in making the transition from being dependent to becoming motivated and responsible learners.

As I looked back on the outcome of Cycle 1, I realised that the focus of my research had not changed entirely. I was still eager to achieve meaningful simulation learning experiences. However, my awareness that students in the paediatric nursing programme might not necessarily display conduct expected of mature learners stimulated me to rethink about how I should approach students who enter postgraduate studies in future. According to Melrose (2001:166), a slight shift of focus from one cycle to another is not necessarily negative, but rather evidence of a deeper probing of the situation under investigation.

### **3.2.5.1 Professional development**

As I commenced my action research, I did not give much thought to my own professional development because I was more concerned about a plan to achieve meaningful simulation learning experiences. However, I soon learned the importance of continuous self-reflection in the process of action research. Through reflection, my flexibility and openness to new ideas increased. Not only could I acknowledge some shortfalls in my own educational practice, but I also began to grasp the link between the outcome of the research and my role as a partner in deciding how to implement new ideas towards what works best and what needs improvement in simulation-based education.

In my role as a facilitator of debriefing, I realised the importance of assisting students in reflecting on their own actions as a crucial step in the experiential learning process. However, I found guided reflection very challenging at first because it was very difficult to keep quiet and resist the temptation to inform the students what I thought they should say. The 'lecturer' in me had to become less prominent and I knew that I would have to be attentive and listen to the students more so that I could discover how they linked their simulation learning experiences with new ways of thinking and learning. Therefore, I was eager to establish a sensitive and responsive relationship with the 2014 intake of paediatric nursing students. I would aim to find a balance between supporting the students in their learning and allowing enough space for them to experience learning without my intrusion.

By the end of the first cycle, I came to appreciate that action research is work in progress. By planning and implementing the first action cycle, I enhanced my own understanding of the conduct of research. I felt confident to continue with planning and implementing a second and possibly a third action cycle to reach the purpose of the study.

### **3.2.6 Areas that needed modification in Cycle 2**

In reflecting on the lessons learned in Cycle 1, I identified various essential issues as discussed below.

#### **3.2.6.1 Preparing students for simulation**

Although I considered an introductory lecture about simulation and subsequent orientation to the simulation environment adequate to prepare students for simulation learning experiences, the findings confirmed that more planning was needed to ease the simulation-induced anxiety and stress experienced by students.

### **WHAT SHOULD CHANGE?**

Students did not respond to numerous invitations to visit the simulation venue before simulation sessions. I decided that, apart from an introductory lecture on simulation, students should be required to spend more time in the simulation environment before they participate in simulation. Under direct supervision of the simulation coordinator, they should familiarise themselves with the features of the patient simulator, equipment, and medical supplies. Additionally, an experienced simulation educator should accompany students during their first simulation learning experience. This person would be available to assist students to reach scenario outcomes and provide guidance when necessary.

I pondered whether I should continue to provide students with resources for simulation preparation or to expect them to take responsibility for their own learning in this regard. According to adult learning theory, I could rely on student self-direction and motivation to be prepared for simulation. However, being aware that the new group of paediatric nursing students might not necessarily display adult learner behaviour supported my decision to provide them with specific guidelines for simulation preparation.

#### **3.2.6.2 Time required to complete a scenario**

Data revealed that students struggled to complete their given tasks within the timeframe allowed.

### **WHAT SHOULD CHANGE?**

In an effort to help students to adjust to simulation as a learning activity, I intended to revise scenario complexity and to guard against overwhelming students, especially during the first and second simulation sessions. Since I was more interested in creating a positive learning environment than expecting students to work under extreme pressure, I planned to extend the time allowed for sessions from 20 to 25 minutes to 30 to 35 minutes.

#### **3.2.6.3 Equipment as an element of realism in simulation**

Wherever possible, real equipment should be used to create a believable representation of the clinical environment. For simulation to be most effective, students must suspend disbelief and interact with the patient simulator and environment as if they were real (Hope & Chin, 2008:82). Although our simulation spaces are outfitted with equipment that resembles that of the clinical environment, technical problems often resulted in the patient simulator malfunctioning during a number of simulated scenarios. On some occasions students did not have access to items like vacoliters, protective clothing or medication required for a scenario. Although malfunctioning of equipment cannot be entirely prevented, an attempt

should be made to prevent it from happening by testing the equipment before students enter the simulation venue. If possible, a scenario should be rehearsed beforehand to expose flaws and allow required modifications to be made (Holland et al., 2008:143). A checklist can be developed to ensure that equipment and items needed for a scenario are in working order and readily available. Effective communication between members of the simulation team and myself could alleviate many of the challenges experienced with regard to equipment.

#### **3.2.6.4 Debriefing as a critical element of simulation learning**

Effective debriefing is important in maximising student learning. Although I followed guidance from literature on debriefing, I sensed that there was ample room for improvement in how I structured and facilitated debriefing sessions. I realised that debriefing requires complex skills and much practice to develop expertise and ensure the best possible outcomes in education-based simulation (Flanagan, 2008:156,168).

##### **WHAT SHOULD CHANGE?**

As mentioned earlier, I realised that I should take care not to control the agenda during debriefing, but to adopt a learner-centred approach and allow students to discover areas that need improvement for themselves. The students suggested the inclusion of video playback and I agreed that it should be introduced during debriefing because it is considered a powerful technique for reflection and self-discovery (Flanagan, 2008:166). I would have to review the literature again and pursue the best possible debriefing techniques to foster a quality debriefing practice.

#### **3.2.6.5 Simulation learning experiences and the adult learner**

Nominal group data suggested that the students' behaviour was not entirely in accordance with expected adult learner behaviour. A main concern was the students' dependence on me as their educator, which indicated their reluctance to take responsibility for their own learning. Tennant (2006:22) suggests that educators of adults should be cautious to claim that their students will spontaneously direct their own learning, and if necessary, they should adapt to this reality by adjusting their pedagogic practices.

##### **WHAT SHOULD CHANGE?**

To assist students in developing independent learner behaviour, I considered using the debriefing sessions as a valuable platform not only to discuss students' perceptions of the simulation experience, but also to explore their ideas and action plans on correcting mistakes that were made during simulation. In so doing, I could perhaps progressively decrease the students' dependency and encourage independence and responsibility for

learning instead of them relying on me to provide all the answers (Dunlap & Grabinger 2003:7).

### **3.3 Conclusion**

The purpose of this first cycle was to develop and implement a strategy for meaningful simulation learning experiences in the paediatric nursing programme. Data were gathered from 18 postgraduate paediatric nursing students and revealed that further refinement of the strategy was indeed necessary in my quest to find the best possible way to use simulation in my programme and to answer my fundamental research question:

***How can meaningful simulation learning experiences be achieved in a postgraduate paediatric nursing programme?***

By the end of 2013, I participated in a second simulation workshop, again presented by simulation experts from the Drexel University in Philadelphia in the United States of America. In addition to insights gained from Cycle 1, I felt that the workshop served to equip me even more and I was ready to plan my second action cycle. In the following chapter, I describe my revised action plan.

# Chapter 4

## Action Cycle 2 (January 2014 – May 2014)

### Refining the Strategy for Meaningful Simulation Learning Experiences

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#### 4.1 Introduction

At the beginning of my action research, my main concern was that I did not have a well-developed plan or strategy in order to provide paediatric nursing students with meaningful simulation learning experiences. I had implemented simulation mainly based on intuitive thinking and basic teaching and learning principles. The development of a strategy for simulation learning experiences as described in Cycle 1 resulted in a more structured approach to simulation use in the paediatric nursing programme. Although the data revealed some shortcomings, I was generally satisfied that the strategy, and its content was a step towards developing a theoretically and empirically founded approach to simulation implementation which could result in meaningful simulation learning experiences for the paediatric nursing students.

Although outcomes from the first cycle did not change the main purpose of my study, my area of concern expanded from not having a well-developed plan or strategy for meaningful simulation learning experiences to:

- having a strategy, but that the strategy needed refinement, and
- understanding that the new intake of paediatric nursing students might also display dependent learner behaviour with a reluctance to take responsibility for their own learning.

In this chapter, I hope to demonstrate how I attempted to address these concerns. The challenge was to find the balance between providing students with the necessary support in simulation, as well as using simulation as an opportunity whereby students could develop a sense of independence and responsibility towards their learning. Hence, my fundamental research question remained:

***How can meaningful simulation learning experiences be achieved in a postgraduate paediatric nursing programme?***

## 4.2 The second action cycle

The second action cycle commenced after I had considered the issues that arose from Cycle 1. My revised action plan included three action steps, namely:

- (1) refine the initial strategy document;
- (2) implement the revised strategy during the first semester of the 2014 academic year; and
- (3) develop independent adult learner behaviour.

In the following section, I describe the action steps taken. The chapter concludes with a discussion on what the outcomes were in respect of actions taken, lessons learned and further planning.

### 4.2.1 First action step: Refine the initial strategy document

Based on issues that arose from the first cycle and new insights gained from simulation literature, it was necessary to review and refine the initial strategy document. Table 4.1 is a presentation of the revised strategy that I implemented in the first semester of 2014. The layout of the strategy document did not change and still consisted of three consecutive phases. However, some action items were changed or new ones added. The strategy document reflects a comparison between action items implemented in the *first* semester of 2013 and those for the *first* semester of 2014 because Cycle 2 of my research was implemented during the first semester of 2014. Changes or additional action items that were added in the 2014 document are printed in bold in Table 4.1. Where necessary, motivation(s) for particular action items are provided as support for decisions taken.

**Table 4.1: Revised strategy for meaningful simulation learning experiences in the paediatric nursing programme**

PHASE 1: SCENARIO DESIGN		
First semester 2013	First semester 2014	
Action item	Action item	Motivation
1. Revise previously used scenarios	1. Revise previously used scenarios	<i>Literature:</i> Beauchesne and Douglas (2011:29); Garrett et al. (2010:310); Glavin (2008:122); Hollard et al. (2008:140); Jeffries (2008:72); Nehring and Lashley (2010:413); Paige and Morin (2013:e481-e489); Vardi (2008:100)
2. Develop new scenario: Bronchiolitis (RSV) 3. Develop new scenario: Asthma	2. Develop new scenario: <b>Congestive heart failure</b> 3. Develop new scenario: <b>Bacterial endocarditis</b>	<i>Literature:</i> Garrett et al. (2010:312)
(In 2013, only the first simulation experience was uncomplicated with only one or two patient problems. Subsequent sessions were markedly more complex in terms of patient problems.)	4. <b>Gradually increase the level of scenario complexity until objectives align with the students' training level</b>	<i>Literature:</i> Beauchesne and Douglas (2011:32); Biggs and Tang (2011:27); Clark (2008:22); Edgecombe et al. (2013:3); Hamstra et al. (2014:4); Issenberg et al. (2005:23); Jeffries (2005:100); Stocker et al. (2014:3).  <i>My reflection/data from Cycle 1:</i> Difficult scenarios may be too overwhelming at the beginning and create a negative learning experience
4. Include the simulation team in the design of scenarios	5. Include the simulation team in the design of scenarios	<i>Literature:</i> Huang and Dongilli (2008:12;16); Jeffries (2005:98) Standard practice at the UFS School of Nursing
PHASE 2: STUDENT ORIENTATION AND PREPARATION FOR SIMULATION		
Action item	Action item	Motivation
<b>Orientation to the simulation environment</b>		
1. Present an introductory lecture on the principles of simulation 2. Orientate students to the simulation venue, equipment and high-fidelity simulators	1. Present an introductory lecture on the principles of simulation 2. <b>Show a video about the features of the paediatric patient simulator</b> 3. <b>Orientate students to the simulation venue:</b> <ul style="list-style-type: none"> <li>• <b>Demonstrate the function of infusion pumps and syringe pumps</b></li> <li>• <b>Demonstrate the function of the oxygen apparatus and suctioning apparatus</b></li> <li>• <b>Demonstrate the features of the patient simulator and the monitor next to the bedside</b></li> </ul>	<i>Data from Cycle 1:</i> Students were not entirely satisfied by the way that they were prepared for simulation learning. <i>Literature:</i> Arthur et al. (2013:1360); Beischel (2013:241); Cato (2013:144); Clark (2008:51); Clark et al. (2012:11); Clark & Harrelson (2002:156); Edgecombe et al. (2013:3); Fraser et al. (2012:1060); Ganley and Linnard-Palmer (2012:e55). Garrett et al. (2010:312); Glavin (2008:119); Gravett (2005:36); Hamstra et al. (2014:4); Jeffries (2008:72); Maas and Flood (2011:232); Page-Cutrara (2014:137); Stocker (2014:4); Wickers (2010:e84).

		<ul style="list-style-type: none"> <li>• Show students where medical and other supplies are stored</li> <li>• Show students where the emergency trolley is placed</li> <li>• Allow time for students to familiarise themselves with all aspects of the simulation environment</li> </ul>	
<b>Preparing students for simulation learning experiences</b>			
3. Provide information regarding the upcoming simulated scenarios: <ul style="list-style-type: none"> <li>• scenario topic</li> <li>• theoretical content</li> <li>• psychomotor skills required (e.g. physical examination of children)</li> </ul>	4. Provide information regarding the upcoming simulated scenarios: <ul style="list-style-type: none"> <li>• Scenario topic</li> <li>• Theoretical content</li> <li>• Psychomotor skills required (e.g. physical examination of children)</li> </ul>		
4. Provide students with reading material and references to relevant literature	5. Provide students with reading material and references to relevant literature		
5. Link course content to simulated scenarios by means of lectures, journal club meetings, demonstrations and practising of skills	6. Link course content to simulated scenarios by means of lectures, journal club meetings, demonstrations of skills		According to the scenario development template, scenario topics are covered prior to a simulation learning experiences.
6. Encourage students to practise skills in the clinical setting prior to simulation sessions	7. Encourage students to practise skills in clinical setting prior to simulation sessions		<i>My reflection:</i> Students should not use simulation sessions to practise skills but to implement and improve on skills expected of advanced clinicians.
7. Randomly assign 4 to 5 students per group	<b>8. Randomly assign 2 to 3 students per group</b>		<i>Literature:</i> Conjeno (2009:147); Polit and Beck (2004:169) <i>My reflection:</i> Keep groups as small as possible to allow equal participation during scenarios.
8. Keep group members the same throughout the academic year	9. Keep group members the same throughout the academic year		<i>Literature:</i> Jeffries (2005:99) <i>My reflection:</i> Allow group members to get used to each other and learn to work together as a team.
<b>PHASE 3: EXECUTION OF SIMULATION SESSIONS</b>			
Number of sessions	<b>Action item</b>	<b>Action item</b>	<b>Motivation</b>
	1. Implement three sessions in the first semester	1. Implement <b>five</b> sessions in the first semester	<i>Literature:</i> Biggs and Tang (2011:24;27); Clark (2008:22;205-207); Parker and Myrick (2009:326); Stocker et al. (2014:3;7) <i>My reflection:</i> More simulation learning opportunities may help solidify learning and build confidence across time.

	Action item	Action item	Motivation
Enhancing realism	(Although the scenario document included items needed for a scenario, the absence of a checklist may have resulted in items not being available on the day of the simulation)	<b>1. Use a checklist and control the availability of equipment and medical supplies needed for specific scenarios</b>	<i>Literature:</i> Bland et al. (2011:666); Glavin (2008:119); Wickers (2010:e84) <i>Data from Cycle 1:</i> Improvements needed in terms of a realistic environment and equipment.
	(Actions mentioned in the next column were part of standard simulation practice in 2013, but were not included in the initial strategy. Based on findings from the first cycle, and for the sake of thoroughness I included them in the revised strategy document)	<b>2. Provide realistic documentation in the patient's file</b>	
		<b>3. Use props, e.g. dress simulator pyjamas or hospital attire</b>	
		<b>4. Facilitators and students wear their hospital uniforms when participating in scenarios</b>	
		<b>5. Remind students to treat the simulation as an actual clinical situation</b>	
Briefing	<b>1. Students sign a declaration of confidentiality (once off)</b>	1. Students sign a declaration of confidentiality (once off)	Standard procedure at the UFS School of Nursing
	<b>2. Assign and clarify appropriate participant roles</b>	2. Assign and clarify appropriate participant roles	<i>Literature:</i> Jeffries (2005:98)
	<b>3. Brief students regarding scenario objectives and time allowed for completion</b>	3. Brief students regarding scenario objectives and time allowed for completion	<i>Literature:</i> Vardi (2008:105)
	<b>4. Sensitise students that simulated scenarios are videotaped and that their actions are observed by members of the simulation team</b>	4. Sensitise students that simulated scenarios are videotaped and that their actions are observed by members of the simulation team	Videotaping scenarios is standard procedure at UFS School of Nursing. <i>Literature:</i> Ganley & Linnard-Palmer (2012:e54) <i>My reflection:</i> Create an academically safe learning environment by providing students with information about standard simulation practice.
	<b>5. Emphasise that simulation is a learning opportunity and not used for formal assessment</b>	5. Emphasise that simulation is a learning opportunity and not used for formal assessment	<i>Literature:</i> Biggs and Tang (2011:27) Simulation is not used for formal assessment at the UFS School of Nursing
		<b>6. Re-orientate students to the simulation environment and equipment prior to each simulated scenario</b>	<i>My reflection/data form Cycle 1:</i> Students requested to be orientated to the environment prior to every simulation learning experience.

Simulated scenario	<b>Action item</b>	<b>Action item</b>	<b>Motivation</b>
	1. Implement the foreign body scenario <b>once</b> 2. Implement the RSV-infection scenario once 3. Implement the asthma scenario once	<b>1. Facilitator to accompany students during their first simulated scenario</b>	<i>My reflection:</i> Simulation is a new learning method and they need initial guidance
		2. Implement the foreign body scenario <b>twice</b>	<i>My reflection:</i> To allow for a gradual increase in scenario complexity.
		3. Implement the RSV-infection scenario once	<i>My reflection:</i> Use a different scenario in order to solidify the principles of nursing children with respiratory disorders.
		<b>4. Implement the congestive heart failure scenario once</b> <b>5. Implement the bacterial endocarditis scenario once</b>	<i>My reflection:</i> Introduce new topics to add variety.
4. Allow 20–25 minutes for a simulated scenario	<b>6. Allow 30–35 minutes for a simulated scenario</b>	<i>Data from Cycle 1:</i> Students requested more time to complete scenarios	
Debriefing	<b>Action item</b>	<b>Action item</b>	<b>Motivation</b>
	1. Conduct debriefing within 10 minutes or as soon as possible after completion of the simulated scenario	1. Conduct debriefing within 10 minutes or as soon as possible after completion of the simulated scenario	<i>Literature:</i> Flanagan (2008:157); Ganley and Linnard-Palmer (2012:e55)
	2. Conduct debriefing in a venue other than the simulated scenario	2. Conduct debriefing in a venue other than the simulated scenario	<i>Literature:</i> Arthur et al. (2013:1360)
	3. Explain the purpose of the debriefing at the beginning of the session	3. Explain the purpose of the debriefing at the beginning of the session	<i>Literature:</i> Zigmont et al. (2011:53)
		<b>4. Use video playback as a form of feedback</b>	<i>Literature:</i> Arafah et al. (2010:305); Clark (2008:215); Wickers (2010:e85). <i>Data from Cycle 1:</i> Students requested video playback of their performance
4. Assist students to express their emotional responses to the simulation before facilitating reflection-on-action	5. Assist students to express their emotional responses to the simulation before facilitating reflection-on-action	<i>Literature:</i> Dreifuerst (2009:111); Glavin (2008:119)	

Debriefing	5. Use guiding questions to facilitate reflection-on-action	6. Use guiding questions to facilitate reflection-on-action	<i>Literature:</i> Dreifuerst, (2009:109;111-112); Dufrene and Young, (2014:375); Glavin (2008:123); Lake (2008:135)
		<b>7. Use debriefing sessions to develop independent learner behaviour</b>	<i>My reflection:</i> By requesting that students should develop their own action plans to improve their performance might assist them in taking responsibility for their own learning instead of them relying on my feedback alone. <i>Literature:</i> Biggs and Tang (2011:27); Clark, Kirschner and Sweller (2012:8); Flanagan, 2008:165; Parker and Myrick (2009:326); Peters (2000:166)
	(Although this action was included as standard debriefing practice, it was not explicitly mentioned in the initial strategy document, therefore its addition in the revised strategy document)	<b>8. Reassess students' emotional responses at the conclusion of the debriefing</b>	<i>My reflection:</i> Complex scenarios could evoke strong emotions in students. A reassessment should be done to ensure that all significant issues were successfully dealt with and that thorough emotional release was achieved. <i>Literature:</i> Dreifuerst (2009:111); Ganley and Linnard-Palmer (2012:e55); Garden (2008:236)
	6. Schedule 30–45 minutes for debriefing	9. Schedule 30–45 minutes for debriefing	<i>My reflection:</i> Previous sessions did not take much longer than the 30–45 minutes scheduled for debriefing.

#### 4.2.1.1 Refining Phase 1: Scenario design

As shown in Table 4.1, additional actions that I planned for scenario design included the development of two new scenarios and a gradual increase in the number and complexity of patient problems from scenario to scenario. Actions that remained the same as in 2013 were the revision of previously used scenarios and the submission of all scenarios to the simulation team for scrutiny prior to simulation events.

- **Action item 1:** In the first semester of 2013, three scenarios related to the nursing care of children with respiratory disorders. I had planned to revise two of these scenarios (foreign body aspiration and RSV infection) to ensure that they were realistic, and aligned with theme content and programme outcomes (Beauchesne & Douglas, 2011:29; Garrett et al., 2010:310; Glavin, 2008:122; Holland et al., 2008:140; Jeffries, 2008:72; Nehring & Lashley, 2010:413; Paige & Morin 2013:e481-e489; Vardi, 2008:100).
- **Action items 2 and 3:** As mentioned in Chapter 3, key principles are better learned when they are emphasised in slightly different scenarios (Garrett et al., 2010:312). Therefore, to add variety and to introduce an additional theme relevant to child nurse practice, I planned to design two new scenarios that related to cardiovascular disorders in children. I selected the cardiovascular disorders because it is one of the themes covered in the programme and the topic lends itself to the development of realistic simulation scenarios through which the theory and practice of nursing children with these types of disorders could be expanded. The first new scenario would relate to an infant with congestive heart failure and the second new scenario would relate to a child with bacterial endocarditis.
- **Action item 4:** According to Jeffries (2005:100), simulated scenarios should be developed taking into consideration student factors that include students' age, type of nursing programme and level within the programme. Hamstra et al. (2014:4) note that a simulated scenario appropriate to the student's level of training can enhance learner engagement, especially for more advanced learners who typically have experience with patients on a regular basis. Stocker et al. (2014:3), and Dieckmann and Ringsted (2013:50) suggest that scenarios should take students to the edge of their comfort zones as a motivation for learning, even if it means that the situation will invoke feelings of inadequacy or even failure. According to these authors, thought-provoking scenarios serve as a starting point for reflective observations.

Although I agree that scenarios should be challenging and match the students' training level, there was a strong likelihood that the new group had never participated in simulation learning experiences before. Beauchesne and Douglas (2011:32) suggest a gradual

introduction to learning through simulation with scenarios that increase in complexity in order to develop a comfort level and confidence in participation. Hence, in contrast to how I proceeded in the first action cycle, I intended to start with a basic patient problem in order to give students the opportunity to get used to simulation first. Following the first session, I would gradually increase the number and complexity of patient problems within a scenario. In order to accomplish this, I planned to adjust the progression of scenario objectives until the level of complexity matched expected learning outcomes and the students' training level (Edgecombe et al., 2013:3; Issenberg et al., 2005:23). In addition, the gradual progression would enhance constructivist learning in the sense that students would be required to integrate new incoming information with what was learned in previous scenarios (Biggs & Tang, 2011:27; Clark, 2008:22).

- **Action item 5:** As I did previously, I would submit the revised and new scenarios to our simulation coordinator and seek the advice of other members of the simulation team for successful implementation (Huang & Dongilli, 2008:12,16; Jeffries, 2008:72; Jeffries, 2005:98).

#### **4.2.1.2 Refining Phase 2: Student orientation and preparation**

Shortfalls regarding the preparation and orientation of students to the simulation environment were evident from the first cycle. In particular, nominal group data revealed students' dissatisfaction with how they were prepared for simulation. Based on this issue raised by the students, I realised that thorough preparation of students for simulation learning events is vital to meaningful learning experiences. Therefore, in an attempt to create a positive learning experience and make the simulation environment more academically safe, I had planned a more detailed approach regarding the preparation and orientation of students (Ganley & Linnard-Palmer: 2012:e55). I was optimistic that additional efforts would result in higher levels of student satisfaction and learner engagement as proposed by Hamstra et al. (2014:4) and Jeffries (2008:72).

Another possible benefit of a more detailed approach to preparation and orientation would be the mitigation of anxiety felt prior to and during simulation sessions. During our 2013 simulation workshop, I had the opportunity to take part in a high-fidelity simulation session. Even though I was familiar with our simulation environment, I felt intimidated and anxious to perform a role in front of peers and onlookers. This experience helped me to relate and empathise with students who participate in simulation for the first time and who may perceive simulation as threatening, especially under the watchful eye of lecturers and peers (Ganley & Linnard-Palmer, 2012:e54; Meyer et al., 2014:385).

As mentioned in Chapter 3, Arthur et al. (2013:1360) and Page-Cuttrara (2014:137) acknowledge that structured orientation can alleviate students' anxiety and seems to improve their learning. Additional simulation literature supports the notion that heightened anxiety challenges student learning. About one-third (33%) of participants in a study by Beischel (2013:241) reported that anxiety negatively affected their learning and ability to perform during participation in their first simulation learning experience. In her study about nursing student anxiety in simulation settings, Cato (2013:144) reported that students who experienced debilitating anxiety were unable to gain maximum learning benefit in a simulated environment. Conversely, students who experienced moderate levels of anxiety were motivated to learn and could still relate what they had learned in simulation to real patient care in the workplace. Learning is thus inhibited by extreme anxiety but is improved when students are moved beyond their comfort zones into a situation where they are challenged, but do not feel threatened (Ganley & Linnard-Palmer, 2012:e55; Glavin, 2008:119; Gravett, 2005:36; Stocker et al., 2014:4).

Apart from minimising initial anxiety, appropriate preparation could lessen the time that students spend on irrelevant tasks such as getting used to the new environment and the simulator, and trying to locate equipment and supplies during their first session (Wickers, 2010:e84). Gathering and processing these types of information consumes working memory (short-term memory) capacity but does not help students to reach scenario objectives (Fraser et al., 2012:1060). Based on the principle of cognitive load management (Clark & Harrelson, 2002:156), it is important to keep irrelevant cognitive load as low as possible so that the student can devote working memory capacity to learning activities (Gravett, 2005:36). Clark, Kirschner and Sweller (2012:11) note that when dealing with new information, or as in our case a new learning environment, students should be explicitly shown all relevant information, including what to do and how to do it. Otherwise, cognitive overload may result in ineffective or depressed learning (Clark, 2008:51). In order to avoid overload and yield better learning, Clark and Harrelson (2002:156) suggest regular spacing of practice exercises instead of requiring students to complete the same amount of practice all at once.

In an effort to improve on previous attempts to prepare and orientate the students for simulation, and thereby hoping to increase student satisfaction and reduce initial anxiety and cognitive load, I planned to include additional actions as presented in Table 4.1.

## **ORIENTATION TO THE SIMULATION ENVIRONMENT**

- **Action items 1 to 3:** The introductory lecture about the principles of simulation would be supplemented with a video about the features of the paediatric simulator. Thereafter, the function and features of all equipment and the simulator would be demonstrated, which is congruent with effective simulation practice (Edgecombe et al., 2013:3; Maas & Flood, 2011:232). I would stay in the venue until all the students had time to familiarise themselves with all aspects of the environment and felt satisfied that they had received adequate orientation.

## **PREPARING STUDENTS FOR SIMULATION LEARNING EXPERIENCES**

- **Action items 4 to 7:** As with the previous group of students, I would provide a detailed timetable indicating the planned simulation sessions. In adherence to Clark and Harrelson's (2002:156) suggestion to space practice exercises instead of requiring students to complete the same amount of practice all at once, I planned to schedule a simulation learning experience once every three to four weeks during the semester.

Adequate preparation of students prior to simulation remains an essential issue because the quality of preparation has a direct bearing on how students engage with simulation (Cantrell, 2008:e21; Ganley & Linnard-Palmer: 2012:e56). In accordance with the simulation development template, course content would be linked to simulated scenarios. The paediatric nursing students would receive preparatory lectures and reading material, participate in journal club meetings, and receive demonstrations of appropriate psychomotor skills required for simulated scenarios. Since students worked in clinical settings during the semester, they would have many opportunities to practise their skills in preparation for simulation sessions (Ganley & Linnard-Palmer, 2012:e55). In my opinion, the students should not use simulation sessions to practise skills, but to implement and improve on skills expected of advanced clinicians.

- **Action items 8 and 9:** In 2013, the random allocation of students to form groups consisting of four to five students seemed beneficial in terms of equalisation since it resulted in a mix of more experienced and less experienced members per group. I planned to take this approach again, but to make groups even smaller, consisting of two to a maximum of three students per group. Conjeno (2009:147) found that students preferred to work in smaller groups during the simulated scenario because it increased their opportunities for hands-on experience. In an attempt to establish collaborative learning where students work together to solve problems and share in the decision-making process

(Jeffries, 2005:99), I planned to keep students in the same simulation group throughout the year.

#### 4.2.1.3 Refining Phase 3: Execution of simulation sessions

##### NUMBER OF SIMULATION SESSIONS

- **Action item 1:** During 2013, I had noticed a slow but steady gain in students' self-confidence and improved performance during simulation learning events. As a result, I was eager to expose the new group to even more simulation learning experiences. At the time of revising the strategy, I still could not find literature that supported exactly how many simulation sessions constituted meaningful learning experiences. However, I reasoned that more simulation sessions meant more opportunities for repetition and elaborative rehearsal and therefore planned to implement two additional sessions during the first semester of 2014, bringing the total for the semester to five.

In contrast to rote rehearsal where students are merely required to recite information for the sake of remembering, elaborative rehearsal is congruent with deep learning because it requires students to integrate new knowledge with existing knowledge each time they encounter a learning event, or as in this case, a simulation learning experience. This practice leads to deep and meaningful learning, which cannot necessarily be accomplished by rote rehearsal (Biggs & Tang, 2011:24; Clark, 2008:205–207; Fasokun et al., 2005:110). Furthermore, elaborative rehearsal is congruent with the constructivist theory of learning where the construction of new knowledge requires an integration of new incoming information from the environment with previous or existing knowledge during active learning events (Clark, 2008:22; Parker & Myrick, 2009:326). Therefore, knowledge construction could be enhanced by giving students more opportunities to participate actively in work-related situations through simulation learning experiences.

Apart from having more opportunities for rehearsal, more sessions would also give students the opportunity to complete Kolb's experiential learning cycle in a safe environment. Since the first three phases of the learning cycle are accomplished by the simulated scenario (concrete experience) and debriefing (reflective observation and abstract conceptualisation), the fourth phase (active experimentation) can be completed either in the clinical setting or, as in our case, a follow-up simulated scenario (Stocker et al, 2014:3,7). This would allow students not only to build on what they already know (Biggs & Tang, 2011:27) but to test new knowledge gained from a previous scenario and create new experiences.

## ENHANCING REALISM

The data from Cycle 1 suggested that improvements were needed in terms of creating a more realistic simulation environment. Since meaningful learning through simulation is related to realism (Bland et al., 2011:666; Glavin, 2008:119), I have added it as an additional component of the strategy's third phase. Although some of the actions suggested below were implemented as standard simulation practice in 2013, they were not included in the initial strategy document. Therefore, I decided to include realism as a component in my strategy based on the apparent importance thereof.

- **Action items 1 to 5:** Our simulation coordinator had developed a checklist whereby equipment and medical supplies could be controlled before sessions. I intended to make use of the checklist to ensure that the necessary resources for simulated scenarios were available. These included items such as intravenous lines, gloves, aprons, hand spray, medication, patient identification bracelets, and a patient file containing appropriate information. Depending on the type of scenario, the patient's file would contain additional information such as prescription for medication, arterial blood gas results and chest X-rays. The simulator could be dressed in pyjamas or hospital attire to add a sense of realism. Similarly, students and facilitators would be requested to wear uniforms and to treat the simulation as an actual clinical situation. Wickers (2010:e84) affirms that professional dress enhances the fidelity of the scenario and assists students in maintaining a professional learning conduct throughout the simulation learning experience. Congruent with existing simulation practice at the UFS School of Nursing, students would have access to a working telephone to contact a member of the simulation team who played the role of a physician.

## BRIEFING

- **Action items 1 to 5:** I did not plan any changes to the existing action items in terms of briefing the students. The motivations for actions implemented were therefore the same as in Cycle 1 (see Table 3.1). However, based on the data from the first cycle, I planned to include an additional action item (Action item 6) and re-orientate students to the simulation environment each time they participated in simulation until they felt comfortable and familiar with the environment.

## SIMULATED SCENARIO

The additional actions that I planned for the simulated scenarios included a facilitator to accompany students during their first simulation experience, the implementation of two new scenarios, and more time allowed to complete a simulated scenario.

- **Action item 1:** Since learning through simulation would likely be a new experience for the 2014 intake of students, I decided that a facilitator should accompany students during their first simulation learning experience to provide support and guidance where necessary. Although Jeffries (2008:72) suggests that facilitators should preferably not be visible during the simulated scenario, I was of the opinion that a facilitator's presence during students' first encounter was necessary to alleviate some anxiety and help students understand how to achieve scenario objectives in a new learning environment.
- **Action items 2 and 3:** In contrast to what I had done in 2013, the foreign body scenario would be repeated twice. During the first foreign body aspiration scenario, a less complicated case would be introduced. Students would have to assess the patient's respiratory status, and plan and evaluate nursing care for a patient experiencing respiratory distress. During the second foreign body aspiration session, complexity would be increased by including additional tasks such as the calculation of daily fluid requirements and using the ISBAR communication technique to report their findings to the 'physician'. The high-fidelity simulator that represents a five-year-old child would be used for both scenarios. For the RSV-infection scenario, the high-fidelity simulator that represents an infant would be used. Additional expectations for this scenario would include infection control measures specific to the patient's condition, the correct procedure for obtaining a telephonic prescription for medication, and correct administration of the medication. In addition to providing for gradual increase of scenario complexity, an additional scenario on respiratory disorders could help to internalise the principles of nursing children with respiratory disorders.
- **Action items 4 and 5:** The fourth scenario would relate to a patient with congestive heart failure and the infant simulator would be used. Students would have to assess the patient's condition, and plan and evaluate nursing interventions. Additional tasks would include the calculation of daily fluid requirements, the correct calculation and administration of digoxin and the completion of a percentile chart. The last scenario would relate to a patient with infective endocarditis and the paediatric simulator would be used. In accordance with the gradual increase of scenario complexity, the students would be expected to demonstrate basic life support skills during this scenario as well.
- **Action item 6:** Based on nominal group data from 2013, I planned to adjust the time allowed for simulated scenarios from 20 to 25 minutes to 30 to 35 minutes per session to give students enough time to complete a scenario without having to work under unnecessary pressure.

## DEBRIEFING

As evident from the first cycle, I found debriefing challenging and realised that I needed more practice to enhance my debriefing skills. In terms of my approach, I determined to focus more on the students' unique perspectives and explanations for their behaviour instead of on correcting the mistakes that students made during scenarios. As opposed to a judgmental approach where the facilitator emphasises mistakes on the part of the students, I would attempt to follow the debriefing with good judgment approach which aims to help students uncover their own mistakes while valuing the unique perspective of each student (Rudolph et al., 2007:365,369).

- **Action items 1 to 3:** In terms of the actual facilitation of a debriefing session, the first three action items and motivations were left unchanged.
- **Action item 4:** Based on the data from Cycle 1 and simulation literature, I planned to add video playback of the simulated scenarios as a means of self-evaluative feedback (Clark, 2008:215). Arafeh et al. (2010:305) recommend the use of video replay to enhance debriefing since video gives a precise portrayal of events. During playback, students would be able to see for themselves how they performed and what needed improvement (Wickers, 2010:e85).
- **Action item 5:** Following video playback, I planned to again proceed by helping students identify their emotional responses to the simulation. Since negative emotions could obstruct learning (Brackenreg, 2004:269; Dreifuerst, 2009:111; Gravett, 2005:35), the group and I would deal with specific issues that might prevent them from engaging in reflective learning before continuing with the rest of the session.
- **Action item 6:** After dealing with students' initial emotional responses to simulation, I would use guiding questions to facilitate a chronological review of the simulation experience and to facilitate reflection-on-action by asking open-ended questions (Dreifuerst, 2009:109,111-112; Dufrene & Young, 2014:375; Glavin, 2008:123; Lake, 2008:135).
- **Action item 7:** This action item related to my third action step for Cycle 2. Instead of creating a separate section for the discussion of Action step 3, I include my discussion thereof here. According to Action item 7, I would use the debriefing sessions to develop independent adult learner behaviour by creating opportunities for students to take responsibility for their own learning. Since debriefing is an opportunity for students to reflect on their actions and discover areas that needed improvement, I planned to use

these opportunities as a means whereby students could develop a responsibility for their own learning instead of them relying on my feedback alone.

Educators who apply constructivist learning theory realise that knowledge transmission is not inertly passively passed from educator to learner, but is created by individual learners, or as in our case, groups of learners (Parker & Myrick, 2009:326). Therefore, students who continually rely on the educator for information or feedback may miss opportunities to create their own meaning of learning experiences. However, students need explicit guidance from educators to process experiences and construct knowledge (Clark et al., 2012:8). The educator should consider previous learning done by students as a foundation upon which to modify, build, and expand new knowledge. Since constructivism is congruent with adult learning theory, it offers potential for the development of self-directed learning whereby students take ownership of their learning (Peters, 2000:166). It is therefore necessary to allow students time for personal interpretation of a learning experience instead of providing them with all the answers or solutions. Flanagan (2008:165) and Wickers (2010:e85) suggest that the educator should reflect questions asked by the students back to the group for an answer, rather than giving his/her own opinion (if at all).

Since the debriefing sessions are opportunities whereby I help students to focus on their simulation experience, I felt that this could become an ideal opportunity to apply constructivist learning principles. For example, students could be challenged to make action plans and decide for themselves how to rectify mistakes or improve on nursing care provided during simulated scenarios. Their plan could then be applied and tested in a subsequent scenario. The outcome could be discussed in a debriefing session and so on. In this way, previous learning done by students could be a foundation upon which to modify, build and expand new knowledge (Biggs & Tang, 2011:27) and, as in our case, promote appropriate nursing care of children. Additionally, I hoped that guiding students in this manner would inspire a desire for deep learning and develop independent learner behaviour.

- **Action item 8:** I planned to conclude a debriefing session by reassessing students' emotions in response to the debriefing to ensure that the group and I had successfully dealt with significant issues. Dreifuerst (2009:111) emphasises the importance of emotional release so that the students' attention can be redirected to reflective learning. Likewise, Ganley and Linnard-Palmer (2012:e55) and Garden (2008:236) highlight the importance of protecting students from emotional harm by ensuring that they are appropriately debriefed after simulation. Therefore, students should preferably not leave the debriefing venue until a thorough emotional release has been achieved.

- **Action item 9:** I decided to keep the time scheduled for debriefing sessions the same as before, which was 30 to 45 minutes.

In concluding this section, Table 4.2 is a summary of the proposed changes and additional action items that would be implemented in Cycle 2.

**Table 4.2: Summary of changed or added action items for the first semester’s simulation learning experiences**

Topic	Change/Addition
Scenario design	<ol style="list-style-type: none"> <li>1. Develop two new scenarios</li> <li>2. Gradually increase complexity of scenarios</li> </ol>
Orientation to the simulation environment	<ol style="list-style-type: none"> <li>1. Show a video about the features of the paediatric patient simulator</li> <li>2. Provide a detailed orientation to the simulation venue</li> </ol>
Preparing students for simulation learning experiences	<ol style="list-style-type: none"> <li>1. Randomly assign 2–3 students per group for the duration of the semester</li> </ol>
Number of sessions	<ol style="list-style-type: none"> <li>1. Increase the number of simulation sessions from three to five</li> </ol>
Enhancing realism	<ol style="list-style-type: none"> <li>1. Use a checklist and control the availability and realism of equipment and medical supplies needed for specific scenarios</li> <li>2. Provide realistic documentation in the patient’s file</li> <li>3. Use props, e.g. dress simulator in pyjamas or hospital attire</li> <li>4. Facilitators and students wear their hospital uniforms when participating in scenarios</li> <li>5. Remind students to treat the simulation as an actual clinical situation</li> </ol>
Briefing	<ol style="list-style-type: none"> <li>1. Re-orientate students prior to each simulated scenario</li> </ol>
Simulated scenarios	<ol style="list-style-type: none"> <li>1. Facilitator to accompany students during their first simulated scenario</li> <li>2. Implement the existing foreign body scenario twice</li> <li>3. Implement both new scenarios once</li> <li>4. Allow 30–35 minutes for a simulated scenario</li> </ol>
Debriefing	<ol style="list-style-type: none"> <li>1. Use video playback as a form of feedback</li> <li>2. Reassess students’ emotional responses at the conclusion of the debriefing</li> <li>3. Use debriefing sessions to foster independent learner behaviour</li> </ol>

By the end of January 2014, I had revised and redrafted the strategy and it was ready for implementation. The following section gives an account of how I planned the collection and analysis of data that would follow strategy implementation. As a point of departure, I include a description of the research participants, and methods for collecting and analysing data.

#### **4.2.1.4 Describing the participants**

According to Zuber-Skerritt and Perry (2002:176), the second or third action cycles do not have to include the same workgroup, but it is essential that the understanding gained in the reflection phase of a cycle should be transferred to the planning phase of subsequent cycles. It was thus possible to continue with the action research, even with a new intake of paediatric nursing students.

#### **4.2.1.5 Planning the collection and analysis of the data**

Mindful that the data collection methods should be appropriate for action research and meaningful in terms of answering the research question(s), I opted to use the NGT and field notes again. In the first cycle, these two methods provided valuable data, which informed an improved second action plan.

As in the first cycle, the NGT would be used to gather the students' suggestions towards improving their simulation learning experiences. I planned to use the NGT by the end of the first semester, after the students had completed five simulation sessions. My field notes could serve to confirm important points made by the participants and facilitate appropriate emphasis on students' priority suggestions from the NGT. I would continue to write down my observations and reflections to capture salient events and insights related to simulation learning experiences. The NGT and use of field notes as the data collection methods were described in detail in Chapter 3.

In addition to the NGT and field notes, I decided to include the debriefing sessions as an additional data source. Information gained during debriefing may be used to evaluate students' simulation learning experiences and provide insight into aspects of the strategy that might need adjustment. Furthermore, as mentioned in Chapter 2, the inclusion of one more data source could enhance data triangulation and the validation of conclusions. The debriefing sessions would be audio-recorded so that I would have a permanent record of events that could be analysed at a later time (Polit & Beck, 2004:391). By recording the sessions, I could remain fully engaged during debriefing instead of being preoccupied with taking notes during the sessions. The disadvantages of audio-recordings include data loss in case of technical problems, and the time-consuming process of transcribing the participants' responses afterwards (Mills, 2007:71,72).

Nominal group data would again be analysed by means of quantitative ranking of the data and qualitative content analysis. I planned to analyse the debriefing sessions by means of conventional content analysis using deductive and inductive reasoning. This type of analysis is useful in analysing the data that were collected over a series of rounds and would therefore be appropriate for analysing debriefing sessions or parts thereof. Additionally, the use of more than one type of analysis can increase an understanding of the data (Leech & Onwuegbuzie, 2007:563,565). The field notes would again be used to complement nominal group and debriefing data as necessary.

## 4.2.2 Second action step: Implement the revised strategy

The following section is an account of how the strategy was implemented in the first semester of 2014.

### 4.2.2.1 Implementing Phase 1: Scenario design

- **Action item 1:** Following a revision of the foreign body and RSV-infection scenarios, the only change that I made to scenario documents was the inclusion of a gradual progression of scenario complexity. Besides this adjustment, I was satisfied that the scenarios were realistic and captured the main principles of nursing children with respiratory disorders.
- **Action items 2 and 3:** As mentioned earlier, I used the simulation development template to design the two new scenarios (congestive heart failure and bacterial endocarditis). All the scenarios, those revised as well as the newly developed ones, were designed to incorporate clinical knowledge and skills appropriate to the role of an advanced paediatric nurse. These included physical assessment skills, ISBAR communication, time management, infection control principles, advanced skills such as the interpretation of blood gases or x-rays, and basic life support.
- **Action item 4:** Table 4.3 is a summary of the five simulated scenarios planned for the first semester. The student tasks and specific knowledge and skills required for each session are included. Progression in terms of student tasks and/or specific skills and knowledge that students required to plan and execute nursing care are printed in bold in the table.
- **Action item 5:** After completion, the developed scenarios were submitted to our simulation coordinator as well as to other members of the simulation team. Adjustments were made as necessary.

**Table 4.3: Scenario objectives, knowledge, and specific skills required for the first semester of 2014**

<b>RESPIRATORY DISORDERS IN CHILDREN</b>		
<b>Theme outcome:</b> <i>Render holistic, comprehensive nursing care to infants and children with respiratory-related conditions according to best practice guidelines</i>		
<b>Session 1</b>	<b>Student tasks</b>	<b>Specific skills and knowledge required for the scenario</b>
Foreign body aspiration	1. Assess the patient's respiratory status by means of physical examination	<ul style="list-style-type: none"> <li>• Principles of nursing children experiencing respiratory distress</li> <li>• Physical examination of the thorax and lungs</li> <li>• Interpretation of arterial blood gases</li> <li>• Interpretation of chest X-rays</li> </ul>
	2. Identify the signs and symptoms of respiratory distress	
	3. Demonstrate appropriate nursing interventions in the care of a patient experiencing respiratory distress	
	4. Evaluate the patient's response to nursing interventions	
<b>Session 2</b>	<b>Student tasks</b>	<b>Specific skills and knowledge required for the scenario</b>
Foreign body aspiration	1. Assess the patient's respiratory status	<ul style="list-style-type: none"> <li>• Principles of nursing children <b><i>with underlying respiratory disorders</i></b></li> <li>• Physical examination of the thorax and lungs</li> <li>• Interpretation of arterial blood gases</li> <li>• Interpretation of chest X-ray</li> <li>• Nursing process – develop a specific nursing care plan for the patient</li> <li>• <b><i>Calculation of daily fluid requirements</i></b></li> <li>• <b><i>ISBAR communication</i></b></li> </ul>
	2. Identify the signs and symptoms of respiratory distress	
	3. Demonstrate appropriate nursing interventions in the care of a patient experiencing respiratory distress	
	<b><i>4. Calculate the patient's daily fluid requirements and set infusion rate accordingly</i></b>	
	<b><i>5. Inform physician about the patient's condition</i></b>	
	6. Evaluate the patient's response to nursing interventions	
<b>Session 3</b>	<b>Student tasks</b>	<b>Specific skills and knowledge required for the scenario</b>
RSV-infection (Bronchiolitis)	1. Assess the patient's respiratory status	<ul style="list-style-type: none"> <li>• Principles of nursing children with underlying respiratory disorders</li> <li>• Physical examination of the chest and lungs</li> <li>• Interpretation of arterial blood gases</li> <li>• Interpretation of chest X-ray</li> <li>• Nursing process – develop a specific nursing care plan for the patient</li> <li>• Calculation of daily fluid requirements</li> <li>• ISBAR communication</li> <li>• <b><i>Correct procedure for obtaining a telephonic prescription for medication</i></b></li> <li>• <b><i>Correct administration of medications</i></b></li> <li>• <b><i>Infection control measures specific to patient's condition</i></b></li> </ul>
	2. Identify the signs and symptoms of <b><i>bronchiolitis</i></b>	
	3. Demonstrate appropriate nursing interventions in the care of a patient experiencing <b><i>bronchiolitis</i></b>	
	4. Calculate the daily fluid requirements and set infusion rate accordingly	
	5. Inform physician about the patient's condition	
	6. Evaluate the patient's response to nursing interventions	

## CARDIOVASCULAR DISORDERS IN CHILDREN

**Theme outcome:**

*Render holistic\* comprehensive# nursing care to infants and children with cardiovascular conditions according to best practice guidelines*

Session 4	Student tasks	Specific skills and knowledge required for the scenario
Congestive heart failure	1. Assess the patient's current condition	<ul style="list-style-type: none"> <li>• Principles of nursing children with underlying <b>cardiovascular disorders</b></li> <li>• Physical examination of the chest and lungs</li> <li>• <b>Physical examination of the heart and circulation</b></li> <li>• Interpretation of arterial blood gases</li> <li>• Interpretation of chest X-ray</li> <li>• Nursing process – develop a specific nursing care plan for the patient</li> <li>• Calculation of daily fluid requirements</li> <li>• ISBAR communication</li> <li>• <b>Correct administration of Lanoxin® to children</b></li> <li>• <b>Correct procedure for obtaining a telephonic prescription for medication</b></li> <li>• <b>Completion and interpretation of a percentile chart</b></li> </ul>
	2. Identify the signs and symptoms of congestive heart failure	
	3. Demonstrate appropriate nursing interventions in the care of a patient experiencing <b>congestive heart failure</b>	
	4. Calculate the daily fluid requirements (per os)	
	<b>5. Administer medications</b>	
	6. Inform physician about patient's condition	
	7. Evaluate the patient's response to nursing interventions <sup>7</sup>	
	<b>8. Complete additional documentation (percentile chart)</b>	
Session 5	Student tasks	Specific skills and knowledge required for the scenario
Bacterial endocarditis	1. Assess the patient's current condition	<ul style="list-style-type: none"> <li>• Principles of nursing children with underlying cardiovascular disorders</li> <li>• Physical examination of the chest and lungs</li> <li>• Physical examination of the heart and circulation</li> <li>• Interpretation of arterial blood gases</li> <li>• Interpretation of chest X-ray</li> <li>• Nursing process – develop a specific nursing care plan for the patient</li> <li>• Calculation of daily fluid requirements</li> <li>• ISBAR communication</li> <li>• Correct procedure for obtaining a telephonic prescription for medication</li> <li>• Correct administration of medications</li> <li>• <b>Basic life support of infants and children (CPR)</b></li> </ul>
	2. Demonstrate appropriate nursing interventions in the care of a patient experiencing <b>bacterial endocarditis</b>	
	3. Identify signs and symptoms of <b>cardiac arrest</b>	
	4. Inform physician about patient's condition	
	5. Demonstrate appropriate nursing interventions in the care of a patient experiencing <b>cardiac arrest</b>	
	6. Evaluate the patient's response to nursing interventions	

#### **4.2.2.2 Implementing Phase 2: Student orientation and preparation**

As in the beginning of 2013, I informed the 18 students who had registered for the 2014 paediatric nursing programme that they would participate in simulation as one of their learning activities. I explained to them about the ongoing research project that involved their simulation learning experiences. I explained that nominal group data would be collected by the end of the first semester while other sources of data such as field notes and debriefing sessions were to be collected as the semester progressed. The data would be used toward improving their simulation learning experiences in the second semester. Although simulation sessions were compulsory, they had the right to decline participation in any of the planned data collection methods at any stage during the project. In agreement with the ethical principles of educational action research, students should provide voluntary informed consent and be given the right to opt out without fear of retribution or other negative consequences regarding their studies (Banegas & Villacañas de Castro, 2014:60; Baumfield et al., 2013:35).

#### **ORIENTATION TO THE SIMULATION ENVIRONMENT**

- **Action items 1 and 3:** Apart from the introductory lecture by our simulation coordinator, the students watched a video of the paediatric patient simulator's features before they visited the simulation venue. The simulator coordinator and I accompanied the students to the simulation venue for a more detailed orientation to the environment. We demonstrated the function of all the equipment (e.g. infusion pumps, suction apparatus etc.), indicated where the medical supplies were stored, and demonstrated the features of the paediatric simulator. We requested the students to acquaint themselves with the environment and the simulator and ask for our assistance when necessary. They were allowed to spend as much time as needed to familiarise themselves with the surroundings and equipment.

#### **PREPARING STUDENTS FOR SIMULATION LEARNING EXPERIENCES**

- **Action items 4 to 7:** Students' study guides contained a detailed timetable indicating the five scheduled simulation learning experiences. Reading material and references to relevant literature were provided at least one week before simulation sessions. Theoretical concepts related to the nursing care of infants and children with respiratory and cardiovascular conditions were presented to the students during lectures and journal club meetings. Additionally, demonstrations of the necessary psychomotor skills were provided and the students had many opportunities to practise their skills in the clinical areas under the supervision of a preceptor. They were expected to recall and apply their knowledge and previously learned skills during simulation sessions.

- **Action items 8 and 9:** Students were randomly assigned to one of six simulation groups, which consisted of three members each. Student groups were kept as small as possible to enhance student engagement in simulated scenarios without compromising the benefits of collaborative learning and teamwork. As before, the students and I decided that members would stay with their initial group throughout the year, or at least for the first semester.

#### 4.2.2.3 Implementing Phase 3: Execution of simulation sessions

##### NUMBER OF SIMULATION LEARNING EXPERIENCES

- **Action item 1:** As planned, the students participated in five scheduled simulation learning experiences during the first semester of 2014. Sessions were scheduled to be conducted once every three to four weeks during the semester. Apart from allowing students the opportunity for repetition and elaborate rehearsal, follow-up simulated scenarios concluded Kolb's learning cycle by allowing students to actively test new knowledge gained from a previous scenario, thereby creating new experiences in a safe environment (Stocker, 2014:7).

##### ENHANCING REALISM

- **Action items 1 to 5:** To enhance realism, and to allow suspension of disbelief, equipment and medical supplies were controlled before sessions by using a checklist. The patient's file contained realistic and identifiable documents and information related to the patient's health problem. Depending on the scenario, the simulator was dressed in pyjamas or hospital attire. Students and facilitators wore their uniforms and were reminded to treat the simulation as an actual clinical situation.

##### THREE STAGES OF A SIMULATION LEARNING EXPERIENCE

###### (a) Briefing

- **Action items 1 to 6:** Congruent with simulation practice at the UFS School of Nursing, students signed a declaration of confidentiality and were reminded that the simulation was not a test or an examination, but a learning opportunity. The simulated scenarios commenced with a "mini" orientation that included role allocation, an explanation of the scenario and its objectives, and a reminder of where medical supplies and equipment could be located. As recommended by Garrett et al. (2010:312), students were given time to assess the situation and assume roles and responsibilities. Students were made aware that all simulated scenarios are videotaped and that their actions would be observed remotely by myself and members of the simulation team.

## **(b) Simulated scenarios**

- **Action items 1 to 6:** All scenarios were implemented according to scenario scripts. As planned, a facilitator accompanied students during their first simulated scenario to provide support and to promote active student participation. Although scenario objectives should be achievable within an appropriate time limit (Edgecombe et al., 2013:3), which was 30 to 35 minutes in our case, I allowed students time to complete all their given tasks, even if their progression through scenarios took more time than planned. Contrary to the recommendation by Jeffries (2008:72) that the set time limit should not be exceeded, I felt that students who are novices at simulation should get enough time to get used to this type of learning experience, especially for their first few experiences.

## **(c) Debriefing**

- **Action items 1 to 3:** Debriefing immediately followed the simulated scenario and was facilitated by me or another member of the simulation team who was present and had observed the students. The facilitators clarified the purpose and expectations of debriefing at the beginning of every session.
- **Action item 4:** According to the strategy, students should have had the opportunity to watch a video of the simulated scenario in which they participated. The purpose was that video playback would be a source of feedback where students could assess their own performance before we moved on to the reflection-on-action stage of the debriefing. However, this action item did not always realise because the time scheduled for the debriefing sessions proved to be too short to accommodate video playback and a thorough debriefing session. However, excerpts of recorded video were used so that students could assess their cardiopulmonary resuscitation efforts from the fifth scenario. In order to ensure that students received thorough feedback regarding their resuscitation attempt, a separate session was scheduled where they had full video playback and recommendations for improvement by their facilitator.
- **Action items 5 and 6:** After the purpose of debriefing was clarified, I facilitated emotional release before we continued with reflection-on-action. As recommended by Decker et al. (2013:S28), I allowed sufficient time to elicit the students' emotional response and their primary concerns. I attempted to stay within the debriefing structure that I had selected and to use the same guiding questions that I had formulated and used in Cycle 1. When necessary, I interjected with open-ended questions relating to patient assessment, nursing care and team functioning.

- **Action item 7:** As explained earlier, this action item related to the third action step of Cycle 2, which was to develop independent learner behaviour by creating opportunities for students to take responsibility for their own learning. In an effort to adhere to my plan, I used the debriefing sessions by helping students to identify aspects of their performance that they or I felt needed improvement. I requested the students to develop action plans to correct and/or improve the group's subsequent performances. In an attempt to help students to engage in active and cooperative learning strategies that align with adult learning principles, I motivated them to make use of resources such as each other, their textbooks, the Internet, and the expertise of healthcare professionals in clinical areas (Knowles et al., 2005:66; Maughan & Mupinga, 2010:212). I deliberately stated that I would decline to be available for the development of their action plans, but would be there to discuss the implementation of the plans in follow-up scenarios.
- **Action items 8 and 9:** Debriefing sessions were concluded by summarising scenario events, and reaffirming the tasks/action plans that the students were responsible for. The students' emotions were reassessed before the session ended and they were assured that their plans would be discussed in subsequent sessions. Sessions usually lasted approximately 30 to 45 minutes.

### **4.2.3 Monitoring and observing**

In the following section, I describe how the data were gathered to determine whether the strategy was successful in terms of providing meaningful simulation learning experiences. Besides gathering the data as planned (see 4.2.1.5), my own ongoing reflection and growing experience with simulation made an important contribution towards improving and eventually finalising the strategy document.

#### **4.2.3.1 Collection of the data**

The data were collected by means of the NGT, field notes and recordings of the debriefing sessions. Since the data were collected at different times during the second cycle, consent was renegotiated with the participants and reconfirmed throughout the data gathering process (Polit & Beck, 2006:93; Speziale & Carpenter, 2007:343). I adhered to the principle of voluntary informed consent by ensuring students that they had the right to decline participation at any stage of the research (Baumfield et al., 2013:35; Koshy et al., 2011:105). In the following section, I describe the collection of the data through the three mentioned methods.

### **(a) Field notes**

I made my field notes during, and sometimes after, simulation learning experiences. I made an effort to capture salient events by either describing what I had observed or by making reflective notes about ideas for improving upcoming simulation learning experiences. In order to protect each student's identity, I used pseudonyms where applicable.

### **(b) Recordings of debriefing sessions**

Debriefing followed each simulated scenario within five to ten minutes after the scenario ended. Across a span of five months, six groups of students participated in five scenarios each that resulted in 30 debriefing sessions. I facilitated 24 of these, while two colleagues who had observed the simulation learning experiences (Reed, 2012:e213) took turns to facilitate six of the debriefing sessions. Although I did not facilitate every debriefing, I was present at the sessions that my colleagues facilitated. All the debriefings were audio-recorded and back-up copies were stored on my computer and on an external hard drive. Except for the simulation coordinator, I was the only other person who had access to the recordings.

### **(c) The nominal group technique**

The nominal group meeting took place approximately one week after the students had completed five simulation sessions for the semester. The same educator who facilitated the NGT in the first cycle applied comprehensive sampling and invited all 18 students to join the group meeting. Sixteen female students with ages ranging from 32 to 56 years agreed to participate. After the students gave informed consent (see Appendix C), the facilitator proceeded in the same manner as with the 2013 group (see 3.2.5.1). The facilitator used the same focal request to gather their ideas for improving simulation learning experiences:

*Write down suggestions to improve your learning during a simulation experience.*

#### **4.2.3.2 Data analysis**

In this section, I describe how the three sources of data were analysed and/or used to determine the success of the strategy after its implementation in the first semester of 2014.

### **(a) Field notes**

I prepared my field notes for use by converting scribbled notes into expanded write-ups as recommended by Miles et al. (2014:71). Although I did not analyse the write-ups, I included excerpts to support data generated by the NGT and the debriefing sessions. The full texts of field notes are available for scrutiny.

## **(b) Analysing debriefing data**

In order to prepare recordings of debriefing for analysis, I transcribed seven debriefing sessions verbatim and an independent person transcribed the other 23. I accomplished data immersion by reviewing all 30 transcriptions for accuracy (Miles et al., 2014:71) by comparing the scripts with the audio recordings. Hard copies of the transcriptions were stored in a safe place and are available for scrutiny. The transcripts were imported into the ATLAS.ti7 software package and were then ready for analysis. The use of ATLAS.ti7 ensured that I maintained an audit trail of the analysis process. Due to limited time and large volumes of debriefing data to analyse, I selected portions of the data that I felt would render significant information in terms of the students' simulation learning experiences. In this cycle, I chose to focus on the emotions that students experienced as a result of participating in simulation learning experiences and I motivate my selection in the following section.

It is well known that emotions can influence the quality of adult learning experiences (Dirkx, 2008:9; Gravett, 2005:35; LeBlanc, McConnell & Monteiro, 2015:266). During learning events, adult learners may experience strong emotions arising from within or evoked by the learning environment itself (Dirkx, 2008:9). A review of literature related to debriefing pointed to the fact that students' emotional responses to simulation play an important role in terms of how they perceive simulation and whether any learning from the experience takes place (Arafeh et al., 2010:304; Dreifuerst, 2009:111; Flanagan, 2008:156; Ganley & Linnard-Palmer, 2012:e56; Garden, 2008:235). As simulation can be a stressful event for students who have never experienced this type of learning, emotional release following a simulated scenario is considered an important step in the debriefing process (Dreifuerst, 2009:111; Rudolph et al., 2007:361). Since feelings and emotions are embedded in simulation learning, this phenomenon is best revealed by examining the experiences of those who participated in simulation learning experiences.

In order to analyse the students' emotional responses to a simulation learning experience, I selected those units of debriefing data that related to the students' expressions of their emotions only (Saldaña, 2013:16,106). During first cycle coding, I employed in vivo coding to label the emotions that students experienced immediately after they had participated in a simulated scenario. In vivo coding is particularly appropriate for studies that prioritise and honour the participant's voice (Miles et al., 2014:74). I applied an inductive approach and coded the exact words or phrases uttered by the students when they were asked to respond to the following request during debriefing sessions: *Describe, in one word or one sentence, how you are feeling at this moment.* I coded each student's expression of emotion but

excluded words or phrases that did not describe an emotion, for example, "tired", "better organised", or "don't know".

I proceeded with second cycle coding and selected structural coding as a coding method. This type of coding is useful when multiple participants are involved and when the researcher is interested in relevant data from a segment of the larger data set (Saldaña, 2013:86). In order to structure the already established in vivo codes of the students' emotions, I asked myself: *What kinds of emotions did the students experience following a simulated scenario?* I followed a deductive approach and categorised the data by applying two structural codes to the students' expressions, namely (a) positive emotions, and (b) negative emotions. After I had listed all the expressions in the relevant category, I quantified the data by performing a frequency count of the expressions (Saldaña, 2013:86). The count revealed 38 positive, and 57 negative emotional expressions. Table 4.4 is a presentation of the two categories of emotions and a frequency count of students' emotional expressions.

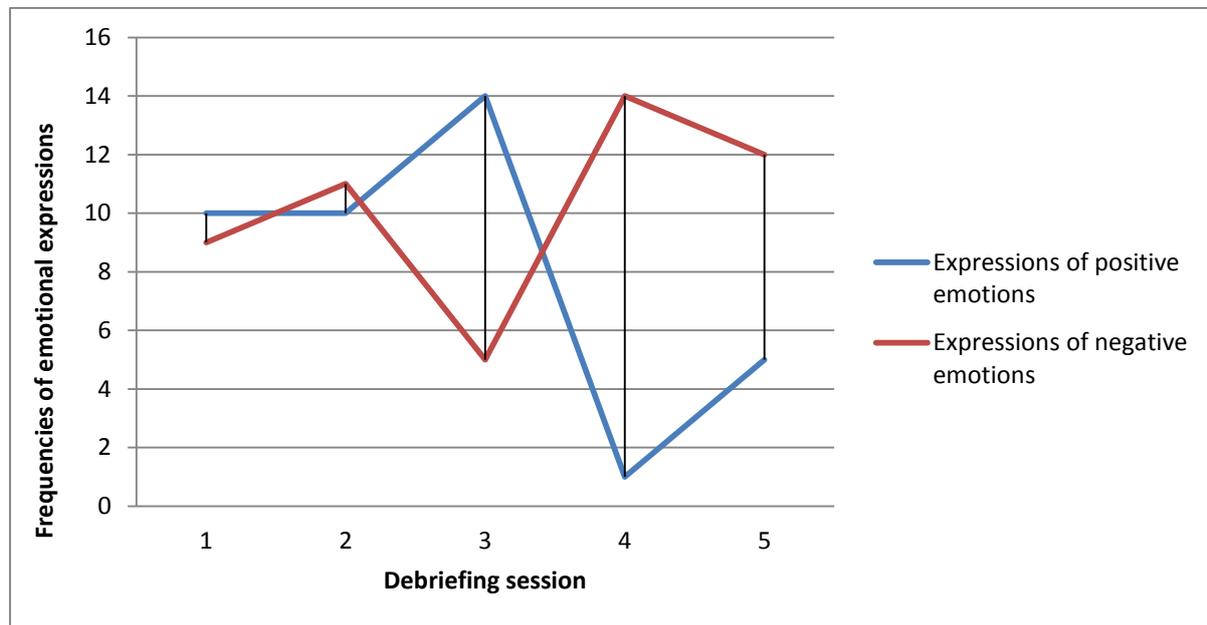
**Table 4.4: Participants' emotions following a simulated scenario**

Positive emotions	Frequency	Negative emotions	Frequency
"happy"	12	"confused"	12
"content"	7	"not satisfied"	10
"satisfied" / "okay"	6	"not happy"	6
"relieved"	4	"nervous"	4
"fine" / "good"	3	"anxious"/"a little bit anxious"	4
"thoughtful"	2	"depressed"/"down"/"a little bit depressed"	5
"happy that it's over"	1	"scared"	3
"a bit competent"	1	"disappointed"	3
"relaxed"	1	"angry"	3
"proud"	1	"unsure"	2
<b>Total</b>	<b>38</b>	"bad"	2
		"sad"	2
		"fear"	1
		<b>Total</b>	<b>57</b>

At a glance, the data appeared to suggest that students experienced more negative than positive emotions following a simulated scenario. However, this did not reveal whether their emotions changed across the course of five simulated scenarios. Since I had expected that students would become more comfortable with simulation across time, I reasoned that they would gradually express more positive than negative emotions in due course. In an effort to test my reasoning, I employed a third coding method, namely longitudinal coding.

Since the debriefing data were collected successively across a span of five months, longitudinal coding could reveal a cumulative change of the students' emotional responses (Saldaña, 2013:236). I did not, however, perform an in-depth qualitative longitudinal analysis

of the data at this stage. I employed a long-term quantitative analysis to assess possible change in the frequencies of positive and negative emotional expressions from the first to the fifth debriefing sessions. Table 4.1 provides a summary of the results.



*Figure 4.1: Students' emotional expressions across time*

As can be seen in Figure 4.1, there was a general increase in the frequency of positive emotional expressions and a decrease in the frequency of negative emotional expressions from the first to the third debriefings. However, there was a significant decrease in expressions of positive emotions (one mention) and an obvious increase of expressions of negative emotions (14 mentions) in the fourth debriefing session. To me, this finding was significant because it challenged my reasoning that students' emotions would gradually change from negative to positive across time. Since I did not want to predict or speculate what could have caused the apparent change in the students' emotions, I decided to analyse the data further by linking the students' emotional expressions to their attributions thereof. This was possible because the debriefing facilitators more often than not requested students to explain *why* they expressed certain emotions before moving to the reflection-on-action stage of the debriefing.

To facilitate my interpretation of the students' attributions to their emotions, I formulated the question: *What attributions did the students make about to their emotions following a simulated scenario?* During this phase of the analysis, I used descriptive coding to label students' attributions to the positive and negative emotions experienced after simulated scenarios. The descriptive codes were collapsed, and several categories emerged from the data. After initial identification of categories, I asked an independent interpreter to verify my

findings. Table 4.5 provides a summary of the categories that related to positive and negative emotions as agreed between the independent interpreter and myself.

**Table 4.5: Categories related to students' positive and negative emotions**

Categories related to positive emotions	Categories related to negative emotions
(a) Simulation is more familiar and enjoyable	(a) Unfamiliar environment and learning method (i.e. simulation)
(b) Confidence in performance and patient management	(b) Lack of competence regarding nursing care of patient
(c) Positive patient outcomes as a result of nursing actions	(c) Lack of leadership in the group during scenarios
(d) Reassuring presence of the facilitator	(d) Lack of confidence in own performance
(e) Authenticity of the situation	(e) Lack of knowledge and skill
	(f) New scenario and patient diagnosis

In view of the purpose of my study, which was to develop a strategy through which meaningful simulation learning experiences would be achieved, the purpose of analysing the students' emotional reactions to simulation was to determine the extent to which simulation learning experiences satisfied, or did not satisfy, their expectations. I had selected this route based on evidence that students' emotional reactions to simulation could have a direct bearing on how they engage with and learn from simulation (Arafeh et al., 2010:304, Dreifuerst, 2009:111). For example, if the action items within the strategy were not successful in mitigating initial anxiety, or did not provide for adequate preparation of students, their participation in simulation could result in significant emotional responses which might inhibit learning if their emotions distract them from engagement in the experience (Dreifuerst, 2009:111; Glavin, 2008:119, LeBlanc, 2009:26-27). Therefore, by discovering potential pitfalls in the strategy prior to the end of the students' course, I could have the opportunity to modify action items or approaches during the second semester of 2014.

In terms of the negative emotional responses, the categories presented in Table 4.5 revealed the students' initial discomfort with the unfamiliarity of simulation and the environment, and their own lack of knowledge, skill, competence, and confidence in nursing care rendered during scenarios. Although these categories revealed students' challenges during simulation, the categories that were derived from their positive emotional responses revealed encouraging evidence that simulation became more familiar and enjoyable as time went on. The students were pleased with improved patient outcomes, their growing confidence levels, and the authenticity of simulations. Thus, action items within the strategy such as the provision of more simulation sessions, the presence of a facilitator during their

first session, re-orientating them prior to each scenario and ensuring realism, seemed to have a positive effect on the students' simulation learning experiences.

The significant number of negative emotional expressions (14) in relation to the one positive expression following the fourth simulated scenario (see Figure 4.1) indicated that this particular scenario was experienced as an unpleasant event by most students. Data analysis revealed that the students attributed their emotional responses to the fact that two completely new scenarios (congestive heart failure and bacterial endocarditis) were introduced. Fasokun et al. (2005:64) point out that adult learners are quick to react unfavourably to unnecessary pressure on them. However, the students' reaction was in spite of the fact that they were prepared in exactly the same manner as for the previous three scenarios. LeBlanc et al. (2015:269,271) explain that students' ability to recall previously learned information may be impaired when an event is experienced as highly emotional. However, the exact reason why the new scenario caused such significant emotional responses was not clear, but I was concerned about the students' apparently unfavourable reaction to changing or new circumstances.

### **(c) Interpreting nominal group data**

As mentioned earlier, the nominal group was facilitated by the same person and in the same manner as with the previous group of participants. As before, the facilitator requested that the participants list their suggestions according to each phase of a simulation learning experience, namely briefing, simulated scenario and debriefing. The nominal group meeting resulted in 15 suggestions from the participants. Table 4.6 presents the suggestions, listed under a specific stage of a simulation learning experience. Two suggestions related to briefing, eight to the simulated scenarios and five to debriefing. The voting score (X) as well as the number of participants who voted for a suggestion (n) appear next to each suggestion. Excerpts from my field notes are included to substantiate nominal group data where applicable.

**Table 4.6: Summary of nominal group results and excerpts from the field notes**

<b>Focal request:</b> <i>Write down suggestions to improve your learning during a simulation experience</i>					
<b>Briefing</b>		<b>Simulated scenario</b>		<b>Debriefing</b>	
<b>Suggestions</b>	<b>*Voting score</b>	<b>Suggestions</b>	<b>Voting score</b>	<b>Suggestions</b>	<b>Voting score</b>
<p>1. Disclose scenario beforehand in order to prepare</p> <p><i>#F/n: Although scenario information was provided beforehand, students did not seem prepared for simulation learning experiences – are they making use of the opportunities that we provide for them?</i></p>	<p>52 (n=16)</p>	<p>1. Orientation on the physical environment – where the equipment is (For each scenario they want orientation again)</p> <p><i>F/n: During debriefing sessions a few students replied that they struggled to get used to the environment and that they did not feel orientated</i></p>	<p>45 (n=13)</p>	<p>1. Be open for improvement ideas during debriefing (facilitator must not be polite); give feedback on what the facilitator expects</p> <p><i>F/n: Students appeared reluctant to enter into a learning relationship which required reflection and subsequent deep learning – maybe they are not familiar with the process of critical reflection.</i></p> <p><i>F/n: Students seemed reluctant to adhere to their agreement to find their own solutions for performance gaps and presented excuses such as “no time for practice” or they did not present an excuse at all.</i></p>	<p>36 (n=16)</p>
<p>2. More knowledge and skills needed beforehand</p> <p><i>F/n: Students lack communication techniques – particularly when they inform the physician about the patient’s condition</i></p> <p><i>F/n: During debriefing students acknowledged that “we still need a lot of practice” and “we need more info to be able to communicate with the physician”</i></p> <p><i>F/n: Students seemed to struggle with ISBAR communication – they need more practice here</i></p> <p><i>F/n: Students often failed to do a thorough assessment of the patient</i></p> <p><i>F/n: Students often struggled to develop a care plan for their patient – perhaps it is because they are not used to working from care plans in clinical areas?</i></p> <p><i>F/n: I am concerned about the number of medication administration errors that occurred during scenarios</i></p>	<p>48 (n=16)</p>	<p>2. Clear labels on medication, no tricking, it delays thinking process and completion of procedure</p> <p><i>F/n: In some cases, the medication was not labelled correctly and it caused unnecessary confusion during scenarios</i></p>	<p>42 (n=12)</p>	<p>Give answers for questions asked during debriefing</p>	<p>29 (n=12)</p>

	<p>3. Facilitator must be there all the time (educator should be there; they need access to informants) Repeat scenarios to correct yourself</p> <p><i>F/n: The presence of the facilitator during their first simulation seemed to have a very positive effect on the students' experience of simulation</i></p> <p><i>F/n: The facilitator did a very good job in guiding the students during their first session – they seemed less anxious.</i></p> <p><i>F/n: Students acknowledged that they need more practice in order to improve their performance and were willing to participate in more simulation sessions</i></p>	38 (n=12)	3. Show video during debriefing	18 (n=13)
	<p>4. More time in the simulation</p> <p><i>F/n: Students began to complete their tasks in a shorter period of time when they became more familiar with the environment</i></p>	33 (n=11)	4. Talk about individual mistakes as well, not only feelings	12 (n=6)
	5. Time frame given beforehand (want to know how long the scenario will last)	27 (n=11)	5. Satisfied	1 (n=1)
	6. Jonathan's voice is not clear enough	22 (n=8)		
	7. Include a pharmacy line	18 (n=7)		
	8. Jonathan exaggerates too much – not authentic	17 (n=5)		

\*N = 16 (n = number of participants who voted for a suggestion); # F/n = excerpts from my field notes

Before I began the process of interpreting nominal group results, I spent time with the NGT facilitator to clarify and validate the students' priorities by recalculating their votes, after which we ensured that all the suggestions were captured under the correct headings.

Because of time constraints, it would not be feasible to accommodate every suggestion in the third action cycle, which I intended to implement during the second semester of 2014. Therefore, I selected suggestions with a voting score of 35 or higher as priority suggestions. This selection, which resulted in a list of six priority suggestions, is depicted in Table 4.7.

**Table 4.7: List of selected six priority suggestions**

Briefing		Simulated scenario		Debriefing	
Suggestions	*Voting score	Suggestions	Voting score	Suggestions	Voting score
1. Disclose scenario beforehand in order to prepare	52 (n=16)	1. Orientation on the physical environment – where the equipment is (for each scenario they want orientation again)	45 (n=13)	1. Be open for improvement ideas during debriefing (facilitator must not be polite); give feedback on what the facilitator expects	36 (n=16)
2. More knowledge and skills needed beforehand	48 (n=16)	Clear labels on medication, no tricking, it delays thinking process and completion of procedure	42 (n=12)		
		Facilitator must be there all the time (educator should be there; they need access to informants) Repeat scenarios to correct yourself	38 (n=12)		

Apart from clarifying suggestions with the NGT facilitator, I wanted to elucidate the meanings of the suggestions from the students' point of view as well. Since member checking adds to the credibility of a study (Baumfield et al., 2013:141; Lichtman, 2013:22), I discussed all 15 suggestions with the students to ensure that my interpretations of their suggestions were actually what they meant it to be. Together we agreed to pay attention to their six most important suggestions (those with a voting score of 35 and higher) and accommodate these in the second semester's simulation learning experiences. Table 4.8 depicts the students' six priority suggestions as well as their comments in this regard.

**Table 4.8: List of six priority suggestions with comments from the participants**

Briefing		Simulated scenario		Debriefing	
Suggestions	*Voting score	Suggestions	Voting score	Suggestions	Voting score
1. Disclose scenario beforehand in order to prepare  <i>*Students felt that this suggestion was no longer a priority because "we know more about simulation now"</i>	52 (n=16)	1. Orientation on the physical environment – where the equipment is (for each scenario they want orientation again)  <i>*Students agreed that this is a priority for them</i>	45 (n=13)	1. Be open for improvement ideas during debriefing (facilitator must not be polite) Give feedback on what the facilitator expects  <i>*Students requested that we address their needs during debriefing and deal with majority issues</i>	36 (n=16)
2. More knowledge and skills needed beforehand  <i>*Students acknowledged that they need to "come better prepared" to simulation</i>	48 (n=16)	2. Clear labels on medication, no tricking, it delays thinking process and completion of procedure  <i>*Students commented that they want to spend time on learning important matters during the simulation – not try to figure out if equipment is authentic or not</i>	42 (n=12)		
		3. Facilitator must be there all the time (educator should be there; they need access to informants) Repeat scenarios to correct yourself  <i>*Students asked for support and requested that we focus on the objectives of the scenario and not on their practice experience</i>	38 (n=12)		

*\* Students' comments about their suggestions during our contact session*

The comments that the students added to their suggestions supported the interpretation and clarified the meaning thereof. Since the students' comments were included, I based my interpretation on this set of data and not on the data provided in Table 4.8. In the following section, I describe and interpret the suggestions made by the students during the nominal group meeting. Suggestions and applicable field notes are quoted verbatim.

## SUGGESTIONS UNDER BRIEFING

In comparison to the 2013 group of students who had 10 suggestions related to briefing, this group had only two, and both were included in my initial priority list (see Table 4.5).

- 1. Disclose scenario beforehand in order to prepare.*
- 2. More knowledge and skills needed beforehand.*

Students initially suggested that the simulation scenario must be disclosed to them beforehand so that they could prepare. At first, I found this suggestion interesting since I had disclosed the topic of each scenario and provided students with detailed information for preparation as suggested by the action items in the strategy document. As illustrated in Table 4.7, students commented that this particular suggestion was no longer a priority because "*we know more about simulation now*". Therefore, I exclude this suggestion and a discussion thereof altogether.

It is clear from their second suggestion and their comment that they "*need to come better prepared*" to simulation that the students acknowledged the significance of preparing for simulation learning experiences. This suggestion is congruent with some of the categories that arose from debriefing data whereby students acknowledged a lack of competence regarding nursing care, and a lack of knowledge and skill (see Table 4.5). Excerpts from my field notes also confirmed that the students needed more practice in order to improve their performance. Some notes from my diary read as follows:

- Students lack communication techniques – particularly when they inform the physician about the patient's condition.*
- During debriefing students acknowledged that "we still need a lot of practice" and "we need more info to be able to communicate with the physician".*
- Students seem to struggle with ISBAR communication – they need more practice here.*
- Students often fail to do a thorough assessment of the patient.*
- Students often struggled to develop a care plan for their patient – perhaps it is because they are not used to working from care plans in clinical areas?*
- I am concerned about the number of medication administration errors that occurred during scenarios.*

During the contact session where the students were requested to comment on their nominal group suggestions, they acknowledged that they had enough information and time for practising skills before simulation learning experiences. Therefore, from the nominal group data and my field notes it is evident the students were reluctant to prepare themselves for learning events, which is in contrast to expected adult learner behaviour as postulated by Knowles (Knowles et al., 2005:173). The students acknowledged their own lack of self-

directed behaviour in terms of self-preparation which in turn compromised the full potential of learning through simulation. I believe that simulation learning experiences could become more meaningful if students would take the time to prepare thoroughly for simulation learning events.

### **SUGGESTIONS UNDER SIMULATED SCENARIO**

From the eight suggestions under simulated scenario, three had a voting score higher than 35:

1. *Orientation on the physical environment – where the equipment is. (For each scenario they wanted orientation again.)*
2. *Clear labels on medication, no tricking, it delays thinking process and completion of procedure.*
3. *Facilitator must be there all the time. (Educator should be there; they need access to informants.) Repeat scenarios to correct yourself.*

With regard to the first suggestion, students indicated a need to be orientated to the location of equipment *each time* they participated in a simulated scenario. They agreed that even after five simulation sessions, this was still a priority to them. One entry from my diary reads:

*During debriefing sessions, a few students replied that they struggled to get used to the environment and that they did not feel orientated.*

As mentioned earlier, debriefing data showed that students became more familiar with the environment across time, which resulted in a more enjoyable learning experience. These data confirm that adult learners need time to adapt to new circumstances, or as in our case, a new learning strategy such as simulation (Gravett, 2005:6).

The students' second suggestion and comment related to realism. The students' suggestion refers to the physical dimension of simulation fidelity, which relates to equipment and environmental attributes (Paige & Morin, 2013:e485). Their request was based on occurrences where the labels on medication were unclear and had led to confusion during a simulated scenario. Students were adamant that they did not want to spend time on trying to figure out whether equipment is authentic or not, but rather on learning important matters. Their suggestion can be substantiated by a field note that reads:

*In some cases the medication was not labelled correctly and it caused unnecessary confusion during scenarios.*

Jeffries (2005:101) underscores the importance of an environment that mimics clinical reality and, as a result, enhances the level of simulation fidelity. As mentioned earlier, students' perception of how believable the representation of reality can be associated with how they

will engage and experience simulation (Berragan, 2011:660), and with the possibility that they will suspend disbelief (Hamstra et al., 2014:4-5). Therefore, their suggestion again confirmed the necessity to ensure an authentic simulation environment for simulation to be effective (Bland et al., 2011:666).

According to the students' third suggestion regarding a simulated scenario, it seemed that they wanted a facilitator/educator present during scenarios. They commented that they needed support and requested that facilitators should focus on the objectives of the scenario and not on the students' clinical experience. Debriefing data as well as my field notes confirmed that the students appreciated the facilitator's presence. My field notes read:

*The presence of the facilitator during their first simulation seemed to have a very positive effect on the students' experience of simulation.*

*The facilitator did a very good job in guiding the students during their first session – they seemed less anxious.*

However, the students requested the presence of a facilitator "all the time". Because the students were professional nurses who were supposed to be working as independent practitioners, I could not adhere to their suggestion in this regard. However, I was still of the opinion that a once-off accompaniment by a facilitator was necessary to introduce the students to simulation and to ease initial anxiety. From then onwards I would expect them to draw from their accumulated clinical experience during scenarios.

### **SUGGESTIONS UNDER DEBRIEFING**

Out of five suggestions, one had a voting score higher than 35:

*1. Be open for improvement ideas during debriefing (facilitator must not be polite) Give feedback on what the facilitator expects.*

The students commented that the debriefing facilitator(s) should address their needs and deal with majority issues. One of my diary entries reads:

*Students appeared reluctant to enter into a learning relationship, which required reflection and subsequent deep learning – maybe they are not familiar with the process of critical reflection.*

Their apparent need for feedback could have resulted from the fact that I had deliberately tried to refrain from providing instructional feedback all of the time. Instead, in adherence to my third action step, I had attempted to develop independent learner behaviour by requesting students to formulate action plans in an effort to improve their performance (Reed, 2012:e212). However, students did not always provide a solution or an action plan during subsequent debriefing sessions. According to a field note:

*Students seemed reluctant to adhere to their agreement to find their own solutions for performance gaps and presented excuses such as "no time for practice" or they did not present an excuse at all.*

According to Fowler (2007:431), experiential learning is a result of a deliberate action of the student to combine experience and reflection. Usually this is a process that is driven by the student's own inner motivation and not by the educator. However, if students do not have well-developed skills such as planning, directing and monitoring their own learning, they would less likely be self-directed in terms of finding solutions to problems (Knowles et al., 2005:218). Additionally, students who adopt a surface approach to learning will not habitually attempt to turn learning material into their own structure of knowledge (Fasokun et al., 2005:111). The data presented here provided evidence that it was necessary to continue with efforts to cultivate independent learner behaviour in the students.

#### **4.2.3.3 Reflection on the outcome of the three action steps**

The three action steps in Cycle 2 related to the refinement and re-implementation of the strategy and an attempt to develop independent learner behaviour in the students. In order to facilitate a discussion of the outcomes, Table 4.9 presents a comparison between what was planned and the outcomes that resulted from actions taken.

With the exception of a few issues that arose, there was evidence that the strategy was becoming more streamlined and meaningful. Actions that needed improvement related to ensuring realistic equipment and scheduling more time for debriefing sessions. A significant issue that emerged from the data was the students' apparent reluctance to take responsibility for their own learning. It seemed as if their reluctance to prepare for simulation compromised the full benefit of learning through simulation and could therefore influence their simulation learning experiences negatively.

**Table 4.9: Comparison between adjustments made to the strategy document and the outcomes thereof**

Topic	Change/Addition	Outcome based on data
Scenario design	<ol style="list-style-type: none"> <li>1. Develop two new scenarios</li> <li>2. Gradually increase complexity of scenarios</li> </ol>	<ol style="list-style-type: none"> <li>1. Students experienced the introduction of a new scenario as an unpleasant event</li> <li>2. The highly complex fourth and fifth scenarios caused significant emotional reactions from the students</li> </ol>
Orientation to the simulation environment	<ol style="list-style-type: none"> <li>1. Show a video about the features of the paediatric patient simulator</li> <li>2. Provide a detailed orientation to the simulation venue</li> </ol>	<ol style="list-style-type: none"> <li>1. There was no explicit evidence to prove this action item redundant</li> <li>2. Despite a detailed orientation to the simulation venue, the students requested continuous orientation in terms of the location of equipment</li> </ol>
Preparing students for simulation learning experiences	<ol style="list-style-type: none"> <li>1. Randomly assign 2–3 students per group</li> </ol>	<ol style="list-style-type: none"> <li>1. There was no explicit evidence to prove this action item redundant</li> </ol>
Number of sessions	<ol style="list-style-type: none"> <li>1. Increase the number of simulation sessions from three to five</li> </ol>	<ol style="list-style-type: none"> <li>1. Students became more comfortable with simulation and the environment over time</li> </ol>
Enhancing realism	<ol style="list-style-type: none"> <li>1. Use a checklist and control the availability of equipment and medical supplies needed for specific scenarios</li> <li>2. Provide realistic documentation in the patient's file</li> <li>3. Use props, e.g. dress simulator in pyjamas or hospital attire</li> <li>4. Facilitators and students wear their hospital uniforms when participating in scenarios</li> <li>5. Remind students to treat the simulation as an actual clinical situation</li> </ol>	<ol style="list-style-type: none"> <li>1. Data revealed some shortcomings in relation to the provision of realistic medications</li> <li>2. There was no explicit evidence to prove this action item redundant</li> <li>3. There was no explicit evidence to prove this action item redundant</li> <li>4. There was no explicit evidence to prove this action item redundant</li> <li>5. There was no explicit evidence to prove this action item redundant</li> </ol>
Briefing	<ol style="list-style-type: none"> <li>1. Re-orientate students prior to each simulated scenario</li> </ol>	<ol style="list-style-type: none"> <li>1. Despite a detailed orientation to the simulation venue, the students requested continuous orientation in terms of the location of equipment</li> </ol>
Simulated scenarios	<ol style="list-style-type: none"> <li>1. Facilitator to accompany students during their first simulated scenario</li> <li>2. Implement the existing foreign body scenario twice</li> <li>3. Implement both new scenarios once</li> <li>4. Allow 30–35 minutes for a simulated scenario</li> </ol>	<ol style="list-style-type: none"> <li>1. Students appreciated the presence of a facilitator during their first simulation learning experience</li> <li>2. There was no explicit evidence to prove this action item redundant</li> <li>3. The highly complex fourth and fifth scenarios caused significant emotional reactions from the students</li> <li>4. There was no explicit evidence to prove this action item redundant</li> </ol>
Debriefing	<ol style="list-style-type: none"> <li>1. Use video playback as a form of feedback</li> <li>2. Reassess students' emotional responses at the conclusion of the debriefing</li> <li>3. Use debriefing sessions to foster independent learner behaviour</li> </ol>	<ol style="list-style-type: none"> <li>1. Time allocated for debriefing proved too short for video playback as well as a discussion of simulation events</li> <li>2. There was no explicit evidence to prove this action item redundant</li> <li>3. Data revealed significant reluctance from students to take responsibility for their own learning</li> </ol>

#### **4.2.3.4 Professional development**

Based on my experience as a learner and as an educator, I found simulation to be a particularly effective and enjoyable mode of learning due to its tactile nature. Most importantly, I have learned that meaningful simulation learning experiences has to do with helping students to discover their own potential in terms of what they are capable of as well as areas that needed development without me judging them for mistakes. I was getting used to the idea of giving the students enough space for learning without interjecting with my ideas all the time, which was a temptation that I had to resist on many occasions. I became more convinced that one or two simulation sessions would not produce the result that I was looking for because growth and development takes time. I was learning the secret of being very patient with the students while they were finding their way to meaningful learning.

#### **4.2.4 Areas that needed modification in Cycle 3**

In reflecting on the lessons learned in Cycle 2, I have identified the following essential issues, of which some were similar to those that had emerged from the first cycle.

##### **4.2.4.1 Orientation to the simulation environment**

Although the students had a more thorough orientation to the simulation environment and equipment than the previous group, they requested a re-orientation with regard to the location of equipment prior to each simulated scenario. Students made this request despite the fact that the environment and set-up had remained the same throughout the semester.

##### **WHAT SHOULD CHANGE?**

At first, I was reluctant to comply with the students' request because I was of the opinion that they should become familiar with the environment at least by their fourth or fifth scenarios. However, Ganley and Linnard-Palmer (2012:e56) underscore the importance of providing an academically safe learning environment by providing opportunities for students to be orientated to before simulation experiences. Therefore, I decided to respect the students' request and determined to continue orientating them to the environment prior to each upcoming simulated scenario.

##### **4.2.4.2 Equipment as an element of realism in simulation**

As mentioned earlier, realism is considered a true strength to simulation because scenarios that are as realistic as possible allow fidelity and belief in the activity by students (Sanford, 2012:1008). Although we utilised a control list to ensure the availability of equipment and

items needed for scenarios, shortfalls were noticed particularly with regard to the availability and labelling of medications.

### **WHAT SHOULD CHANGE?**

The necessity to rehearse a scenario should be re-emphasised so that modifications to aspects such as the availability of medication and the correct labelling thereof could be made in time. I realised that the quality of simulation learning experiences could be compromised by expecting the students to make believe or to pretend that equipment is authentic. Therefore, I determined to pay particular attention to this issue in future.

#### **4.2.4.3 Dealing with habits of ineffective practice**

As evident from my field notes (see Table 4.6), I was concerned about the students' misconduct regarding medication administration during simulated scenarios because it was in stark contrast to acceptable child nurse practice. I often noticed errors regarding the calculation of medication dosages, co-checking and patient identification prior to administration. On some occasions, some of the errors would have resulted in certain morbidity in paediatric patients. Since the paediatric nursing students did not have limited clinical experience in administering medications, I attributed their behaviour to habits of ineffective practice.

Knowles et al. (2005:191–194) point out that adult learners' prior experiences often create fixed mental models, otherwise known as cognitive structures. These mental models enable individuals to function efficiently in the workplace, but can also obstruct change when they are expected to adjust their behaviour or actions. In an effort to help adult learners to 'unlearn' incorrect practice, it is necessary to confront them with their existing beliefs and perspectives first before continuing with relearning. Based on evidence that medication errors occur more frequently in the paediatric population than in the adult population (Gonzales, 2010:557), and have more serious consequences for children than for adults (Lan et al., 2014:826), the paediatric nursing students' habits of ineffective practice in this regard were worth confronting and eradicating.

Wolf, Hicks and Serembus (2006:39) reported that the most common errors during the administration phase were omission errors followed by errors of giving the wrong dose of a medication. Infants and children are particularly vulnerable to medication errors because of their immature and unique state of physiological development, which results in a high sensitivity to medication and low tolerance of errors (Lan et al., 2014:826). Since medication errors are preventable (Gonzales, 2010:555), continuous errors in administration highlights

the importance of developing, testing and implementing effective error-preventing plans (Lan et al., 2014:822).

### **WHAT SHOULD CHANGE?**

Positive outcomes regarding safe medication administration to paediatric patients were achieved in a study done by Pauly-O'Neill (2009:e185). Students had intensive training in simulation that resulted in dramatic improvements in performance of skills necessary to use the five rights (right patient, right medication, right dosage, right route, and right time), assess for patient allergies and the correct dilution of medication. Pauly-O'Neill (2009:e181–e182) suggests that training within a simulated setting can improve nursing students' ability to administer medication accurately to a complex paediatric patient. In an attempt to help the students unlearn incorrect medication administration practices and improve patient safety through safe medication practices, I determined to include the following reinforcing efforts for the second semester's simulation learning experiences:

- Introduce a contact session during which specific attention is given to the principles of correct medication administration to children.
- Allow students the opportunity to practise the calculation of certain high-risk medications such as digoxin and morphine.
- Encourage students to bring drug dosage handbooks, calculators and reference materials into the simulation venue.
- Treat every medication administration in simulated scenarios as authentic.
- Foster a culture of zero error in simulation and discuss every medication error during debriefing sessions (adapted from Pauly-O'Neill, 2009:e182).

Apart from applying the above-mentioned efforts prior to and during simulated scenarios, the debriefing sessions could be used as opportunities to help the students to (a) identify their frames of reference in terms of medication administration, (b) analyse their impact on actions, and (c) build new frames that could be tested in subsequent simulated scenarios. Rudolph et al. (2007) refers to this process as the 'debriefing with good judgment' model. I hoped that by using this approach, the issue of the students' habits of ineffective medication administration practice could be resolved.

#### **4.2.4.4 Developing independent learner behaviour**

During Cycle 2, I deliberately attempted to develop independent learner behaviour by expecting students to take responsibility for their own learning. I used the debriefing sessions to create opportunities for students to develop their own action plans in terms of

improving their performance. Whenever I requested students to make action plans, I explained to them that they were adult learners and that as such they should take responsibility for their own learning and not rely on my feedback alone. Despite my efforts to motivate students and to cultivate a desire for deep learning, they often did not adhere to their resolutions to improve their performance. Data from this second cycle strongly suggested that the students were reluctant to participate in active and cooperative learning opportunities and that they still comfortably relied on educator feedback.

### **WHAT SHOULD CHANGE?**

Ákerlind and Trevitt (1999:96) point out that more often than not students will resist the introduction of educational approaches that they are not familiar with. I was of the opinion that the students were so used to being dependent on an educator, that it would take a while for them to discover the value of using experiential learning opportunities to construct knowledge and advance their nursing skills. Hence, I would continue to require of the students to make action plans for improving their performance during simulated scenarios.

#### **4.2.4.5 Debriefing as a critical element of simulation learning**

As in the previous cycle, I found debriefing the most challenging aspect of simulation. I was thoroughly convinced that the art of debriefing cannot be learned from books alone, but requires persistent practice. Although I followed guidance from literature on debriefing, I sensed room for improvement particularly with regard to facilitating reflection-on-action during debriefing sessions. Since the broader domain of simulation debriefing is vast, it would be awkward to attempt a thorough exploration of all the aspects of my debriefing practice. At this stage in the research, I focussed on advancing independent learner behaviour and felt that I needed more practice to solidify the debriefing process. Another aspect was that the time scheduled for debriefings was inadequate for video playback and a thorough discussion afterwards.

### **WHAT SHOULD CHANGE?**

Since effective debriefing requires time, part of planning the debriefing is to ensure that adequate time is available, which is typically two to three times the length of the simulated scenario (Beauchesne & Douglas, 2011:32). I planned to schedule more time for debriefing in the future and include video playback as a technique for reflection and self-discovery of aspects that need improvement (Flanagan, 2008:166). I hoped that these actions would result in positive attitudes and meaningful simulation learning experiences.

### 4.3 Conclusion

The purpose of this second cycle was to use data from Cycle 1 and to refine and re-implement the strategy. Additionally, I attempted to foster independent adult learner behaviour as far as possible. Data revealed that a few modifications to the existing strategy were necessary and that a continuous effort to develop adult learner behaviour was required. At this stage I was more satisfied that I was no longer implementing simulation based on intuitive thinking and basic teaching and learning principles, but now had an empirical foundation for meaningful simulation learning experiences. As a result of the insights gained from Cycle 2, I felt even more equipped to plan and implement my third and last action cycle. In the following chapter, I describe my final action plan.

*I tell you one thing, if you learn it by yourself, if you have to get down and dig for it, it never leaves you. It stays there as long as you live because you had to dig it out of the mud before you learned what it was (Wigginton, 1985, prologue).*

– Addie Norton

## Chapter 5

### Action Cycle 3 (June 2014 – November 2014): Finalising the Strategy for Meaningful Simulation Learning Experiences

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*Through education we need to help students find pleasure in what they have to learn.*

– Plato

#### 5.1 Introduction

The purpose of this study was to develop a strategy for meaningful simulation learning experiences for postgraduate paediatric nursing students. At the beginning of the study, my main concern was that I did not have a completed, well-developed plan to guide my use of simulation in the paediatric nursing programme. During the course of two action cycles, I developed and implemented an extensive strategy. I subsequently made adjustments based on my own reflections, salient simulation literature, and the paediatric nursing students' suggestions for improving the strategy. The discovery that my postgraduate students did not display expected adult learner behaviour created another concern, which inspired the inclusion of additional action items in the strategy that aimed at developing independent and self-directed learner behaviour.

This final action cycle is the conclusion of the fieldwork. In this chapter, I describe how I planned and implemented changes to the strategy, followed by an inquiry to determine the efficiency of the strategy in terms of providing the paediatric nursing students with meaningful simulation learning experiences. The cycle commenced at the beginning of the second semester of 2014.

#### 5.2 The third action cycle

In view of the issues that emerged from the second action cycle, I planned to include three action steps in Cycle 3, namely (1) adjust the strategy document according to insights gained from Cycle 2; (2) determine the efficiency of the strategy in terms of actions taken to ensure meaningful simulation learning experiences; and (3) finalise the strategy document. In the

following section, I describe how the first two action steps were implemented, and in the following chapter, I present the finalised strategy.

### 5.2.1 First action step: Adjust the strategy document according to insights gained from Cycle 2

I used the students' suggestions and my own insights gained from the second cycle to adjust and refine the strategy further. This step would directly benefit the students because Cycle 3 commenced in the second semester of their academic year and lasted approximately five months. Table 5.1 provides a summary of the adjustments made, but since the main layout of the strategy document did not change, I did not include the entire strategy document as in the previous two chapters.

**Table 5.1: Summary of adjustments made to the strategy document**

Topic in the strategy document	Adjustments made to the action items
Preparing students for simulation learning experiences	<ol style="list-style-type: none"> <li>1. Reinforce the principles and practice of correct medication administration to children by implementing the steps proposed in Chapter 4 (see 4.2.4.3)</li> <li>2. Agree to foster a culture of zero error in medication administration</li> </ol>
Enhancing realism	<ol style="list-style-type: none"> <li>1. Reinforce the use of a checklist to control the availability and realism of equipment and medical supplies needed for specific scenarios</li> <li>2. Reinforce the necessity to rehearse a scenario so that modifications could be made in time</li> </ol>
Briefing	<ol style="list-style-type: none"> <li>1. Create an academically safe environment by orientating students to the simulation environment prior to simulated scenarios</li> </ol>
Simulated scenarios	<ol style="list-style-type: none"> <li>1. Create opportunities to practise the principles of correct medication administration to children during every simulated scenario</li> </ol>
Debriefing	<ol style="list-style-type: none"> <li>1. Allow more time for debriefing sessions: 60–90 minutes per session</li> <li>2. Reinforce the use of video playback as a form of feedback</li> <li>3. Adhere to the culture of zero error in medication administration by discussing students' performance in this regard</li> <li>4. Continue to develop independent learner behaviour by requiring students to develop action plans to improve their performance during simulated scenarios</li> </ol>

#### 5.2.1.1 Preparing students for simulation learning experiences

As shown in Table 5.1, I made two adjustments that specifically related to the principles and practice of medication administration to children. In order to prepare students for simulated scenarios during which they would encounter medication administration as one of their tasks, I

scheduled a contact session during which correct medication practices could be reinforced as proposed in Chapter 4 (see 4.2.4.3). During this contact session, the students had the opportunity to practise their medication skills by means of pen-and-paper exercises. They were required to calculate the dosages of oral and intravenous medications such as digoxin and morphine sulphate. In addition, we used role-play to practise the correct procedure of obtaining telephonic prescriptions. The students were encouraged to bring drug dosage handbooks, calculators, and reference materials to upcoming simulated scenarios. The students and I agreed to foster a culture of zero error regarding medication administration during simulated scenarios.

### **5.2.1.2 Enhancing realism**

To ensure realistic scenarios as far as possible, I reinforced the use of a checklist to ensure that medical supplies and equipment were available and a realistic portrayal of the clinical areas. I gave specific attention to the labelling of oral and intravenous medications. An internet search provided examples of realistic labels and was used to create a sense of authenticity.

In terms of ensuring that all the equipment was in working order and that medical supplies and documentation were appropriate for scenarios, I requested a short scenario rehearsal on the day before the students participated in the scheduled sessions. Unfortunately, scenario rehearsal did not realise. Reasons included aspects over which I had no control, such as a shortage of simulation team members that could assist me in preparing and controlling the environment beforehand and a technician that was not always available to control the function of simulators and computer software. This ongoing situation meant that I had to spend more time and effort in preparing scenarios to ensure realism as far as possible.

### **5.2.1.3 Briefing**

As requested by the students, I orientated them to the simulation environment prior to each simulated scenario. The location of equipment and supplies was pointed out and the students had a few minutes to familiarise themselves with the environment and their tasks before sessions began.

### **5.2.1.4 Simulated scenarios**

In order to change the students' habits of ineffective practice with regard to the administration of medication to children, each one of the five scheduled simulated scenarios included a task that

required them either to obtain a telephonic prescription for medication or to administer prescribed medication. By repeating this specific task, I hoped that the students would build new frames of reference (Botma et al., 2015:506; Clark, 2008:206; Fink, 2013:36; Merrill, 2002:50) regarding the principles of medication administration and realise the potential harm to patients should they continue with incorrect practice in this regard.

#### **5.2.1.5 Debriefing**

One of the identified shortfalls of debriefing was that I did not schedule enough time so that video playback as well as a discussion of the students' performance could be achieved. Hence, I rescheduled the debriefing for 60 to 90 minutes instead of 30 to 45 minutes as before. Since more time was scheduled for debriefing, I used video playback as a means of feedback more often during the second semester. As planned, the students and I specifically discussed their performances regarding medication administration and attention was given to medication administration errors that occurred from time to time. I continued to encourage independent learner behaviour by requesting the students to develop and implement action plans to improve their performance, both individually and as a team.

#### **5.2.2 Second action step: Determine the efficiency of the strategy in terms of actions taken to ensure meaningful simulation learning experiences**

Although the first two action cycles rendered evidence that the strategy could be used as a method to ensure that simulation was delivered in a planned and structured way, it was also necessary to determine the efficiency of the strategy in terms of rendering meaningful simulation learning experiences. This action step was important because the identification of processes that influenced the students' simulation learning experiences would determine the composition of the final strategy document and thus answer the fundamental research question of this study, namely:

***How can meaningful simulation learning experiences be achieved in a postgraduate paediatric nursing programme?***

In the following section, I describe how I planned the collection and analysis of data so that I could determine the outcome of actions taken.

### 5.2.2.1 Planning the collection and analysis of data

As in the previous two cycles, I planned to use techniques of inquiry suitable for action research (Mills, 2007:65,67). In keeping with Melrose's (2001:169) recommendation to use more than one method of data collection to enhance rigor, I would collect data by means of field notes, focus groups, and a simulation evaluation instrument. Whereas the field notes would be an ongoing method of data gathering, I planned to use the other two techniques by the end of the third cycle, after the students had had the opportunity to participate in another five simulation learning experiences. I reasoned that they would be more familiar with simulation by the end of their academic year and would then be able to provide valuable data. Since I have described the purpose and use of field notes in the first and second cycles, I only elaborate on focus groups and the simulation evaluation instrument in the following section.

#### FOCUS GROUPS

A focus group is a useful technique for qualitative data collection because participants have the opportunity to express and clarify their views, which may be less likely to occur in a one-to-one interview (Burns & Grove, 2009:513; Lichtman, 2013:206). Apart from focus groups being one of the most commonly used methods of data collection in education research (Johnson & Christensen, 2012:429), the use of focus groups is considered particularly effective in action research because it allows individuals to explore their experiences interactively, which usually results in rich and varied data (Mills, 2007:66; Stringer, 2004:76). Groups generally consist of six to twelve participants who come together for approximately one hour (Lichtman, 2013:207). Hence, instead of conducting six to twelve individual interviews with the students, I was of the opinion that the focus groups would be useful in obtaining a rich set of data about their simulation learning experiences. Additional strengths of focus groups include:

- high response rates because participants are usually reluctant to refuse talking to the interviewer, but they would consider ignoring a questionnaire;
- less ambiguity because interviewers can determine whether questions have been misunderstood; and
- richness of data related to participants' responses to open-ended questions as opposed to losing depth through closed-ended items in questionnaires (Polit & Beck, 2004:351).

A limitation of focus groups is that not all participants may be equally articulate and perceptive, which means that the more expressive individual(s) may dominate discussions (Creswell,

2009:179; Gibson & Soanes, 2000:462). In an effort to minimise possible dominance, I planned to request an experienced moderator to conduct the focus groups in the hope that this person would facilitate discussions in such a manner that all or most of the participants would have an opportunity to contribute. I decided to schedule the time for focus groups shortly after they had written their summative examinations since it would be a more convenient time for them to participate.

### **SIMULATION EVALUATION INSTRUMENT**

Action researchers often gather quantitative data to supplement other forms of data collection (Baumfield et al., 2013:53; Mills, 2007:73; Stringer, 2004:89). In order to supplement focus group data, I planned to determine the students' individual viewpoints of their simulation learning experiences by means of a simulation evaluation instrument. For this purpose, I developed a four-point, forced choice, Likert-type scale (Burns & Grove, 2009:410) that included 32 items. The students could select from the statements 'strongly disagree', 'disagree', 'agree' and 'strongly agree', thus omitting the statement 'uncertain'. The format of the simulation evaluation tool is similar to the standard module evaluation instruments used by the UFS. Accordingly, the items and the statements are presented in both English and Afrikaans, thus excluding a separate instrument for each of the languages mentioned. The instrument is attached as Appendix D.

I formulated the 32 items by considering some of the issues that arose from the first two action cycles. For example, an ongoing challenge seemed to be the creation of a realistic environment and I therefore included a number of the items to get the students' viewpoints on this issue. Since the action items that were included in the strategy document were already based on the literature, I did not perform a literature study to determine which items should be included in the evaluation instrument. Due to time constraints, I did not conduct a pilot study to determine the clarity and appropriateness of the items in the instrument. However, prior to using the instrument, I requested two colleagues experienced in the use of simulation to review the instrument for face and content validity. They evaluated whether the wording of the items were clear and unambiguous (Baumfield et al., 2013:26,125; Salkind, 2008:114). Minor typographical changes and correction of a few typing errors were necessary following the review.

I planned to analyse the focus groups by means by using first and second cycle coding followed by the development of themes. The simulation evaluation instrument would be analysed using descriptive statistics (see Table 2.1).

## 5.3 Monitoring and observing

In the following section, I describe how the focus group data and supplementary documentary evidence were gathered, followed by analysis and a discussion of the results.

### 5.3.1 Focus groups

Before I invited the paediatric nursing students to participate in focus groups, I tested the focal questions (Burns & Grove, 2009:510) by inviting five third-year Baccalaureate nursing students to respond to the following prompts: *How did simulation influence your learning?* and *What about simulation hindered your learning?* These students had prior experience in high-fidelity simulation learning and were therefore suitable for testing the clarity of the question. Their responses indicated that the meaning of the question was clear and therefore it did not need to change. None of the data derived from my discussion with the third-year students were included in this study.

By the end of the 2014 academic year, two focus groups were conducted with the paediatric nursing students after they had completed a total of 10 simulation learning experiences (five in the first and five in the second semester). Sixteen female students voluntarily agreed to participate. An example of the consent form provided to the participants is attached as Appendix C. The two focus groups consisted of seven and nine participants respectively. With respect to difficult power issues that might occur in situations where the participants were known to the researcher, I requested an independent moderator to conduct the focus groups. This person was not involved in any of the participants' educational activities. In this way, I excluded social desirability by creating an opportunity for participants to disclose information without feeling coerced to respond in a way that is desirable but not necessary truthful.

Equivalence and internal consistency were maintained by using the same focus group moderator for both meetings (Speziale & Carpenter, 2007:40). The moderator was a nurse educator with extensive experience in the facilitation of focus groups. Burns and Grove (2009:514) recommend that the environment should be familiar and non-threatening to participants. Therefore, the focus groups were conducted in the same venue as where the debriefing sessions were usually conducted. Refreshments were served prior to the discussion to establish a relaxed atmosphere. Since all group members were fellow students who were exposed to the same situations, they could agree or disagree with each other without feeling

threatened. With consent of the participants, a voice recording device was used to record discussions.

The moderator prompted participants to respond to the following question: *How did simulation influence your learning?* When the moderator was satisfied that there were no more responses to her question, she prompted participants by asking: *How did simulation hinder your learning?* Both group sessions lasted between 30 and 40 minutes. At the conclusion of each meeting, the moderator summarised the main ideas and thanked the participants.

### **5.3.2 Simulation evaluation instrument**

During a final contact session at the end of the students' academic year, I requested the students to complete the simulation evaluation forms. Since I planned to use the data in this study, I made my intent known to them. Seventeen female students agreed that I could use the information in my study and then voluntarily completed the evaluation form. As indicated on the evaluation form (see Appendix D), an agreement to complete the form implied consent to use the data. I reassured them that their responses were anonymous.

## **5.4 Data analysis**

In the following section, I describe the analysis of the simulation evaluation instrument followed by a description of how the focus group data were analysed. As in the previous two cycles, I would use my field notes verbatim to confirm important points made by the participants and facilitate appropriate emphasis on data emerging from the focus groups and the simulation evaluation instrument.

### **5.4.1 Analysis of the simulation evaluation instrument data**

All 17 instruments were completed and returned, which excluded response bias (Creswell, 2009:151). Prior to analysis, I categorised the items according to corresponding topics in the strategy document, namely (a) scenario design, (b) student orientation and preparation for simulation, and (c) execution of simulation sessions. Since a number of the items specifically related to the students' simulation learning experiences, I included a fourth category, namely (d) simulation as a learning experience.

The data were analysed using descriptive statistics to gain insight into the students' viewpoints of the simulation learning experiences. Since only 17 questionnaires were included for analysis,

a research assistant manually calculated total scores, frequencies, and percentages. I reviewed the accuracy of findings by recalculating the results using the Microsoft Office Excel® worksheet. Table 5.2 reflects the four categories and the total scores, frequencies and percentages of corresponding items. The total scores were calculated according to the weight given to each statement, i.e. strongly disagree = 1, disagree = 2, agree = 3, and strongly agree = 4. The highest possible score for an item was 68 and the lowest possible score for an item was 17. To facilitate the interpretation of findings, I reversed the scores of items to which most students strongly disagreed or disagreed. The items are 4, 14, 16, 23, 26, 28 and 32.

**Table 5.2 Total scores, frequencies and percentages related to each item in the simulation evaluation instrument**

Item Number	Item related to a specific topic	*Total score #n = 17	Strongly disagree		Disagree		Agree		Strongly agree	
			F	%	F	%	F	%	F	%
<b>A. Scenario design</b>										
10.	Simulation scenarios were aligned with course content	67	0	0	0	0	1	6	16	94
11.	Simulation scenarios were aligned with current child health practice	67	0	0	0	0	1	6	16	94
16.	Scenarios were too complicated	54	7	41	6	35	4	24	0	0
<b>B. Student orientation and preparation for simulation</b>										
2.	I was thoroughly orientated for my first simulation experience	51	1	6	1	6	9	53	6	35
3.	The facilitators spent enough time to prepare me for simulation	55	0	0	1	6	11	65	5	29
4.	I made use of opportunities to acquaint myself with the simulation environment before my first experience	46	3	18	8	47	4	24	2	12
8.	I received information about upcoming simulation sessions at least a week in advance	66	0	0	0	0	2	12	15	88
9.	Simulation scenarios were aligned with information given beforehand in class	67	0	0	0	0	1	6	16	94
12.	I made an effort to prepare myself for simulation sessions	60	0	0	0	0	8	47	9	53
13.	I did some extra reading work to prepare myself for simulation sessions	56	0	0	2	12	8	47	7	41
<b>C. Execution of simulation sessions</b>										
5.	The simulation environment felt authentic (real life)	58	0	0	1	6	8	47	8	47
6.	The equipment needed during a scenario was always available	57	1	6	0	0	4	24	12	70

7.	The documents that were used for a scenario were always available	<b>50</b> (n = 14)	0	<b>0</b>	0	<b>0</b>	6	<b>43</b>	8	<b>47</b>
14.	I prefer to have a facilitator in the simulation room at all times	<b>53</b>	7	<b>41</b>	6	<b>35</b>	3	<b>18</b>	1	<b>6</b>
15.	I prefer to have preset tasks to complete during scenarios	<b>45</b> (n = 16)	2	<b>12</b>	2	<b>12</b>	9	<b>56</b>	3	<b>18</b>
17.	Enough time was allocated to complete expected outcomes	<b>52</b>	1	<b>6</b>	5	<b>29</b>	4	<b>24</b>	7	<b>41</b>
23.	The debriefing sessions were too long	<b>53</b>	6	<b>35</b>	7	<b>41</b>	4	<b>24</b>	0	<b>0</b>
24.	Enough feedback about my performance during the simulation session was provided at debriefing	<b>57</b>	1	<b>6</b>	0	<b>0</b>	4	<b>24</b>	12	<b>70</b>
25.	I want to watch the video of the simulation during debriefing sessions	<b>59</b>	0	<b>0</b>	1	<b>6</b>	7	<b>41</b>	9	<b>53</b>
28.	Ten simulation sessions per year are too many	<b>47</b>	8	<b>47</b>	2	<b>12</b>	2	<b>12</b>	5	<b>29</b>
<b>D. Simulation as a learning experience</b>										
1.	Simulation was an enjoyable learning experience	<b>58</b>	0	<b>0</b>	2	<b>12</b>	6	<b>35</b>	9	<b>53</b>
18.	My ability to work as a member of a team improved as a result of simulation	<b>58</b>	0	<b>0</b>	1	<b>6</b>	4	<b>24</b>	12	<b>70</b>
19.	My ability to plan nursing care improved as a result of simulation	<b>66</b>	0	<b>0</b>	0	<b>0</b>	2	<b>12</b>	15	<b>88</b>
20.	I developed self-confidence as a result of simulation	<b>58</b>	0	<b>0</b>	2	<b>12</b>	6	<b>35</b>	9	<b>53</b>
21.	Previously, I had some habits of ineffective practice, but that changed as a result of simulation	<b>56</b> (n = 16)	0	<b>0</b>	2	<b>13</b>	4	<b>25</b>	10	<b>62</b>
22.	The debriefing sessions were meaningful	<b>65</b>	0	<b>0</b>	1	<b>6</b>	1	<b>6</b>	15	<b>88</b>
26.	I felt judged during debriefing sessions	<b>59</b>	10	<b>59</b>	6	<b>35</b>	0	<b>0</b>	1	<b>6</b>
27.	Debriefing helped me to improve on performance during next simulation sessions	<b>59</b>	0	<b>0</b>	0	<b>0</b>	5	<b>29</b>	12	<b>71</b>
29.	I will be able to apply what I have learned in simulation in the clinical environment	<b>59</b>	0	<b>0</b>	0	<b>0</b>	5	<b>29</b>	12	<b>71</b>
30.	I am thinking of ways to implement what I have learned	<b>65</b>	0	<b>0</b>	0	<b>0</b>	3	<b>18</b>	14	<b>82</b>
31.	I think simulation should be used to assess student performance	<b>55</b>	2	<b>12</b>	2	<b>12</b>	3	<b>18</b>	10	<b>59</b>
32.	I feel that there are aspects of simulation that need improvement	<b>42</b>	2	<b>12</b>	7	<b>41</b>	6	<b>35</b>	2	<b>12</b>

\*Total score: Strongly disagree = 1; Disagree = 2; Agree = 3; Strongly agree = 4

Highest possible score for an item = 68; Lowest possible score for an item = 17

#n: Total responses per item, n = 17 unless stated otherwise

F: Frequency of responses per item

‰: Percentage of responses per item

In the following section, I describe the results of the first three categories with specific reference to the relevant content in the strategy document. Since data from the fourth category, namely

simulation as a learning experience, revealed converging findings between the simulation evaluation instrument and focus groups, I describe the results from the fourth category together with focus group findings. However, where data from the first three categories from the evaluation document support focus group findings, I include those in the discussion of focus group data as well. In the discussion, I present the results by referring to the total scores, frequencies, and percentages.

#### **5.4.1.1 Results related to scenario design**

According to the total scores of the students' responses to Items 10 and 11 (each of the scores was 67), there seemed to be agreement that the simulated scenarios were aligned with course content as well as with current child health practice. These results confirmed that the scenarios were authentic and thus represented real child health problems as encountered by the students in clinical areas. The findings correspond with Biggs's (1996:360) idea of constructive alignment which means the results of instruction are significantly improved when educators design instruction that takes into account the teaching context, teaching and learning activities, and outcomes and assessment tasks. In this regard, Botma et al. (2015:501) note that educators who create learning opportunities for nurses should take the clinical environment into consideration, as in the case with the paediatric nursing students.

In terms of scenario complexity (Item 16), only four (24%) students felt that the scenarios were too complicated while seven (41%) students strongly disagreed and six (35%) disagreed that the scenarios were too complex. With a total score of 54 for this item, I inferred that the gradual progression of scenario complexity was in keeping with the practice of scaffolding because, although the students had guidance from a facilitator at the beginning, my field notes reflected that they became more confident to perform on their own as time went on. Thus, they had several opportunities to construct knowledge gradually without feeling overwhelmed during sessions.

#### **5.4.1.2 Results related to student orientation and preparation for simulation**

Responses to Item 2 (total score 51) revealed that 15 (88%) students felt thoroughly orientated for simulation while only two (12%) did not. It was also encouraging to find that 16 (94%) felt that the facilitator spent enough time to prepare them for simulation (Item 3). Similarly, with a total score of 66 for Item 8, students confirmed that they had received relevant information about simulation scenarios in advance. According to the responses to Item 9 (total score 67),

the students were satisfied that simulation scenarios were aligned with information provided in class, which is similar to the findings on Item 10 as described earlier. Based on these results, I concluded that efforts to prepare students for simulation activities were successful and could be a process that renders simulation learning experiences meaningful.

Items 4, 12 and 13 relate to the students' own efforts to prepare for simulation sessions. According to their responses to Item 4 (total score of 46), it seemed as if the students acknowledged that they had not made use of opportunities to familiarise themselves with the simulation environment before their first learning experience. However, according to responses to Item 12, all (n=17) the students confirmed that they had made an effort to prepare for simulation sessions. According to the responses to Item 13, 15 students either agreed or strongly agreed that they had done extra reading work as preparation for simulation sessions while two students disagreed. Since the latter two findings were in contrast to what I had experienced and reflected on throughout the year in terms of students' preparing themselves for simulation, I was hesitant to accept it at face value. I reasoned that their responses may not have been entirely honest and they could possibly have been hesitant to reveal information that may have reflected negatively on their student behaviour (Koshy et al., 2011:168).

#### **5.4.1.3 Results related to the execution of simulation sessions**

With reference to Item 5 (total score 58), 16 students either strongly agreed or agreed that the simulation environment felt authentic. Only one student felt that this was not the case. Item 6 had a total score of 57 and except for one student, 16 either strongly agreed or agreed that the equipment needed during scenarios was always available. Fourteen students (n=14) responded on Item 7 and all of them were satisfied that documents necessary for scenarios were always available. These results confirmed that efforts to create a realistic simulation environment were successful.

With reference to item 14 (total score 53), 13 students responded that they did not find the presence of a facilitator necessary during all simulation sessions. Bearing in mind that the same group of students had requested the presence of a facilitator at all times during the nominal group meeting at the end of Cycle 2 (see Table 4.7), I inferred that they felt more confident to perform on their own during the second semester's simulations. This finding also corresponded with some notes I had made following debriefing sessions where it became clear that there was a steady growth in most of the students' confidence levels. One note reads:

*I am excited about our discussion in the debriefing sessions today. Some members verbalised that they are getting used to simulation now. One student even mentioned that they liked working as a group and could help each other to find direction during the session.*

According to the responses on items 15 (total score 45; n=16), it seemed that the students preferred to have preset tasks to complete during scenarios. This finding could be attributed to discomfort felt by the students when I requested them to plan and implement nursing care based on the health problem(s) presented during simulated scenarios instead of providing them with specific scenario tasks as I had done with scenarios in the first semester. For example, instead of requesting the students to calculate a burn injury patient's daily fluid requirements or perform a physical assessment, I merely presented the burn injury patient and asked them to implement nursing care as if they were in the clinical setting. My motivation for doing this was that during the debriefing sessions I realised that the students were very eager to talk about the objectives reached or not reached whereas I expected them to relate to the patient and the health problem(s) and implement nursing care accordingly. One of my field notes reads:

*If we continue in the way that we are currently implementing HFS, will there be a time when the students will know 'how to nurse the manikin' instead of learning the principles that we actually want them to transfer to the practice setting? If we merely give them tasks or objectives it seems as if we are preventing 'real nursing' because they concentrate on the task and forget or neglect detail.*

Despite their initial discomfort with this adjustment, I noted that they were quite capable of planning and implementing appropriate nursing care during scenarios. Hence, their preference for a list of preset tasks as suggested by the data is unclear.

Students seemed to appreciate the extended time allowed for completing simulated scenarios because according to Item 17 (total score 52), four (24%) students agreed and seven (41%) strongly agreed that they had had enough time to plan and implement nursing care during scenarios. According to Item 23 (total score 53), only four (24%) students felt that the debriefing sessions had been too long while the rest of the group felt differently. Whereas data from the second cycle revealed that the students felt that they had not received enough feedback on their performance (see Table 4.7), it was encouraging to find that the students felt that they had received adequate feedback during debriefing sessions (Item 24 with a total score of 57). This finding might be explained by the responses to Item 25, where except for one student, the rest of the group (16) confirmed their preference to watch the video of their performance, which is a form of feedback, during debriefing sessions.

According to Item 28 (total score of 47), 10 (59%) students confirmed that 10 simulation sessions per year were not too many while seven (41%) seemed to prefer fewer than 10 sessions per year.

#### **5.4.2 Analysis of focus group data**

The data were prepared by requesting an independent person to transcribe the recordings of both focus groups. Hardcopies of the transcriptions were stored in a safe place and are available for scrutiny on request. Since I did not transcribe the focus groups myself, I accomplished data immersion by reviewing both transcriptions repeatedly for accuracy (Miles et al., 2014:71) by comparing the transcriptions with the audio-recordings. The reviewed transcripts were imported into the ATLAS.ti7 software package and were then ready for analysis. The use of ATLAS ti7 ensured that I maintained an audit trail of the analysis process (Bong, 2007:271). In addition, the analytical software allowed me to organise and categorise the data using codes which directed my attention to categories and themes emerging from the analysis.

I followed recommendations for qualitative data analysis made by Miles et al. (2015) to analyse and display the data. The analysis involved first and second cycle coding as a method of data condensation and eventual retrieval of the most meaningful data. While some research methodologists view coding as a mere technical preparation for higher-level thinking about the data, Miles et al. (2015:72,73) assert that coding is a method of discovering because it involves deep reflection about the data's meanings and, thus, deep analysis and interpretation thereof.

During first cycle coding, I studied the transcripts to identify and label the students' responses to the moderator's prompts. The moderator's first prompt was, *How did simulation influence your learning?* The second was, *What aspects of simulation hindered or interfered with your learning?* I applied an inductive approach and coded relevant words or phrases by using either in vivo coding or descriptive coding. Before I commenced with second cycle coding, I submitted the data set to an experienced qualitative research methodologist who agreed to verify the appropriateness of the initial codes. After it was established that the codes were meaningful in terms of the research purpose and question, I continued with second cycle coding to cluster the codes into a number of categories (Miles et al., 2014:86, 279). According to the patterns that emerged in relation to the fundamental research question (Saldaña, 2013:9), it became clear that the categories could be represented by two central themes relevant to the students' simulation learning experiences, namely meaningful learning experiences and hindrances to learning through simulation.

The two central themes are displayed in Figure 5.1 below. As shown in the figure, the first central theme has three categories with related subcategories. The second central theme has five categories. There were no sub-categories to the second theme because of limited data in terms of aspects that students perceived as hindrances to their learning.

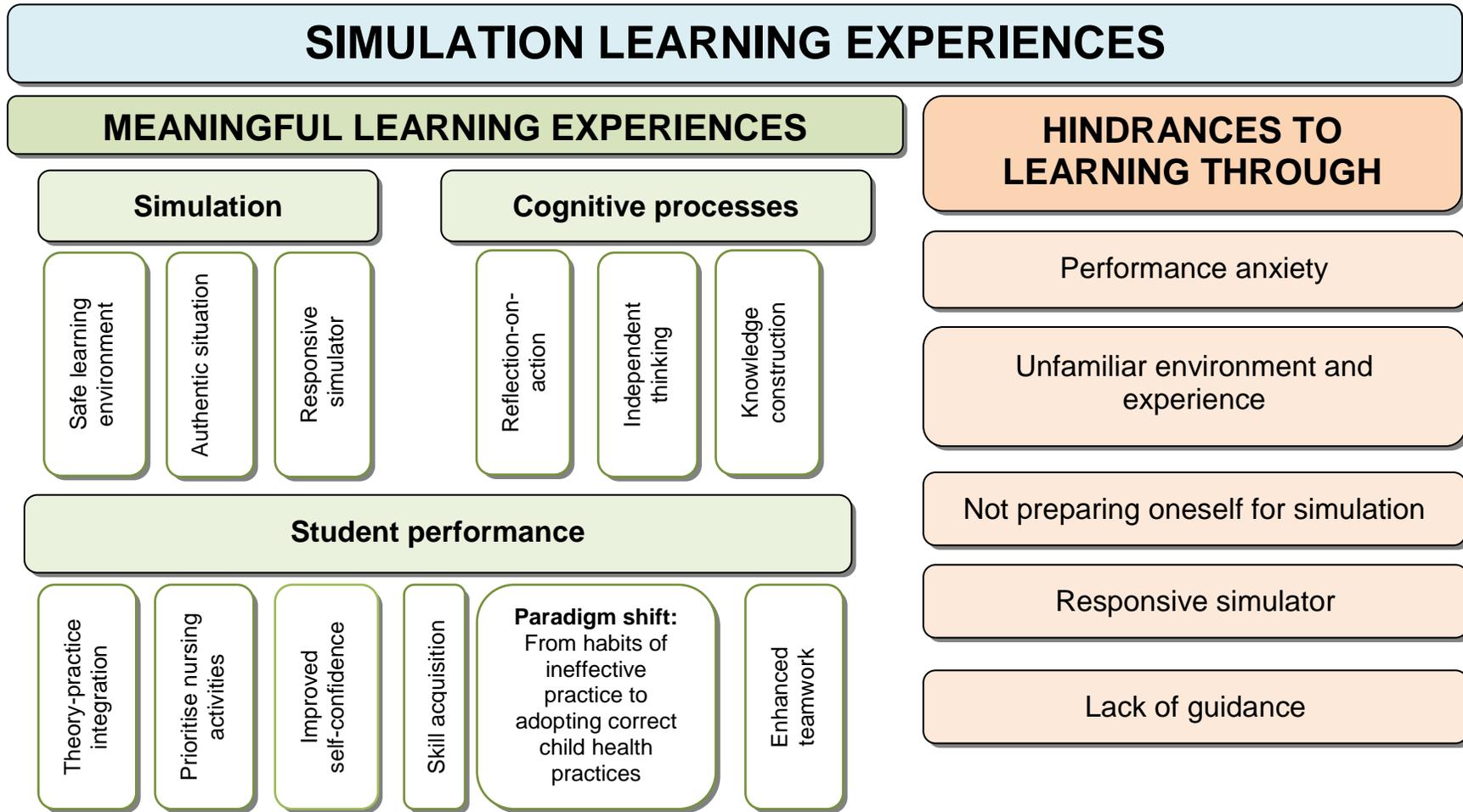


Figure 5.1: Main themes, categories and sub-categories relating to simulation learning experiences

## 5.5 Discussion of results

I discuss each theme separately and excerpts from students' responses or my field notes are quoted verbatim.

### 5.5.1 Theme 1: Meaningful learning experiences

Based on previous learning experiences, adult learners bring frames of references, both negative and positive, into the learning environment (Clapper, 2010:e8; Knowles et al., 2005:66). Unfortunately, unpleasant learning experiences often lead to frustration and discouragement on the part of the student (Fasokun et al., 2005:41,42). Fink (2013:8) and Taniguchi, Freeman and LeGrand Richards (2005:142) refer to a learning experience as meaningful and important when something valuable and applicable to life has been learned. Likewise, Collins and Martin (2010:199) state that adults want to leave a learning experience with something to apply to their work or life.

The interactive and dynamic nature of simulation presents students with learning opportunities that extend beyond traditional teaching methods such as lectures, tutorials, or demonstrations of skills required for nursing practice. However, according to Vardi (2008:109), there is no point in implementing simulation if students leave without being positive about what they learned and without being able to take away safe practical skills and abilities that they can apply in the workplace. From experience, most educators know that students, in particular adult learners, do not engage fully or energetically in learning something they do not want to learn or see no reason for learning (Collins & Martin, 2010:199; Holmes, 2015:1; Knowles et al., 2005:68). It is therefore vital that educators understand the student's' perspectives on any educational intervention so that we can maximise that educational tool (Clapper, 2010:e8; Nagle et al., 2009:18). With reference to simulation learning experiences, Vardi (2008:99) mentions that the educators determine the nature of the experience. Edgecombe et al. (2013:13) elaborate on this matter by stating that the design and implementation of the simulation affect the student's perception of their learning and subsequently their experience thereof. Since the focus of this study was to provide students with meaningful simulation learning experiences, the results were encouraging as there was convincing evidence that the paediatric nursing students did in fact find their simulation learning experiences meaningful. In the following section, I discuss the three categories and related subcategories under the theme of meaningful learning experiences.

### 5.5.1.1 Simulation environment

Adult learners are active agents in their own learning, and their learning is influenced not only by their experiences, but also by the environment in which the learning occurs (Fasokun et al., 2005:23). One of the benefits of simulation is that students are able to practise a variety of tasks and skills in an environment that represents the clinical setting as closely as possible (Berragan, 2013:5; Rutherford-Hemming, 2012:130). Contrary to the clinical setting, the simulation environment is a controlled environment in the sense that students have both the time and the space to learn without the interference from daily work and its associated accountabilities (Vardi, 2008:99). Focus group data revealed that the paediatric nursing students perceived the environment as academically safe and authentic in terms of how it represented the clinical area, and experienced the responsive simulator as meaningful to their learning.

#### SAFE LEARNING ENVIRONMENT

Since adult learners could be reluctant to interact effectively unless they feel that it is safe to do so (Gravett, 2005:46), it is essential to create a learning environment that will promote positive learning experiences (Glavin, 2008:119). As mentioned in earlier chapters, simulation can appear very threatening to students, especially if they have never encountered learning through simulation before. Since most simulations are designed to include more than one participant, students may feel uncomfortable to expose their shortcomings in the presence of others. Similar to findings of a qualitative study by Partin, Payne and Slemmons (2011:187), where the students appreciated a non-threatening learning environment, it seemed that the paediatric nursing students welcomed the fact that they could make mistakes and learn from it without being reprimanded, as shown in the excerpts below:

*And again, with the debriefing, it was kind of motivating, because when you [facilitator] did good would always tell you and praise you, and where you went wrong, she would tell you, 'Guys, please improve next time.' She wouldn't be harsh or use any hard words on us, but she would always motivate us.*

*... I think I felt better in the sense that I made a mistake on a doll rather than on the patient  
...*

In the literature, a safe simulation learning environment is often attributed to the idea that students can practise potential harmful procedures on the simulator without endangering a real patient's life (Aebersold et al., 2012:2; Archer, 2010:31; Buckley & Gordon, 2011:720; Gore et al., 2011:e175; Kneebone et al., 2004:1095; Maran & Glavin, 2003:23). While this is true, the environment should also be academically safe for the student. In an academically

safe environment students know that they can participate in learning activities without the fear of being judged or ridiculed in the presence of others (Ganley & Linnard-Palmer, 2012:e50).

Findings from the simulation evaluation tool (Table 5.2) confirmed that 15 students (88%) enjoyed simulation. According to responses to Item 26 (total score 59), only one student strongly agreed about feeling judged during debriefing sessions, while 10 (59%) strongly disagreed and six (35%) disagreed about feeling judged.

Some of my field notes on the debriefing sessions confirm that the students became notably more relaxed and spontaneous over time:

*I am encouraged by the fact that the students seem to have realised that the debriefing sessions are opportunities for learning and not fault finding – they are much more eager to discuss and make plans for improvement after admitting to less than optimal nursing actions.*

*I am very excited about the students' responses during this debriefing session – they seemed more relaxed and verbalised that they enjoy the kind of learning simulation has to offer.*

The students thus perceived the simulation environment as academically safe at least in the sense that participation in simulation evoked positive emotions such as enjoyment, and encouraged risk-taking because the students felt that they would not be judged for mistakes. I inferred that the students' eagerness to engage actively in meaningful dialogue and reflection on simulation performance could be attributed to an improvement in my own debriefing skills. I had deliberately attempted to create an atmosphere of security by continuously reinforcing that the purpose of debriefing sessions was for learning and not fault finding. I would also not allow students to make fun of each other's perceived mistakes. According to Fink (2013:8,36), meaningful learning is associated with experiences that change the degree to which students care about something and they consequently exert more energy in learning activities.

### **AUTHENTIC SITUATION**

Given that I regarded a realistic simulation environment imperative to meaningful simulation learning experiences, and thus included action items in the strategy document in an effort to achieve realism, the students' positive perceptions in this regard were encouraging. One of their comments was:

*I found that what was nice about the simulation, it made you feel like it was a real situation ...*

As described earlier, data from the evaluation tool (see Table 5.2, Items 5, 6 & 7) seemed to have verified a sense of authenticity.

The literature on simulation supports authenticity of the environment as one of the characteristics of simulation, in particular high-fidelity simulation, that influences students' learning experiences (Bland et al., 2011:666; Foronda et al., 2013:e412; Nel, 2010:71). When students do not experience the simulation environment as a representation of the clinical setting, they will find it difficult to suspend disbelief and will most likely not behave in the simulation as they would in the clinical setting. Johannesson et al. (2013:111) found that a realistic and authentic environment helped the participants in their study to realise the seriousness of the situation in terms of the nursing role they had to assume during simulation. A study by Butler, Veltre and Brady (2009:e135) found that students who participated in high-fidelity simulation valued the higher resemblance to real life more than did the group who participated in low-fidelity simulation. The former group of students was of the opinion that the authenticity of the situation made their learning time more active and productive. Similarly, students in a mixed-methods study by Cantrell, Meakim and Cash (2008:e25) placed high importance on the realism of the simulation as a learning experience.

I found reasonable evidence from my data to conclude that the paediatric nursing students perceived the simulation environment as authentic and realistic enough so that they would be motivated to participate and suspend disbelief. The significance of this finding is that the students' perceived that realism might provide a platform through which they could discover their own incorrect practice and the potential negative effects on patients. In addition, realism could make it easier for students to transfer what they have learned during simulation to the clinical practice setting (Paige & Daley, 2009:e100). These possibilities are substantiated by the results of Items 29 and 30 where all the students' (n=17) either agreed or strongly agreed that they would be able to transfer their learning to the clinical environment and that they are thinking of ways to implement what they have learned (see Table 5.2). A field note reads:

*I'm very motivated by the students' responses when I asked them during the debriefing sessions if they learned something new. Usually they do not hesitate to give positive replies. Some even mention their growing awareness of wrongful practice in the clinical areas as a result of what they learn from participating in simulation.*

## **RESPONSIVE SIMULATOR**

In addition to confirmation by the students that the environment felt realistic, it seemed as if the high-fidelity simulator added to meaningful learning experiences in the sense that the immediate feedback provided by the simulator served as cues for the students to re-evaluate the situation and adjust their actions if necessary. One student commented:

*... Jonathan [referring to the simulator] makes the situation more real because of the nagging, a normal child don't nag like that, unlike if he was just still, we would have taken our own time and relax. You see, actually he kept us on our toes ... in a positive manner.*

Another student said:

*For me it was that he [simulator] was helping, like even if he's complaining then you will exactly know what's wrong. It will actually help you with the nursing diagnosis because he is going to tell you that 'I'm struggling to breathe' ...*

Although the simulator could not respond to the students in coherent sentences, they could act on its responsiveness in terms of short sentences such as 'My arm hurts' or 'Where is my mom?' In addition, the simulator could, for example, display signs of respiratory distress by means of cyanosis or adventitious breath sounds, all of which seemed to help the students assess the situation and to implement relevant nursing care. In the study by Johannesson et al. (2013:110), participants appreciated a responsive simulator while practising catheterisation because the quality of their performance was continuously assessed, which motivated them to refine their skill. Similarly, results from a study by Grady et al. (2008:403) demonstrated higher performance with high-fidelity than with low-fidelity simulator training. However, in a literature review by Foronda et al. (2013:e415), the authors note that evidence regarding the minimal level of fidelity required to produce significant learning outcomes when nursing students engage in simulation remains inconclusive.

### **5.5.1.2 Cognitive processes**

In the following section, I describe how participation in simulation stimulated deeper understanding of learning material with internalisation of new information and subsequent restructuring of knowledge schemas. Meaningful learning occurs when students are able to see and understand the connections between different ideas or various learning experiences (Fink, 2013:36,42).

### **REFLECTION-ON-ACTION**

According to Kolb's experiential learning theory, learning is a continuous process grounded in the experience with knowledge being continuously derived and tested out by the student. This process involves the student becoming actively involved in the experience and reflecting on the experience during as well as after it takes place (Clapper, 2010:e10) and in doing so developing the ability to link theory to practice (Lisko & O'Dell, 2010:106). With regard to simulation learning experiences, Fowler (2007:430,431) emphasises that participation in the simulated scenario alone does not constitute experiential learning because learning results from the coming together of an experience followed by meaningful reflection.

Dreifuerst (2009:110) mentions that not all learners have an innate ability to reflect on an experience consistently and thoughtfully enough for it to be a meaningful learning event. One of the action items in the strategy document related specifically to the facilitation of reflection whilst debriefing the students. As mentioned in an earlier discussion, I used specific guiding questions to facilitate a chronological review of a simulation experience in an attempt to help the students to reflect on their actions. It was therefore encouraging to find that the students not only valued the opportunities to reflect, but also realised the benefit of reflection with regard to performance enhancement:

*For me, it made me realise the little mistakes that one does in practice. Because in simulation we get a chance to reflect and during the reflection, it's then when I realise the mistakes that I make and sometimes we think it's small mistakes, but they do count.*

*It gives me the opportunity to assess myself so that I can be able to see where I lack when I compare to where I came from, what we've been doing, and what I'm supposed to do and maybe, if there are any other changes of implementation ...*

Some commented on the effect of video playback during the debriefing sessions:

*You sit there and [facilitator] will not be telling you what you've done, you'll be seeing what you have done and you will revisit the procedures the way they are supposed to be done.*

*With this simulation you are able to identify your strength and your weakness because after the simulation you'll come here and view the video and you are able to see were you went wrong.*

Fowler (2007:431) mentions that the interaction of experience and reflection requires internal, personal energy from the student and that the facilitator is the external motivator encouraging the interaction of the student's experience and reflection. The significance of drawing on the experiences of performed actions is that the student's thinking is eventually transformed into understanding. This understanding then becomes evident in subsequent actions as students apply what they have learned to new situations (Fink, 2013:34; Sandvik, Eriksson & Hilli, 2014:68).

Based on the focus group data, it was evident that the paediatric nursing students had at least begun to develop reflective skills. This finding not only indicated that I had facilitated the debriefing sessions in a meaningful way, but also revealed that the students had progressed from being fully dependent on me for feedback to developing the ability to find meaning in their learning experience as a result of reflection-on-action. One student seemed to have found particular significance in self-reflection because it brought insight into her nursing practice:

*... sometimes after this simulation sessions I do sit alone in retrospection ... you know, when I consider some of the things that I did, I get chills down my spine ...*

## **INDEPENDENT THINKING**

Knowles et al. (2005:125) assert that the critical element in the assessment of adult learners' learning needs is the students' own perception (self-assessment) of where they are now and where they want and need to be. The significance of self-assessment is that students will find it difficult to regulate their learning unless they have the ability to assess their current knowledge status (Clark, 2008:318). In the context of this study, I used the concept of self-assessment to describe a student's judgment about his or her own abilities, qualities, or actions.

In view of various attempts to foster independent adult learner behaviour, the data suggest that the students eventually realised that they had to find their own solutions to problems experienced during simulated scenarios instead of relying on me for all the answers:

*I think she [facilitator] wanted us to figure things out for ourselves ... if you figure the thing out for yourselves you'll never forget it, it will stay with you ... maybe she [facilitator] wants to give us a challenge to figure things out on our own.*

*... I think with the simulation, I think it's supposed to do exactly what it says, it's just supposed to stimulate us, not like give us everything ... some things you must figure out on yourself.*

*I think with [facilitator] giving us, like, scenarios and objectives to achieve, it was guiding us into the simulation thing and where she felt, right, now we can be independent and just dropped us like that and you're supposed to continue, of which is a good challenge ...*

However, the transition process was not easy, seemingly not for the students but also not for me. Some of my field notes read:

*The students do not seem happy with my request that they should go back to their text books and read more about pathophysiology or the principles of infection control.*

*I'm somewhat frustrated because some of the students are very reluctant to bring their solutions for performance gaps identified in previous simulation sessions and discuss these during the debriefing sessions.*

*Today, I was very disappointed with some of the students' absolute reluctance to exert any effort in preparing for simulation sessions and for not delivering on our agreements in terms of homework.*

However, as time went by, I noticed a slow but definite change in the students' demeanour. Data from Cycle 2 that concluded midyear revealed that the students wanted a facilitator to be with them at all times (see Table 4.8). However, by the end of the year, 13 (76%) of the same students disagreed that they prefer a facilitator in the simulation room at all times (see

Table 5.2, Item 14). I concluded that, although the situation had been uncomfortable for students at the beginning, continuing efforts to stimulate independence resulted in efforts of self-assessment where the students reflected on their own abilities and actions to such an extent that they became more independent as time went along. I inferred that knowledge was being constructed in a meaningful way as demonstrated in the following subcategory.

### **KNOWLEDGE CONSTRUCTION**

As described earlier, one of the major premises underpinning simulation is the concept of constructivism (Dreifeurst, 2009:110; Neill & Wotton, 2011:e167). Knowledge construction is therefore considered as one of the outcomes of simulation (Clapper, 2010e10; Kaakinen & Arwood, 2009:15). Consistent with findings from previous studies (Cant & Cooper, 2010:3; Jeffries, 2007:23; Lapkin et al., 2010:e213; Weaver, 2011:39), the paediatric nursing students acknowledged that the simulation learning experiences increased their knowledge, as can be seen in the following comments:

*... and academically, I found it really, really helpful and I enjoyed it ultimately. At first very anxious, but as time went on I saw that it was in the best interest because if we were not doing the simulation I doubt the amount of knowledge that we have gained we would have it at this point in time, so it was really beneficial.*

*... with simulation, it really empowers you academically ...*

*... so I think it helps a lot to improve our knowledge ...*

The idea that knowledge can emerge from the collective activities of individuals is not new (Fasokun et al., 2005:27). Since simulation learning experiences do not occur in isolation, the paediatric nursing students shared knowledge construction, which is a meaningful way of learning for adults (Farmer, 2010:87). Seemingly, the students actively engaged with the learning material and therefore made meaning of new information and experiences (Fink, 2013:35; Kolb, 1984:27).

#### **5.5.1.3 Student performance**

According to the Nursing Education Stakeholders Group, competence in nursing is “based on the ability to integrate knowledge from all disciplines to identify the problem, understand the theory related to the problem, as well as the appropriate response, treatment and care of the patient” (NES, 2012:50). In the following section, I describe the paediatric nursing students’ perceptions of how simulation improved their overall performance and their realisation that increased competence would positively influence their child nursing practice.

## **THEORY-PRACTICE INTEGRATION**

In the context of this study, I use theory-practice integration to describe the ability of a student to transfer theoretical knowledge acquired in the classroom and clinical practice to the simulation setting. The simulated scenarios were specifically designed to capture important principles in the nursing care of children and it was therefore expected that the students would use simulation activities to link theory with the actual practice of child health nursing. According to the findings, the students perceived the simulation sessions as being valuable in terms of the opportunities that were created to apply classroom work to situations similar to those they experienced from day to day in the clinical setting:

*It [simulation] gave me opportunity to practise, to put into practice the theory, and then ultimately master the skill.*

*I think it is more important, for the learning purpose actually, more especially that we actually do practise more than theory; theory is only a portion but basically, mostly, it's practical that we have to master ...*

*... it [simulation] covered most of the things that otherwise we would have missed generally in a lecture ...*

As mentioned earlier, data from the simulation evaluation tool confirmed that the students found the simulated scenarios aligned with course content and with child nurse practice (see Table 5.2, Items 10 and 11). The alignment of simulated scenarios with course content and child nursing practice facilitated the integration of theory with practice in this context. The students perceived the study material as being relevant to their learning needs, which is an important consideration in the education of adults (Knowles et al., 2005:67). According to Joseph and Juwah (2012:52,59), an educator teacher who follows a constructivist approach typically designs active student-centred learning experiences that will help students to create new knowledge and meaning thereby equipping them to practise successfully in their chosen occupations. In this regard, it seemed as if the simulated scenarios were structured in such a way that students would be able to transfer learning to the practice area.

## **PRIORITISE NURSING ACTIVITIES**

There is evidence from the literature to support the view that simulation activities help students to practise clinical reasoning skills and thereby improve the organisation and prioritisation of nursing care (Bultas, 2011:229). The paediatric nursing students reported that the simulation helped them to prioritise activities for the benefit of the patient:

*It helped me to prioritise my nursing care by just assessing. When you assess the patient you know that you are going to start with this and then after that you do this ...*

*It also in a way has drilled in this aspect of being better organised. Organising the environment. Organising also brings in the issue of prioritising what you are going to do, it all comes with organising ...*

These data corroborate findings described by Kaplan and Ura (2010:371) that the use of simulation increased nursing students' confidence in prioritising and delegating care. Similarly, Mahoney et al. (2013:653) reported that the students in their study felt that simulation helped them to prioritise and made them feel more comfortable in caring for children.

It was my experience that the paediatric nursing students did not only acquire the ability to prioritise their nursing activities, but also began to realise the importance of prioritisation:

*... or you might find that we all go and do a certain activity and ignore the other activities, then we're sort of ... into organising ourselves, the delegation, knowing the environment, it is very crucial in nursing ...*

*... you would be able to manage the unit well because you were organised, you'd be knowing with to do first and the people that you would be working with, you will be teaching them what you have learned ...*

This section of focus group data is supported by findings from the simulation evaluation tool where two students agreed and 15 strongly agreed (total score of 66) that their ability to plan nursing care improved as a result of simulation.

### **IMPROVED SELF-CONFIDENCE**

Consistent with previous studies (Baillie & Curzio, 2009:301; Bambini, Washburn & Perkins, 2009:80; Edgecombe et al., 2013:11; Miller et al., 2010:41; Weaver, 2011:38) the paediatric nursing students reported increased levels of confidence as a result of simulation:

*Because of the knowledge that we have gathered we are now able to do things on our own without anyone's help.*

*The thing is now, like I said and she said, independence, that autonomy that you feel. Now you feel empowered so to speak, so you feel so empowered that, I am capable of suggesting such things because actually it is my responsibility as a professional nurse, I don't work under a doctor, I work with a doctor.*

Similarly, the results of Item 20 (see Table 5.2) revealed that, with the exception of two students, there was a general agreement (total score of 58) that simulation helped the students to develop self-confidence.

One of my field notes support the data:

*Some students verbalised that they felt more comfortable this time around. They did not feel so much 'observed' as with previous sessions. They said that they were more comfortable with the environment and could focus more on the patient – they were not so anxious anymore.*

## **SKILL ACQUISITION**

A systematic review by Issenberg et al. (2005:10) identified that focussed repetition of skills in a manner designed to engage the student was the second most important feature of effective learning in a high-fidelity simulation. The interaction of learning, immediate application and rehearsal to refine skill performance enhances retention. The repetition of scenarios seemed to benefit the paediatric nursing students in terms of skill acquisition:

*... some of the things, like the nursing care plans, we had to hammer them over and over and over again until we could somehow get a grip on it.*

*So being in a simulation over and over, really for me personally, it helped me.*

Kardong-Edgren, Starkweather and Ward (2008:1) had similar outcomes with nursing students who reported gained comfort with simulation over time and satisfaction with the opportunity for repetitive practice. Students in a study by Gordon and Buckley (2009:495) reported a definite increase in both nontechnical and technical skills as a result of repetitive simulation training.

However, apart from gaining skills through repetition, it seemed as if repeated confrontation with aspects of incorrect child nurse practice helped the paediatric nursing students to first realise and then unlearn incorrect behaviour and reinforce correct practice. As mentioned earlier, the students' habits of ineffective practice regarding medication administration to paediatric patients was a major concern for me. However, from the time when I reinforced the principles and practice of medication administration, and incorporated action items to reinforce correct medication practices in every simulated scenario, there was a marked improvement in the students' performance in this regard.

The students' improved performance, both in the acquisition of skills and the correction of incorrect behaviour, could be attributed to the underpinnings of Ericsson's theory of deliberate practice (Ericsson, 2008:991). Based on his work on the acquisition of expert performance, Ericsson developed his theory to explain how a person acquires expert performance. The theory posits that one must engage in deliberate practice activities that are clearly focussed on improving some aspect of performance. The underlying principles of deliberate practice are that (a) tasks must have a well-defined goal, (b) students must have internal motivation to improve, (c) they must receive valid immediate feedback, and (d) there must be many opportunities for repetition and the gradual refinement of performance. The

notion that simulation creates opportunities for deliberate practice is supported by several educators who use simulation (Beauchesne & Douglas, 2011:28; Chee, 2014:251; Issenberg & Scalese, 2007:75; Kneebone et al., 2004:1101; Parker & Myrick, 2009:326). Through deliberate practice, students gain expertise in psychomotor skills and the ability to integrate them, alongside affective and cognitive knowledge schemas (Aebersold et al., 2012:2).

In terms of the paediatric nursing students, the goal was to improve their medication administration skills, based on an agreement between the students and I, thereby instilling motivation for improvement. Additionally, the students received specific feedback during debriefing sessions and then had the opportunity to repeat and improve their performance in subsequent simulated scenarios. The marked improvement regarding medication administration after repeated attempts endorsed my concern that the results of several studies investigating and reporting on student performance in simulation are based on students participating in one or two simulation experiences. A few examples of such studies are Arundell and Cioffi (2005:298-299); Beddingfield et al. (2011:48); Bremmer et al. (2006:172); Fraser et al. (2012:1061); Hauber et al. (2010:243).

#### **PARADIGM SHIFT: FROM HABITS OF INEFFECTIVE NURSING PRACTICE TO CORRECT CHILD HEALTH PRACTICE**

A paradigm shift occurs when one or other agent of change influences a person's accepted way of doing or thinking in such a way that a new way of thinking and doing is adopted (Merriam Webster Dictionaries, 2016: online; OED, 2016: online). As explained by Lisko and O'Dell (2010:106), Kolb's experiential learning cycle allows students to create knowledge by transforming experience into existing frameworks and in the process changes the way a person thinks and behaves. Mezirow (1997:7) explains that when individuals begin to negotiate his or her own values, meanings, and purposes, their frames of references will be transformed through critical reflection of assumptions and by taking action on one's reflective insight. According to Fink (2013:53), meaningful learning is associated with learning activities that help students to discover a new understanding of themselves and a new vision of what they want to become.

Although I expected that the paediatric nursing students' performance should at least change as a result of repeating simulated scenarios, I did not anticipate the significant effect that their engagement with simulation as a learning activity would also have on their self-awareness. I cannot describe it better than the following comments made by some of the students:

*So Jonathan [simulator] made me realise that really, our ubuntu has gone somewhere. We're just there with the pills and injections, then we write the papers and that's it. [We never] give time to our patient.*

*Sometimes she [facilitator] will ask me, 'Is that really how you do it?' ... 'Is that the right way?'. No, it's not the right way, but we prefer [the wrong way]. Why? Because everybody is doing it. But then you are not everybody, why are you following everybody? So somehow I ended up knowing that it doesn't mean that because everybody's doing it, it's right.*

*So somehow I think it brought that spirit of wanting to be an advocate of change because everybody [referring to colleagues in clinical practice] have been doing the wrong thing the whole time. I even joined because everybody was doing it ... even though I knew the correct thing. So somehow this debriefing and simulation helped me break out of my cocoon of wrongdoing. I want to do the right thing.*

Data from the evaluation tool seemed to support the students' aspiration to become agents of change (see Table 5.2, Items 22, 29 and 30). There was general agreement among 87% of the students that they had changed their previous habits of ineffective practice. These findings supported the aim of fostering independent adult learner behaviour. In addition to becoming more independent, the students began to value the significance of being competent professionals in the clinical workplace. Consistent with the paediatric nursing students' realisation that they should reconsider their practice, the nursing students in a study by Westin, Sundler and Berglund (2015:6) described an increased self-awareness as a result of simulation training, which in turn seemed to have initiated a deeper focus on the patient's perspective.

### **ENHANCED TEAMWORK**

Most nursing educational programmes train students as individuals; yet, as practitioners they are most often required to work as members of nursing and interprofessional teams. Unfortunately, teamwork failures have been identified as a major contributor to adverse patient outcomes (Guimond, Sole & Salas, 2011:181). Hence, the ability to work effectively as a team is necessary to best serve the interests of the patient (Weller, 2013:147). There is evidence from the literature to support the view that the interactive nature of simulation promotes the enhancement of teamwork skills (Aebersold et al., 2012:7; Baillie & Curzio, 2009:302; Foronda et al., 2013:e412; Meyer et al., 2014:389; Parker & Myrick, 2008:327). Similarly, the paediatric nursing students commented on teamwork improvement:

*So being in a simulation over and over, really for me personally, it helped me. Like she said, teamwork, it helped us to be in a team, know how to operate in a team.*

Some comments indicated an understanding of the importance of teamwork as essential for quality patient care:

*... 'cause if you work as a team, that means the patient will quickly be helped, rather than working alone, and then you could easily make mistakes.*

*... so teamwork, it helps you to join information and discuss and share the information and then help each other towards meeting one goal which is to care for that patient in totality and in quality.*

*... it also enhanced the teamwork ... at first I did not, actually I did not see the essence of teamwork, until I got into simulation ...*

With reference to Item 18 (see Table 5.2), most students (94%) confirmed that their ability to work as a member of a uniprofessional team improved because of simulation. I concluded that the students did not only develop teamwork skills, which is an important aspect of advanced clinical practice, but came to value the significance of teamwork for the benefit of patients.

In the following section, I describe the aspects perceived by the students as hindrances to their process of learning through simulation.

### **5.5.2 Theme 2: Hindrances to learning through simulation**

Hindrances to learning through simulation was the second central theme identified from the focus group data. As mentioned earlier, negative learning experiences may leave adult learners frustrated and disengaged during learning activities. During the course of this study, I continuously considered how to use information derived from the students and my field notes to improve the strategy for the sake of providing meaningful simulation learning experiences. In Cycle 3, I deliberately focussed on what the students reported as hindrances. From the analysis I identified five categories, namely:

1. performance anxiety;
2. unfamiliar environment and experience;
3. not preparing oneself for simulation;
4. responsive simulator; and
5. lack of guidance.

#### **PERFORMANCE ANXIETY**

Students who participate in simulation experience varying levels of anxiety. One of the accepted assumptions in education is that disproportionately high levels of anxiety can negatively affect student performance (Gore et al., 2011:e179). A review of the literature revealed that student anxiety during simulation is related to learning style, concerns specific to the simulation, and being observed (Nielsen & Harder, 2013:e507). As mentioned in Chapter 3, students benefit most from simulation experiences when they are moved beyond

their comfort zones into a situation where they are challenged, but do not feel threatened (Ganley & Linnard-Palmer, 2012:e55; Glavin, 2008:119; Gravett, 2005:36; Stocker et al., 2014:4).

According to the data, some of the paediatric nursing students felt uneasy by knowing that they were being observed and mentioned it as hindrance to their learning:

*What made me so uncomfortable was the idea that people were actually watching ... I didn't like it.*

*... you know, the idea that the lecturers are watching us was a challenge, you know a problem, it was a problem at first because we were like ... we're being watched.*

This finding was not novel in terms of factors that appear to cause performance anxiety during simulation. In their literature review, Nielsen and Harder (2013:e508) found that being observed or video recorded was a frequently cited cause of increased anxiety. However, students in an action research study by De Oliveira et al., (2015:e53) reported that the use of cameras did not inhibit engagement in simulation but rather contributed to reflection during debriefing. The reasons for these contrasting findings are not clear. However, it was my observation that the paediatric nursing students became so immersed in the scenarios that the cameras did not seem to unsettle them anymore. When I deliberately referred to this issue during debriefing sessions, more often than not the students would reply that they actually forgot about the cameras or about being observed.

It would seem unusual if the paediatric nursing students did not report any anxiety at all. Although I acknowledge that increased stress or anxiety can diminish student performance, I did not experience the paediatric nursing students' levels of stress as destructive but interpreted that they have experienced a form of healthy anxiety, which I did not link with a hindrance to their learning.

## **UNFAMILIAR ENVIRONMENT AND EXPERIENCE**

Apart from the fact that performance anxiety may hinder learning, simulation technology and the environment itself may cause anxiety in learners, which may interfere with the learning process (Burbach, Barnason & Hertzog, 2014:12). The paediatric nursing students commented that they experienced discomfort and being somewhat unsettled during the initial stages of the simulation experience:

*And I think that was because of, at first when we were in the simulation, because we have never been there, we have never been in this situation ...*

*... but at first really, for the first, second and third simulation things were just frustrating if I may say so.*

As mentioned earlier, simulation evaluation tool data indicated that the students did not make use of opportunities to familiarise themselves with the simulation environment prior to their first learning experience. In view of efforts to prepare and orientate the students for simulation as a new form of instruction (see Table 4.1), their own lack of interest to prepare for learning events may explain why they made the above-mentioned comments.

Whereas the paediatric nursing students perceived the initial unfamiliarity of simulation as a hindrance to their learning, nursing students in a study by Arundell and Cioffi (2005:299) reported that although they were initially somewhat anxious about simulation, they found the learning experience a good challenge and a clever way to learn. Although I acknowledge that adult learners are less likely to engage in learning when they perceive the learning situation as threatening (Fasokun et al., 2005:54), the paediatric nursing students perceived the simulation learning environment as uncomfortable at the beginning, but not necessarily as threatening. Hence, I concluded that it might rather have been their own lack of interest to prepare for learning events that hindered their learning and not so much the learning environment.

### **NOT PREPARING ONESELF FOR SIMULATION**

Consistent with my observation that the paediatric nursing students were sometimes reluctant to do their homework or do preparatory assignments for contact sessions, some of them acknowledged that they did not prepare for simulation sessions and consequently felt exposed during simulation sessions:

*And the other thing, I don't know if you will see it as I see it ... coming to the simulation unprepared, because we'll be confused and not enjoying ... [and] then you will be exposed if you didn't study fully.*

*... it was actually, the discomfort was brought about by the fact that we were not that knowledgeable ...*

Conversely, data from the evaluation tool (see Table 5.2, Items 12 and 13) revealed a general agreement (total score of 60) among all the students that they did prepare themselves for simulation. In addition, 15 students either agreed (n = 8) or strongly agreed (n = 7) that they did extra reading work to prepare for simulation sessions.

However, the students' reluctance to prepare for simulation sessions was particularly obvious during debriefing sessions when I requested them to explain certain aspects of the simulated patient's condition, such as pathophysiology, or to provide definitions of concepts related to the health problem. In my view, this demonstrated a lack of self-direction, which meant that,

as adult learners, the students did not take responsibility for their learning all of the time (Clark, 2008:59; Knowles et al., 2005:186).

### **RESPONSIVE SIMULATOR**

As mentioned in earlier discussion of results reflected in Theme 1, the responsive simulator appeared to relate to meaningful learning experiences for some of the students. However, instead of perceiving the simulator as a positive contribution to their learning, some students perceived the simulator as distracting and felt it hindered their learning:

*He ... sometimes he cries and he never stops crying. And sometimes he talks and never stops talking, and it's frustrating.*

*The thing with Jonathan, like Jonathan was nagging me.*

*I would say it was irritating in the sense that we were actually focussing on two things ... but now with Jonathan complaining throughout it means now we are not going to reach the goal that we were supposed to ... with Jonathan nagging, it means you lose your concentration.*

According to this contrasting finding, it seemed that the simulator did not appeal to all the students in the same manner. The exact reasons for this are not known, but it is possible that some of the students were more outcome-driven instead of realising the importance of delivering patient-centred care. Hence, for the outcome-driven student, a 'nagging' simulator may be regarded as a hindrance to learning instead of a device that provides feedback on the appropriateness of nursing actions and as a result could help them to reach the outcome. Another idea that might be worth investigating in future is whether the students purely perceive the simulator as a device capable of some technical capabilities and are therefore not able to suspend disbelief and perform patient-centred care at all times during scenarios. The students' contrasting perceptions regarding the simulator motivated me to reconsider the degree of immersion that some students achieve during scenarios and to what extent the simulator plays a role therein. Nevertheless, I did not experience the simulator as an actual hindrance to the students' learning. I felt that it was rather an issue of some students being annoyed with the simulator at times.

### **LACK OF GUIDANCE**

Data from the evaluation tool (see Table 5.2, Item 24) revealed that four (24%) students agreed and 12 (70%) strongly agreed that they received enough feedback on their performance during the debriefing sessions. In contrast with this finding, focus group data suggested that some of the students felt that inadequate guidance was provided, which resulted in a hindrance to learning:

*... like the time when Ma'am didn't give us the objectives, and then we lose track a little bit because we are used to her giving us objective, 'You must reach this.' The other time she just said, 'Nurse this patient' and then we lost a little bit of focus, we didn't know how to go about it.*

The following comment indicates that some students wanted answers instead of going through the slightly uncomfortable process of reflection-on-action or self-assessment on performance:

*And I think again the discomfort, it was caused, sometimes when you come for debriefing Ma'am wouldn't tell you that you're not supposed to do this ... instead of doing this you are supposed to have done this. [O]r sometimes she just gives you homework to go and study, next time when you come and you didn't get the answer, go back and get the answer ...*

One student commented that a facilitator should be available to guide them for least four simulations until they get used to the situation:

*... but at the first time maybe it would have been better if someone would have been there for the first two, three four simulations until we could really get used to them ...*

Since I was dedicated to guiding the students in their process of learning through simulation, I found the contrasting findings between focus group and evaluation instrument data somewhat confusing. What the students perceived as a hindrance to learning, I viewed as an initial reluctance to find their own solutions to some of the questions that they had about their performance. Since I deliberately continued to foster independent learner behaviour, their comments about a lack of guidance might relate to a time when they were required to make the transition from being dependent on me to becoming more independent and self-regulated (Collins & Martin, 2010:198; Fasokun et al., 2005:19,23). Based on other portions of data as described under the results of Theme 1, which indicated an eventual independence and greater responsibility for their own learning, I concluded that their initial discomfort actually became a motivator to develop self-direction as one of the important characteristics of adult learning.

This insight could be verified by results from the simulation evaluation tool where all (n=17, with a total score of 59) either agreed or strongly agreed that the debriefing had helped them to improve on performance during next simulation sessions (see Table 5.2, Item 27). Likewise, the finding that 94% of the students responded that they wanted to watch the video of the simulation during debriefing sessions (Table 5.2, Item 25) implied that they appreciated opportunities to view their own performance and learn from errors. According to Alinier et al. (2004:204), video playback as a form of immediate feedback is an important aspect of the simulation session as it is meant to help students reflect positively about their

experience with the patient simulator. Likewise, Fanning and Gaba (2007:122) endorse video playback since it may provide students with a more realistic perspective of their performance in a scenario than oral feedback alone.

In my view, the paediatric nursing students did receive adequate feedback about their progress in order to understand how to focus their learning efforts. Therefore, I again attributed the students' comments about a lack of guidance to the initial discomfort adult learners sometimes experience when they are introduced to learning methods they are not used to (Gravett, 2005:15).

## 5.6 Reflection on the Outcome of the Third Action Cycle

The purpose of data collection in the third cycle was twofold. Apart from gathering data to determine the efficiency of the strategy in terms of providing meaningful simulation learning experiences, I also used data to describe the outcome of the action items that were implemented at the beginning of Cycle 3 (see Table 5.1). Table 5.3 provides a summary of the adjustments that had been made to the strategy document and the outcomes that resulted from actions taken.

**Table 5.3: Summary of the adjustments made to the strategy document and the outcomes thereof**

Topic	Change/Addition	Outcomes based on data
Preparing students for simulation learning experiences	<ol style="list-style-type: none"> <li>1. Reinforce the principles and practice of correct medication administration to children</li> <li>2. Agree to foster a culture of zero error in medication administration</li> </ol>	<ol style="list-style-type: none"> <li>1. Data revealed changes in the students' perception about their habits of ineffective practice with regard to medication administration and child nurse practice</li> <li>2. Data rendered significant evidence that this action item had a positive outcome in terms of the students' medication administration practice</li> </ol>
Enhancing realism	<ol style="list-style-type: none"> <li>1. Reinforce the use of a checklist to control the availability and realism of equipment and medical supplies needed for specific scenarios</li> <li>2. Reinforce the necessity to rehearse a scenario so that modifications could be made in time</li> </ol>	<ol style="list-style-type: none"> <li>1. Data rendered evidence that the students perceived the simulation environment as authentic and that equipment and documentation used during scenarios were relevant</li> <li>2. Although the omission of this action item was an ongoing issue as explained earlier, there were no data that proved the omission of scenario rehearsal as a hindrance to the students' learning experiences</li> </ol>
Briefing	<ol style="list-style-type: none"> <li>1. Create an academically safe environment by orientating students to the simulation environment prior to simulated scenarios</li> </ol>	<ol style="list-style-type: none"> <li>1. Data confirmed that the students perceived the simulation environment as academically safe</li> </ol>
Simulated scenarios	<ol style="list-style-type: none"> <li>1. Create opportunities to practise the principles of correct medication</li> </ol>	<ol style="list-style-type: none"> <li>1. Data rendered significant evidence that this action item had a positive outcome in terms</li> </ol>

Topic	Change/Addition	Outcomes based on data
	administration to children during every simulated scenario	of the students' medication administration practice as well as the acquisition of skills
Debriefing	<ol style="list-style-type: none"> <li>1. Allow more time for debriefing sessions: 60–90 minutes per session</li> <li>2. Reinforce the use of video playback as a form of feedback</li> <li>3. Adhere to the culture of zero error in medication administration by discussing students' performance in this regard</li> <li>4. Continue to foster independent learner behaviour by requiring students to develop action plans to improve their performance during simulated scenarios</li> </ol>	<ol style="list-style-type: none"> <li>1. Quantitative data confirmed that the time spent on debriefing was adequate</li> <li>2. Data support that this action was beneficial in terms of creating an opportunity to review and evaluate the effectiveness of the students' interventions</li> <li>3. Data revealed significant changes in the students' perception about their habits of ineffective practice with regard to medication administration</li> <li>4. Data confirmed that that the students had developed a sense of independence and self-confidence as learners</li> </ol>

## 5.6 Conclusion

The outcomes of Cycle 3 suggested that the strategy document was ready to be finalised. The data revealed that through practice and skills development the students moved through to being able to recognise simulation as a meaningful learning experience. The students reported feeling more self-confident, knowledgeable, and able to work successfully as members of a team. By using the principle of scaffolding as well as through a process of self-assessment, the students became less dependent on someone to guide them through their learning processes. Due to sustained growth and increased competence, the students developed a sense of salience with regard to correct child health practices and eventually believed that they could successfully perform the role of an advanced paediatric nurse. Importantly, through these interactions, the students started to articulate their thoughts about learning that helped me to better consider my teaching. Before I used action research, the only expected outcome of my teaching was improved student performance. Therefore, I was only really interested in the students getting as close to the 'perfect' or 'expert' performance level as possible. However, through the process of three action cycles, I discovered the significant role that I had to play in making a learning experience meaningful, be it a simulation learning experiences or other modes of instruction. I reflect on my own transformation as a result of this research in the final chapter where I make my final conclusions and recommendations. In the following chapter, I present the third action step of Cycle 3, namely the finalised strategy for meaningful simulation learning experiences.

# Chapter 6

## A Strategy for Meaningful Simulation Learning Experiences

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### 6.1 Introduction

The purpose of my study was to develop a strategy for meaningful simulation learning experiences in a postgraduate paediatric nursing programme. Finalising the strategy document was the third action step taken in Cycle 3. In this chapter, I present the final strategy document.

### 6.2 Final strategy document

In an attempt to answer the research question: *How can meaningful simulation learning experiences be achieved in a postgraduate paediatric nursing programme?* I conducted action research to implement and refine several action items intended to provide the paediatric nursing students with meaningful simulation learning experiences. The strategy is grounded on the principles of constructivist learning theory and Kolb's experiential learning theory. Although I initially included Knowles's adult learning theory in my theoretical framework, data from the first cycle revealed that the paediatric nursing students did not display the characteristics of adult learners as proposed by Knowles. Hence, I did not apply the theory to explain the paediatric nursing students' simulation learning experiences. However, I used the characteristics of adult learners as described by Knowles to guide and adapt my approach to the paediatric nursing students by incorporating steps to foster independent and self-directed learner behaviour.

Within the boundaries of my theoretical framework, I made use of literature on simulation practice, instructional design applied in the paediatric nursing programme, and my own experience and reflection to compile a strategy for meaningful simulation learning experiences. The final strategy is a synthesis of research conducted over a series of three action cycles and is not intended as a step-by-step information guide for the successful implementation of simulation but is meant to enhance the quality of postgraduate nursing students' simulation learning experiences.

The final strategy is presented in Table 6.1. The document consists of five sections, each with its own action items, motivations for action items and expected outcomes upon implementation. The strategy document is described in section 6.2 that follows Table 6.1.

**Table 6.1: A strategy for meaningful simulation experiences**

<b>Scenario Design</b>		
<b>Action Item</b>	<b>Motivation</b>	<b>Expected outcomes</b>
1. Use a simulation development template to design appropriate simulated scenarios	<ul style="list-style-type: none"> <li>• To maintain constructive alignment</li> <li>• To avoid discrepancies between content presented in classrooms and scenario objectives</li> <li>• To establish the level of intended simulation fidelity</li> </ul>	<ul style="list-style-type: none"> <li>• Active student engagement</li> <li>• Attainment of learning outcomes</li> <li>• Transfer of learning</li> <li>• Consistent and purposeful learning experiences</li> </ul>
2. Continuously align learning material and outcomes of simulated scenarios with best practice guidelines	<ul style="list-style-type: none"> <li>• To create realistic simulated scenarios through which students can engage in experiential learning and the construction of meaningful knowledge</li> <li>• To develop practice-related competence</li> <li>• To promote knowledge translation</li> </ul>	<ul style="list-style-type: none"> <li>• Suspension of disbelief</li> <li>• Optimal immersion in the learning experience</li> <li>• Meaningful knowledge construction</li> <li>• Demonstrate evidence of best practice</li> </ul>
3. Develop a variety of scenarios based on different patient conditions	<ul style="list-style-type: none"> <li>• To broaden the scope of learning experiences</li> <li>• To enhance learning by emphasising key healthcare principles in different scenarios</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate competence in nursing patients with different conditions</li> </ul>
4. Incorporate a gradual increase in scenario complexity until objectives align with the intended learning outcomes	<ul style="list-style-type: none"> <li>• To develop a comfort level and confidence in participation</li> <li>• To manage cognitive load</li> <li>• To enhance constructivist learning</li> </ul>	<ul style="list-style-type: none"> <li>• Achievement of learning outcomes</li> <li>• Competence in the care of complex patients</li> </ul>
5. Design simulated scenarios in collaboration with simulation team members	<ul style="list-style-type: none"> <li>• To enhance the quality of scenarios</li> <li>• To ensure that standardised information communicated to participants</li> </ul>	<ul style="list-style-type: none"> <li>• Successful implementation of simulation learning experiences</li> <li>• Students have a positive experience of simulation</li> </ul>

<b>Orientating students for simulation</b>		
<b>Action Item</b>	<b>Motivation</b>	<b>Expected outcomes</b>
1. Present an information session about the use of simulation as a teaching and learning strategy	<ul style="list-style-type: none"> <li>To alleviate initial anxiety felt regarding simulation as a learning activity</li> </ul>	<ul style="list-style-type: none"> <li>Moderate anxiety experienced prior to first simulation learning experiences</li> </ul>
2. Provide students with a detailed orientation to the simulation environment by implementing the following actions: <ul style="list-style-type: none"> <li>Demonstrate the features, capabilities and limitations of the simulators</li> <li>Show a video about the features of the simulators</li> <li>Demonstrate the function of all equipment used during scenarios</li> <li>Indicate where medical and other supplies are kept</li> <li>Allow students to explore the environment under the supervision of a simulation team member</li> </ul>	<ul style="list-style-type: none"> <li>To manage initial cognitive load</li> <li>To avoid unrealistic expectations during scenarios</li> <li>To avoid wasting time looking for equipment and supplies, as well as figuring out how equipment functions</li> <li>To create positive simulation learning experiences from the beginning</li> </ul>	<ul style="list-style-type: none"> <li>Moderate anxiety experienced prior to first simulation learning experiences</li> <li>Student engagement from the onset</li> <li>Student satisfaction</li> </ul>
<b>Preparing the environment prior to simulation learning experiences</b>		
1. Enhance realism by implementing the following actions: <ul style="list-style-type: none"> <li>Use a checklist and control the availability of equipment and medical supplies</li> <li>Provide realistic documentation and medical supplies</li> <li>Use props, e.g. dress simulator in pyjamas or hospital attire</li> <li>All team members and students wear professional attire</li> </ul>	<ul style="list-style-type: none"> <li>To give students a learning experience that is as authentic as possible</li> <li>To promote suspension of disbelief</li> </ul>	<ul style="list-style-type: none"> <li>Suspension of disbelief</li> <li>Optimal immersion in the learning experience</li> </ul>
2. Perform a scenario rehearsal before implementing new or adapted scenarios	<ul style="list-style-type: none"> <li>To prevent unnecessary distraction and confusion due to equipment failure</li> <li>To avoid frustration due to a lack of supplies required to perform nursing tasks</li> </ul>	<ul style="list-style-type: none"> <li>Successful implementation of simulation learning experiences</li> <li>Student engagement</li> <li>Student satisfaction</li> </ul>

Preparing students for simulation learning experiences		
Action Item	Motivation	Expected outcomes
1. Activate existing knowledge before presenting new learning material	<ul style="list-style-type: none"> <li>To determine what students know or have experienced regarding healthcare matters</li> <li>To enable students to self-assess their knowledge and skills</li> <li>To prevent students from using incorrect knowledge schemas to construct new knowledge</li> </ul>	<ul style="list-style-type: none"> <li>Students become aware of their own knowledge schemas</li> <li>Deconstruction of incorrect thought patterns and/or nursing practices AND/OR</li> <li>Confirmation of correct thought patterns and/or nursing practice</li> </ul>
2. Engage with new information	<ul style="list-style-type: none"> <li>To build on existing or recently constructed knowledge</li> <li>To promote deep learning as a result of a meaning-making process by the student</li> <li>To prevent students from constructing new knowledge using incorrect knowledge schemas</li> </ul>	<ul style="list-style-type: none"> <li>Enhanced/deep learning</li> </ul>
3. Provide information about upcoming scenarios a week prior to the simulated scenario	<ul style="list-style-type: none"> <li>To give students time to self-prepare</li> <li>To promote deep learning during scenarios</li> <li>To avoid transfer failure</li> </ul>	<ul style="list-style-type: none"> <li>Transfer of learning</li> <li>Knowledge construction</li> </ul>

Execution of simulation learning experiences			
	Action Item	Motivation	Expected outcomes
Briefing	1. Randomly assign two to three students per group	<ul style="list-style-type: none"> <li>To keep groups equal and as small as possible</li> <li>To promote interdependence and teamwork</li> </ul>	<ul style="list-style-type: none"> <li>Equal participation during simulated scenarios</li> <li>Skills transfer from more experienced to less experienced members</li> </ul>
	2. Keep group members the same for subsequent simulated scenarios	<ul style="list-style-type: none"> <li>To establish a community of learning</li> </ul>	<ul style="list-style-type: none"> <li>Enhanced teamwork</li> <li>Enhanced communication skills</li> <li>Co-construction of knowledge</li> </ul>
	3. Assign and clarify appropriate participant roles	<ul style="list-style-type: none"> <li>To promote teamwork</li> <li>To avoid role confusion during scenarios</li> </ul>	<ul style="list-style-type: none"> <li>Enhanced teamwork skills</li> </ul>
	4. Brief students regarding the purpose of simulation learning experiences, scenario objectives, the environment and time allowed per scenario	<ul style="list-style-type: none"> <li>To create realistic expectations</li> <li>To reduce anxiety</li> <li>To encourage participation</li> <li>To manage cognitive load</li> </ul>	<ul style="list-style-type: none"> <li>Less anxiety experienced prior to and during simulation learning experiences</li> <li>Student engagement</li> <li>Enhanced learning</li> </ul>
Simulated scenario	1. Facilitator to accompany students only during their first and possibly second simulated scenario	<ul style="list-style-type: none"> <li>To help students ease into a new learning experience</li> <li>To role model higher-level thinking skills</li> <li>To develop independent learner behaviour through scaffolding</li> </ul>	<ul style="list-style-type: none"> <li>A positive first simulation learning experience</li> <li>Improved self-confidence</li> <li>Independent thinking</li> <li>Independent learner behaviour</li> </ul>
	2. Extend time for scenarios in cases where students do not complete their tasks within the given timeframe	<ul style="list-style-type: none"> <li>To allow enough time for knowledge construction and experiential learning</li> </ul>	<ul style="list-style-type: none"> <li>Knowledge construction</li> <li>Student satisfaction</li> <li>Meaningful discussion during debriefing sessions</li> </ul>
	3. Provide at least seven to ten simulated scenarios at intervals of three to four weeks	<ul style="list-style-type: none"> <li>To promote elaborate rehearsal</li> <li>To promote deliberate practice</li> <li>To change habits of ineffective practice</li> <li>To manage cognitive load</li> <li>To facilitate active experimentation</li> </ul>	<ul style="list-style-type: none"> <li>Deep learning</li> <li>Improved competence</li> <li>Knowledge construction</li> <li>Skill acquisition</li> <li>Replacement of incorrect thought patterns and/or nursing practices by corrected knowledge and practice</li> </ul>

Debriefing	1. Conduct debriefing as soon as possible after scenarios in a venue other than the simulated scenario	<ul style="list-style-type: none"> <li>• To integrate experiences into an existing knowledge base</li> <li>• To shift from a state of action to a state of reflection-on-action</li> <li>• To avoid delayed reflection-on-action</li> <li>• To facilitate abstract conceptualisation</li> </ul>	<ul style="list-style-type: none"> <li>• Students develop reflection-on-action skills</li> <li>• Students remain engaged during debriefing sessions</li> <li>• Enhanced learning</li> </ul>
	2. Assist students in expressing their emotional responses at the beginning and at the conclusion of the debriefing	<ul style="list-style-type: none"> <li>• To facilitate emotional release</li> <li>• To redirect attention to reflection-on-action</li> <li>• To ensure that thorough emotional release was achieved</li> </ul>	<ul style="list-style-type: none"> <li>• Student engagement</li> <li>• Enhanced learning</li> </ul>
	3. Use video playback of simulated scenarios as a form of feedback	<ul style="list-style-type: none"> <li>• To facilitate reflection-on-action</li> <li>• To provide students with a realistic perspective of their performance</li> </ul>	<ul style="list-style-type: none"> <li>• Self-determination of areas for improvement</li> <li>• Making meaning of scenario incidents</li> </ul>
	4. Facilitate reflection-on-action	<ul style="list-style-type: none"> <li>• To facilitate reflective observation</li> <li>• To facilitate abstract conceptualisation</li> <li>• To promote the development of thinking operations</li> </ul>	<ul style="list-style-type: none"> <li>• Increased ability to link theory with practice</li> <li>• Independent thinking</li> <li>• Paradigm shift</li> </ul>
	5. Conduct debriefing in a non-judgmental manner	<ul style="list-style-type: none"> <li>• To encourage student participation and learning</li> <li>• To decrease feelings of anxiety and intimidation</li> </ul>	<ul style="list-style-type: none"> <li>• Trusting relationship between facilitator and students</li> <li>• Environment that is conducive to learning</li> </ul>
	6. Facilitate the development of action plans for performance improvement	<ul style="list-style-type: none"> <li>• To develop independent learner behaviour</li> <li>• To encourage ownership of own learning</li> </ul>	<ul style="list-style-type: none"> <li>• Independent learner behaviour</li> <li>• Self-directed readiness</li> </ul>
	7. Schedule the time for debriefing sessions approximately one and a half times longer than simulated scenarios	<ul style="list-style-type: none"> <li>• To allow sufficient time for reflective observation</li> <li>• To allow sufficient time for abstract conceptualisation</li> <li>• To allow time for video playback as a means of self-assessment</li> </ul>	<ul style="list-style-type: none"> <li>• Meaningful knowledge construction</li> <li>• Student satisfaction</li> </ul>

### **6.2.1 Scenario design**

Since I see appropriate scenario design as the point of departure in ensuring meaningful simulation learning experiences, I begin by describing the action items intended to guide the development of simulated scenarios.

#### **ACTION ITEM 1:**

##### **USE A SIMULATION DEVELOPMENT TEMPLATE TO DESIGN APPROPRIATE SIMULATED SCENARIOS**

Using a template enables the designer to consider factors such as the type of training programme and the learning objectives intended through simulation (Alinier, 2011:13; Jeffries, 2005:100). While some educators make use of previously designed scenarios, I declined from following this practice because previously designed scenarios were often inappropriate for the training level of the paediatric nursing students and did not always match the patient conditions presented in the programme. As explained earlier, I used a uniquely designed template that is underpinned by principles of scaffolding, authenticity, and constructive alignment to develop simulated scenarios (see 1.6.3). Hence, I was able to establish the level of simulation fidelity intended, and aligned the learning activities encountered during simulated scenarios with teaching activities and assessment tasks presented in the classroom or the clinical area prior to the simulation learning experience (see Appendix B). As a result, there were no discrepancies between learning activities in the classroom and expected learning tasks during simulated scenarios, thus the paediatric nursing students were enabled to engage actively in learning during simulated scenarios and achieve the learning outcomes. The simulation learning experiences were consistent and purposeful, which helped the students to transfer classroom learning to the simulation environment.

#### **ACTION ITEM 2:**

##### **CONTINUOUSLY ALIGN LEARNING MATERIAL AND OUTCOMES OF SIMULATED SCENARIOS WITH BEST PRACTICE GUIDELINES**

Due to ongoing demands and changes in the delivery of health care, it is important that educators stay informed regarding current healthcare practices. A meaningful transition from the learning environment to healthcare practice can be achieved by aligning course content with current trends in health care (Foronda et al., 2013:e413). In an effort to present the paediatric nursing students with appropriate learning activities during simulated scenarios, I deliberately ensured that scenarios were realistic in terms of what students are likely to experience in child healthcare settings. Hence, during simulated scenarios, the students engaged in experiential learning and had numerous opportunities to gain information and to

construct knowledge related to their work as paediatric nurses (see 1.6). The outcome was suspension of disbelief, which helped the students to achieve optimal immersion during scenarios. In addition, the data suggested the construction of relevant knowledge and the ability to demonstrate evidence of best practice (see Table 5.2 and 5.5.1.3).

**ACTION ITEM 3:**

**DEVELOP A VARIETY OF SCENARIOS BASED ON DIFFERENT PATIENT DIAGNOSES**

Different scenarios were developed to broaden the paediatric nursing students' scope of patient care (see Table 3.2) and to enhance learning by emphasising care principles in the respective simulated scenarios (Bultas, 2011:228; Garrett et al., 2010:312). The outcome was that the paediatric nursing students demonstrated competence in planning and implementing nursing care in a variety of paediatric-related conditions.

**ACTION ITEM 4:**

**INCORPORATE A GRADUAL INCREASE IN SCENARIO COMPLEXITY UNTIL OBJECTIVES ALIGN WITH THE EXIT LEVEL OUTCOMES OF THE TRAINING PROGRAMME**

Since most postgraduate students at the UFS School of Nursing had not encountered simulation learning experiences before, I decided to follow a recommendation by Beauchesne and Douglas (2011:32) to increase the complexity of scenarios gradually until the objectives aligned with the exit level outcomes of the training programme (see Table 4.3). The purpose was to help the paediatric nursing students in developing a comfort level and confidence in participation. Other reasons included cognitive load management (see 4.2.1.2), and the enhancement of constructivist learning in the sense that students would be required to integrate new incoming information with what had been learned in previous scenarios (Biggs & Tang, 2011:27; Clark, 2008:22). The outcome was that the paediatric nursing students reached the learning outcomes intended and developed competence in the care of complex patients.

**ACTION ITEM 5:**

**DESIGN SIMULATED SCENARIOS IN COLLABORATION WITH SIMULATION TEAM MEMBERS**

Planning and implementing simulation learning experiences is not an individual endeavour. Often, educators do not have as much knowledge and experience with simulation as members of the simulation team have. Hence, a team effort enhances the quality of scenarios. In addition, working together on scenario development ensures that all team members are acquainted with the scenario script and intended learning objectives, which prevents them from giving confusing information to scenario participants (Alinier, 2011:12). The result of cooperation between me and members of the simulation team was the

successful implementation of simulation learning experiences, which helped the paediatric nursing students to have a positive experience of simulation.

## **6.2.2 Orientating students for simulation**

Through the process of three action cycles, I realised that a thorough orientation of students who have never been in a simulation environment before should be a priority. Partial or unstructured orientation leads to unnecessary student dissatisfaction and heightened anxiety levels that may challenge learning (Arthur et al., 2013:1360; Page-Cuttrara, 2014:137) and negatively influence students' experience of simulation. Students should therefore not be expected to participate in simulation learning experiences if they have not been thoroughly orientated to the environment.

### **ACTION ITEM 1:**

#### **PRESENT AN INFORMATION SESSION ON THE USE OF SIMULATION AS A TEACHING AND LEARNING STRATEGY**

As mentioned earlier, not all postgraduate students may have had exposure to simulation learning events. It is therefore necessary to explain the purpose of simulation and point out features of simulation, such as the differences between low- medium- and high-fidelity simulations. Our simulation coordinator presented an information session that helped the paediatric nursing students to get an idea of what they will encounter during simulation learning experiences thereby reducing their anxiety related to simulation as a new learning strategy for them. Although the paediatric nursing students still felt anxious prior to their first simulation learning experiences, their apprehension was not of a debilitating nature because they mentioned simulation as enjoyable in an environment that is conducive to learning (see Table 5.3 and 5.5.1.1).

### **ACTION ITEM 2:**

#### **PROVIDE STUDENTS WITH A DETAILED ORIENTATION TO THE SIMULATION ENVIRONMENT**

Apart from providing information to students about the purpose and features of simulation, they should also be introduced to the simulation environment prior to their first simulation learning experience. Following the information session, the paediatric nursing students watched a video about the features of the simulators used during scenarios, where after they received a bedside demonstration of the features and capabilities of the simulators and how the simulator is operated. The limitations of simulators were indicated to prevent unrealistic expectations and disappointment during scenarios. Likewise, the students were given a demonstration of how equipment functions because the apparatus may be different from the model used in clinical areas. We showed them where medical stock and other supplies were

stored so that they would not waste time looking for equipment or stock. After all the demonstrations, the students were allowed to explore the environment under the supervision of a simulation team member to assist them when necessary. The students were made aware that all simulation learning experiences would be videotaped and that members of the simulation team would observe their performance from a remote location.

The outcomes of these actions were that, although the students were still anxious prior to simulation, they concurred with Cato (2013:144) that they did not experience debilitating anxiety that could negatively affect their learning. They actively engaged with learning tasks from the outset without having to waste time getting used to the environment first. The data also confirmed that the students experienced a sense of satisfaction in being thoroughly orientated to the environment (see 5.5.1.1).

### **6.2.3 Preparing the environment for simulation learning experiences**

Meaningful learning through simulation is related to realism. In order to prepare students for clinical practice through simulation, a realistic environment should be created to promote learning (Bland et al., 2011:666; Glavin, 2008:119). I endeavoured to create as realistic a simulation environment as possible by implementing the action items suggested below. A detailed description of the layout of the venue where students participated in simulated scenarios laboratory was provided in Chapter 1 (see 1.1).

#### **ACTION ITEM 1:**

##### **ENHANCE REALISM BY ENSURING AN AUTHENTIC ENVIRONMENT**

The simulation development template that I used for scenario development contains a section used for planning the necessary supplies and documentation required during scenarios (see Appendix B). In addition, I used a checklist developed by the simulation coordinator to control the availability of equipment required. To create a further sense of reality, props were used as described in Table 6.1, and I requested that all participants and simulation team members wear their professional dress. The outcomes included suspension of disbelief and optimal immersion during learning events because the students perceived the environment as realistic (see 5.5.1.1).

#### **ACTION ITEM 2:**

##### **PERFORM A SCENARIO REHEARSAL BEFORE IMPLEMENTING NEW OR ADAPTED SCENARIOS**

Although this action item did not realise during the course of my study, I recommend its inclusion in the strategy because it will help to prevent inconsistencies in terms of documentation and avoid malfunction of equipment, all of which could lead to frustration and

dissatisfaction among students (Aebersold et al., 2012:e473; Spinner-Gelfars, 2013:100). The proposed outcomes would be the successful implementation of simulation learning experiences, enhanced student engagement and satisfaction because they are not unnecessarily distracted during scenarios.

#### **6.2.4 Preparing students for simulation learning experiences**

Preparing students for simulation learning experiences begins in the classroom and practice setting. Congruent with standard practice at the UFS School of Nursing, students do not participate in simulation learning experiences unless they have been prepared academically. In keeping with the instructional design that I have described in Chapter 1 (see 1.6), I included action items in the strategy that are intended to create meaningful simulation learning experiences underpinned by the principles of constructivism as a learning theory and experiential learning.

##### **ACTION ITEM 1:**

##### **ACTIVATE EXISTING KNOWLEDGE BEFORE PRESENTING NEW LEARNING MATERIAL**

As explained in Chapter 1, knowledge construction occurs when new information is integrated into existing knowledge schemas (Botma, 2015:503). Activation of existing knowledge that is relevant to new content will optimise this integration process (Clark, 2008:55). Hence, new learning material should not be presented before determining whether students have had any experience relevant to the topics or content presented in the course. This helps students to self-assess their current knowledge and skills and it enables the educator to determine what students know and how much experience they have had in nursing patients with specific health problems. The educator can then incorporate measures to resolve incorrect ideas or practices before students participate in simulation. An example in this study was the discovery that the paediatric nursing students had incorrect medication administration practices. I consequently planned a contact session that served as an attempt to deconstruct their incorrect thought patterns. Through specific steps taken as described in Chapter 5 (see 5.2.1.1), correct information was provided and the students were ready to integrate new knowledge with existing knowledge as described by the following action item.

##### **ACTION ITEM 2:**

##### **ENGAGE WITH NEW INFORMATION**

In preparation for simulated scenarios, I facilitated the integration of new knowledge with existing knowledge through activities such as group work sessions in class, paper cases, pen-and-paper exercises, and journal club meetings. In terms of medication administration, I included learning activities as described earlier. The students also attended demonstrations

of specific psychomotor skills required from advanced practitioners (see Table 4.3) which they then practised under the supervision of a preceptor in clinical areas or laboratory. According to constructivist learning theory these actions promote deep learning because of a meaning-making process experienced by the student (Botma et al., 2015:503). In determining the paediatric nursing students' knowledge schemas beforehand, I could help the students to deconstruct incorrect schemas thereby preventing them from constructing new knowledge using erroneous thought patterns. This process helped the paediatric nursing students to develop correct nursing practices during simulated scenarios (see 5.5.1.3).

**ACTION ITEM 3:**

**PROVIDE INFORMATION ABOUT UPCOMING SCENARIOS A WEEK PRIOR TO THE SIMULATED SCENARIO**

The topics and objectives of simulated scenarios should be communicated to students in advance so that they have time to engage with learning material in preparation for simulation learning experiences. Through self-preparation, students retrieve information from long-term memory and apply it during learning tasks, which results in learning transfer. Conversely, when retrieval does not occur, the result is transfer failure (Clark, 2008:57).

The paediatric nursing students realised the importance of self-preparation and that by not doing so, they missed opportunities for deep learning to take place. Based on the apparent importance of self-preparation, I include this action item in the strategy because students who do indeed self-prepare will experience deep learning and knowledge construction when they integrate previously learned information with the learning activities presented in the simulated scenarios.

## **6.2.5 Execution of simulation learning experiences**

In this study, a simulation learning experience was comprised of a pre-simulation briefing session, the simulated scenario, and the post-scenario debriefing session. The action items of each component are discussed separately in the sections below.

### **6.2.5.1 Briefing**

**ACTION ITEM 1:**

**RANDOMLY ASSIGN TWO TO THREE STUDENTS PER TEAM**

Since the paediatric nursing students came from different healthcare settings and had different skill sets, I randomly assigned members to a group in an attempt to equalise the groups (see 3.2.2.1). By deliberately keeping the groups small enough (three to four members), a situation was created where the students became interdependent on each

other, which stimulated the advancement of teamwork and communication skills. Smaller groups allowed for equal participation during simulated scenarios and skills transfer from more experienced to less experienced members (see 5.5.1.3).

**ACTION ITEM 2:**

**KEEP GROUP MEMBERS THE SAME FOR SUBSEQUENT SIMULATED SCENARIOS**

By keeping group members the same, a community of learning was established (see 1.6). Group members had several opportunities to get used to each other and to co-construct knowledge. Hence, teamwork was enhanced and they developed effective communication skills (see 5.5.1.3).

**ACTION ITEM 3:**

**ASSIGN AND CLARIFY APPROPRIATE PARTICIPANT ROLE**

Role identification should be supported by clear guidelines about what is expected from each participant because it promotes teamwork (Beauchesne & Douglas, 2011:30) and avoids role confusion during scenarios. The paediatric nursing students assumed roles relevant to their profession and training level (e.g. 'Sister-in-charge'; registered nurse 1, 2 and 3) to ensure that they had the required knowledge and skills to perform distinct tasks during scenarios. Roles were rotated for subsequent scenarios. Since team members understood each other's roles they could effectively participate in a team approach in reaching scenario objectives. The outcome was enhanced teamwork skills as demonstrated by research results (see Table 5.2 and Figure 5.1)

**ACTION ITEM 4:**

**BRIEF STUDENTS REGARDING THE PURPOSE OF SIMULATION LEARNING EXPERIENCES, SCENARIO OBJECTIVES, THE ENVIRONMENT AND TIME ALLOWED PER SCENARIO**

In an attempt to mitigate anxiety prior to simulated scenarios, I reassured the students that simulation is not used as a form of assessment, but as a learning opportunity. Following role clarification, the students received the scenario objectives and a timeframe for reaching objectives to avoid unrealistic expectations. The briefing was concluded by a mini-orientation to the environment as requested by the students and served as an effort to reduce cognitive load, as explained earlier. Proper briefing resulted in less anxiety experienced prior to and during simulation learning experiences, and students could actively engage during scenarios because they knew what was expected of them (see 5.5.1.1).

### **6.2.5.2 Simulated scenario**

In terms of Kolb's experiential learning cycle, the students' participation in the simulated scenario represents the concrete experience phase when they become actively involved in the experience (Clapper, 2010:e10) and begin to make meaning of previously introduced information. They now have the opportunity to progress to a stage of competence through activities that are designed to improve performance (Botma et al., 2015:504).

#### **ACTION ITEM 1:**

##### **FACILITATOR TO ACCOMPANY STUDENTS DURING THEIR FIRST SIMULATED SCENARIO**

As explained earlier (see 6.2.1), the scenarios were developed to allow a gradual increase in the level of complexity. However, to provide initial guidance and to create a positive first simulation learning experience, a facilitator accompanied the paediatric nursing students during their first simulation learning experience. She acted as a role model for higher-level thinking skills such as critical thinking and clinical judgment. Thenceforth, the facilitator was not present during subsequent scenarios but remotely observed the students' performance to stimulate independent learner behaviour. Although the students could request assistance when necessary, they were discouraged from doing so and rather advised to rely on each other to achieve scenario objectives. The data suggested that the application of scaffolding resulted in student satisfaction, independent thinking, self-confidence, independent learner behaviour and enhanced teamwork (see Table 5.3 and Figure 5.1).

#### **ACTION ITEM 2:**

##### **EXTEND TIME FOR SCENARIOS IN CASES WHERE STUDENTS DO NOT COMPLETE THEIR TASKS WITHIN THE GIVEN TIMEFRAME.**

The construction of knowledge during simulated scenarios is a meaning-making process and takes time to complete. Congruent with mature learners' need to have enough time for learning tasks, the paediatric nursing students seemed to appreciate extra time to complete nursing interventions during simulated scenarios. By being allowed more time, they could complete important activities such as the calculation of daily fluids or using baseline data to compile a nursing care plan, which assisted appropriate knowledge construction. Completed tasks facilitated meaningful discussion during debriefing sessions because apparent mistakes (e.g. wrong methods used for fluid calculation, incorrect nursing diagnoses) were identified, which helped me to understand the areas where the students still needed improvement. Student satisfaction could be achieved because appropriate feedback was provided.

### **ACTION ITEM 3:**

#### **PROVIDE AT LEAST SEVEN TO TEN SIMULATED SCENARIOS AT INTERVALS OF THREE TO FOUR WEEKS**

Apart from having more opportunities for elaborative rehearsal – which is congruent with deep learning and the construction of knowledge (see 4.2.1.3) – subsequent simulation learning experiences gave the paediatric nursing students the opportunity to fully complete Kolb's experiential learning cycle in a safe environment (Brackenreg, 2004:267; Stocker et al, 2014:3,7). By participating in several simulation learning experiences the paediatric nursing students could not only build on what they already knew (Biggs & Tang, 2011:27), but they could test new knowledge gained from a previous scenario and create new experiences during subsequent scenarios.

In an attempt to change the students' habits of ineffective practice, the repetition of scenarios resulted in the replacement of incorrect thought patterns and nursing practices with correct knowledge and practice. In keeping with the principles of deliberate practice, the students improved on their skills and progressed from lesser to higher levels of competence (see Table 5.2 and 5.5.1.3).

In adherence to a recommendation by Clark and Harrelson (2002:156), I scheduled the simulation learning experiences at intervals of three to four weeks during the respective semesters to avoid cognitive overload and yield better learning. Hence, the students had time in between simulation learning experiences to reflect on previous experiences and gather ideas on improving their performance in subsequent scenarios.

#### **6.2.5.3 Debriefing**

Debriefing is the most important tool by which to assist students in learning from simulation experiences, as this is where the learning and processing of new information occurs (Dreifuerst, 2009:110; Issenberg et al., 2005:21; Mayville, 2011:35). The action items suggested in the section below are not intended as a standardised process for debriefing but rather a combination of principles that I applied to facilitate learning during debriefing sessions.

### **ACTION ITEM 1:**

#### **CONDUCT DEBRIEFING AS SOON AS POSSIBLE AFTER COMPLETION OF THE SCENARIO IN A VENUE OTHER THAN THE SIMULATED SCENARIO**

Conducting the debriefing as soon as possible following a scenario helps students to decompress and integrate experiences into their knowledge base (Cantrell, 2008:e21). As suggested by Cantrell, the debriefing should be conducted while the experience is still fresh

in the students' minds to avoid a delayed reflection on the simulation learning experiences. By using a different venue than the simulated scenario, the focus shifts from a state of action to a state of reflection-on-action (Arthur et al., 2013:1360).

The paediatric nursing students participated in debriefing sessions directly after simulated scenarios in a venue other than the simulated scenarios. Since the experience was fresh in their minds, they could reflect on action and stayed actively engaged during discussions which enhanced their learning through the process of abstract conceptualisation (see Figure 5.1; Kolb, 1984:27).

### **ACTION ITEM 2:**

#### **ASSIST STUDENTS IN EXPRESSING THEIR EMOTIONAL RESPONSES AT THE BEGINNING AND AT THE CONCLUSION OF THE DEBRIEFING**

Emotional release following a simulated scenario is necessary to redirect the student's attention to reflection-on-action (Dreifuerst, 2009:111). By helping the paediatric nursing students to identify their emotional responses following a simulated scenario, we dealt with their primary concerns first (see Table 4.1) and then moved on to the critical reflection-on-action stage. An initial release of emotions helped the students to stay engaged during discussions and they could therefore effectively use the debriefing sessions as a learning opportunity. A reassessment of students' emotions following a debriefing is recommended to ensure that all significant issues were successfully dealt with and that thorough emotional release was achieved (Dreifuerst, 2009:111; Ganley & Linnard-Palmer, 2012:e55; Garden, 2008:236).

### **ACTION ITEM 3:**

#### **USE VIDEO PLAYBACK OF SIMULATED SCENARIOS AS A FORM OF FEEDBACK**

In addition to oral feedback during debriefing, video playback provides students with a realistic perspective of their performance and stimulates reflection-on-action (Alinier et al., 2004:204; Fanning & Gaba, 2007:122). The paediatric nursing students valued the video playback as a form of self-assessment. Through video playback, reflection-on-action was stimulated from the beginning, which facilitated meaning making of scenario incidents and helped them to identify areas of improvement for themselves (see 5.2.1.5).

### **ACTION ITEM 4:**

#### **FACILITATE REFLECTION-ON-ACTION**

Debriefing is the ideal opportunity for the educator to guide reflection-on-action, which is a process through which students link actions with outcomes to promote subsequent learning (Beauchesne & Douglas, 2011:32). In terms of Kolb's experiential learning cycle, reflection-

on-action is linked to reflective observation and abstract conceptualisation. During reflective observation, the student obtains personal meaning of the experience and through abstract conceptualisation identifies potential application of information gleaned through his or her experience (see 1.6.2). It is during these cognitive processes that students develop essential nursing skills such as critical thinking, clinical reasoning and clinical judgment (Dreifuerst, 2009:111).

Through the facilitation of reflection-on-action, the paediatric nursing students had the opportunity to articulate their cognitive processes, the potential effects of their actions, and how they had restructured their thinking. As revealed by the data, reflection-on-action stimulated independent thinking, an increased ability to link theory with practice and even a notable paradigm shift among students (see 5.5.1.2 and 5.5.1.3).

#### **ACTION ITEM 5:**

##### **CONDUCT THE DEBRIEFING IN A NON-JUDGMENTAL MANNER**

Students appreciate a learning atmosphere in which they feel safe enough to participate (Wickers, 2010:e83). I used a non-judgmental approach during debriefing, which encouraged the paediatric nursing students to engage actively in discussions. Consequently, they did not feel intimidated when admitting to mistakes made during simulated scenarios. Over time, a deepening and trusting relationship developed between the students and I. They realised that I was there to help them learn from their experiences rather than judging their performance (see Table 5.2 and 5.5.1.1).

#### **ACTION ITEM 6:**

##### **FACILITATE THE DEVELOPMENT OF ACTION PLANS FOR PERFORMANCE IMPROVEMENT.**

Efforts to develop independent learner behaviour included continuous requests that the students should develop action plans to solve problems encountered during simulated scenarios. Although students found what they perceived as a lack of feedback from my side difficult at times, sustained encouragement in taking ownership of their learning eventually led to independent learner behaviour and self-directed readiness as they began taking ownership of their learning.

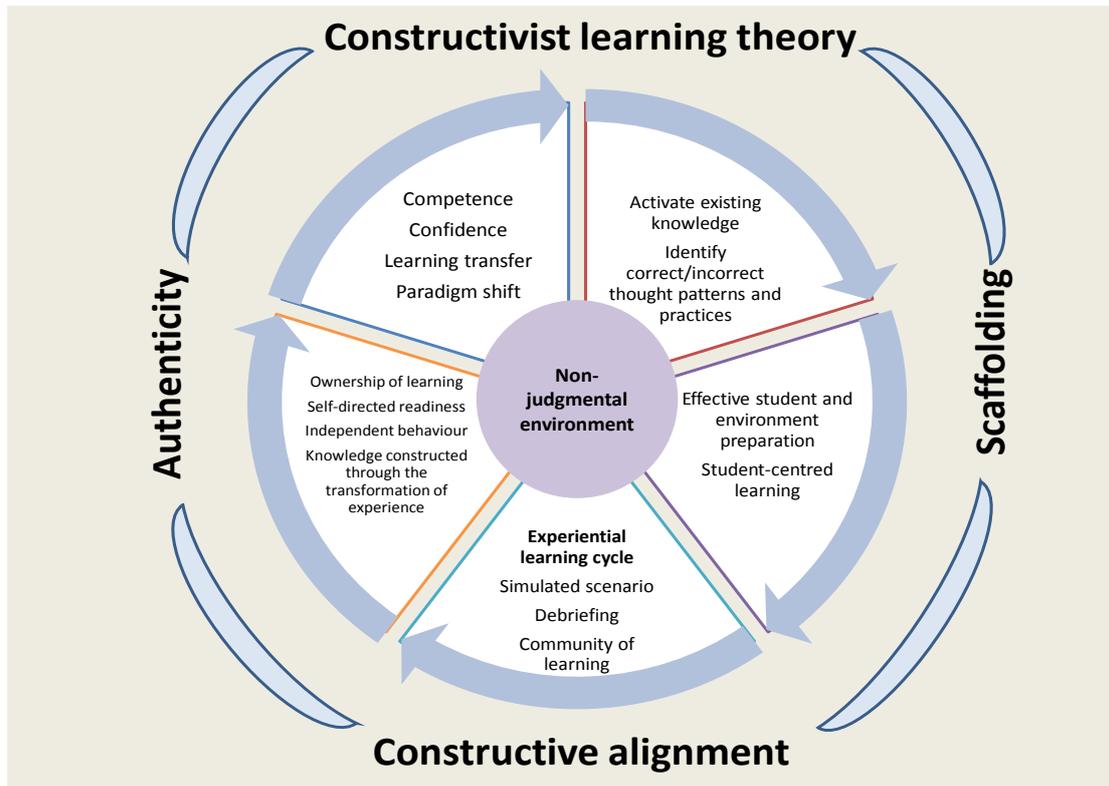
#### **ACTION ITEM 7:**

##### **SCHEDULE THE TIME FOR DEBRIEFING SESSIONS APPROXIMATELY ONE AND A HALF TIMES LONGER THAN SIMULATED SCENARIOS.**

Waxman (2010:33) suggests that debriefing sessions should be two to three times longer than simulated scenarios. However, I found it adequate to allow 90 minutes for debriefing on simulated scenarios that were usually 30 minutes long. The paediatric nursing students had

sufficient time to reflect and think deeply about their performance (reflective observation), which facilitated abstract conceptualisation and meaningful knowledge construction (see 5.5.1.2).

Figure 6.1 is a conceptual presentation of the features within the strategy through which students experience simulation as a meaningful learning opportunity.



Source: Author's own (2016).

**Figure 6.1: Diagrammatic presentation of the features of a meaningful simulation learning experience**

As shown in Figure 6.1, a simulation learning experience is underpinned by constructivist learning principles, namely constructivist learning theory, scaffolding, constructive alignment, and authenticity. Within the boundaries of these principles, a unique simulation learning experience emerges. The process begins when the educator activates existing knowledge and identifies correct/incorrect thought patterns and practices (in this case nursing practices). The students are orientated and prepared to learn in a simulation environment that is as close to reality as possible. Through the process of scaffolding, the students are weaned gradually from being dependent on the educator and the idea of student-centred learning becomes more familiar to them. The students move through Kolb's learning cycle as they participate in the simulated scenarios and debriefing which takes place within a community of learning. They begin to take ownership of their learning, develop self-directed readiness and

independence, and construct knowledge through the transformation of experience. The outcomes are improved competence and confidence, willingness and readiness to transfer learning, and last but not least, a paradigm shift that has the potential to influence patient outcomes positively.

The whole learning cycle is repeated through each simulation session and has a cumulative effect on the students' learning and development in becoming independent and self-directed. However, I am of the opinion that the outcomes described here are dependent on the educator's approach towards mature learners. Findings from this study underscore the establishment of a non-judgmental learning environment because this is the sort of environment that students find most conducive to learning. However, a non-judgmental learning environment should be carefully considered in view of the power relations inherent in the lecturer-student relationship (e.g. staff-student hierarchies).

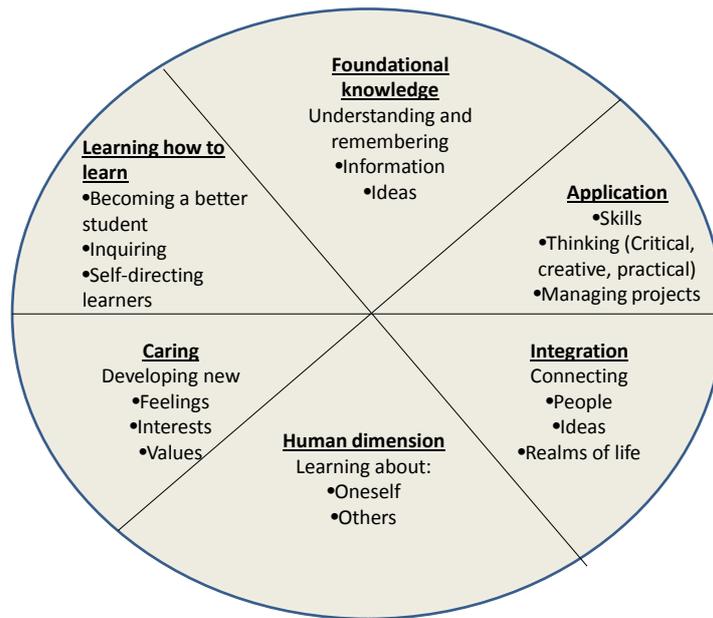
By virtue of nurse educators' position and education, we have the privilege to access the lives and minds of students. It is not difficult therefore to extend our power or authority through personal contact while remaining well within the boundaries of ethical lecturer-student relationship. In this study, I used the NGT and focus groups to gather opinion-based data from the paediatric nursing students. Whereas the NGT is a method whereby consensus is reached on a specific matter, focus groups allow dialogues and expose the differences and unique experiences expressed by different group members, thereby allowing for a rich understanding of issues. However, throughout this study, I realised how easy it was to take 'ownership' of data provided by the students. The power held by me as a lecturer emerged effortlessly despite efforts to give the students space to express their concerns without me assuming what they thought and felt I had to remind myself constantly that the students were important role players in establishing a strategy for meaningful learning experiences. Therefore, in creating a non-judgmental environment the educator should be aware of the power relationship between him- or herself and the students. In a true non-judgmental learning environment, every student should be allowed to voice his or her concerns without feeling threatened or dominated. This means that as educators we will not impulsively decide what we think is best for the student but rather actively engage students in solutions as well as opinions and feelings. Nyadanu et al. (2015:277) underscore the importance of positive student-lecturer relationships as non-threatening relationships positively influence students' holistic and long-term development as well as their academic achievements.

### **6.3 The characteristics of a meaningful simulation learning experience**

'Learning experience' refers to any interaction, course, or programme in which learning takes place, and the term is often used to reinforce the aim of educational interaction, namely learning. The growing use of the term by educators reflects larger educational and technological shifts that have occurred in the design and delivery of education to students (Hansen, 2000:23,26). In the context of this study, the term 'learning experience' refers to the paediatric nursing students' experiences of learning as they progressed through the three stages of simulation, namely briefing, simulated scenario and debriefing.

In Chapter 1, I used a definition by Fink to clarify the concept of meaningful learning experiences. According to Fink (2013:8), a meaningful learning experience consists of a process as well as an outcome dimension. The process dimension is explained as active/energetic student engagement during learning activities. In other words, when students experience a learning event as meaningful they are engaged in their learning and, because of their eager participation, there is a high level of energy in the class. The outcome dimension of meaningful learning experiences refers to significant changes that occur in the students, which continue after the course is over. The lasting change occurs because the students valued what was learned. As evidenced in this study, both the process dimension and the outcome dimension of a meaningful learning experience were achieved. The paediatric nursing students engaged actively during simulation learning opportunities such as the simulated scenarios or debriefing sessions. Furthermore, data revealed a change in the students' behaviour in terms of learning and their practice of health care to children.

In addition to using the definition as an explanation for meaningful simulation learning experiences, I also linked Fink's taxonomy of significant learning to the instructional design of themes in the paediatric nursing programme (see 1.6). The outcome of my research does not only relate to Fink's definition of meaningful learning experiences, but also shows clear similarities with the taxonomy of significant learning. It was not my intention to relate findings from this study to Fink's taxonomy of significant learning. However, the outcome of my research revealed seven characteristics that constitute a meaningful simulation learning experience, some of which correlate with Fink's taxonomy. Figure 6.2 is a presentation of Fink' original taxonomy and in the section following the figure I indicate similarities from the characteristics of meaningful simulation learning experiences found in this study and Fink's taxonomy of significant learning.



Source: Adopted from Fink (2013:35).

*Figure 6.2: A taxonomy of significant learning*

**CHARACTERISTIC 1:  
CONSTRUCTIVELY ALIGNED INSTRUCTION**

This characteristic relates to Fink's category of foundational knowledge as it refers to knowledge construction when students learn to understand and remember specific information and ideas (Fink, 2013:34). As evidenced in this study, educational design that included features such as constructive alignment, scaffolding, authenticity, and evidence of best practice was appropriate academic preparation prior to simulation learning experiences. This type of preparation placed learning events in context for the students and facilitated meaningful knowledge construction throughout the learning process.

**CHARACTERISTIC 2:  
CHALLENGING LEARNING TASKS**

This characteristic relates to two categories in Fink's taxonomy, namely application and integration. During application, students learn how to engage in various kinds of thinking and develop skills when they engage with learning material. Integration takes place when students are able to see and understand the connections between different things (Fink, 2013:34). In this study, learning tasks were context-based, yet challenging enough in terms of the knowledge and skills required to perform the tasks successfully, which helped the paediatric nursing students to develop self-confidence, competence and thinking independently. Scaffolding helped the students to gain independence from the educator

gradually despite challenging simulated scenarios. They engaged actively during learning opportunities and learned to reflect on action.

### **CHARACTERISTIC 3:**

#### **NON-JUDGMENTAL, STUDENT-CENTRED APPROACH TO STUDENTS**

This characteristic relates to three categories in Fink's taxonomy, namely the human dimension, caring and learning how to learn. The human dimension relates to students discovering personal and social implications of what they have learned; the caring category relates to new forms of feelings, interests and values because of the learning experience; and learning how to learn is related to students' engagement in the process of learning which ultimately results in them becoming self-directing learners (Fink, 2013:36). In this study, a non-judgmental approach to mature students resulted in a trusting relationship between educator and student. It was evident that the paediatric nursing students had developed insight into their own shortcomings as adult learners and gradually developed independent learner behaviour. They began taking ownership of their learning because the environment was conducive to learning (Fink, 2013:76–77).

### **CHARACTERISTIC 4:**

#### **COLLABORATION THROUGH A COMMUNITY OF LEARNING**

This characteristic is similar to the human dimension and integration categories in Fink's taxonomy. In establishing communities of learning, students learn how to integrate different perspectives and learn about and from each other (Fink, 2013:49,52). When the paediatric nursing students worked in homogeneous groups, they became dependent on each other and co-constructed knowledge through a process of collaboration.

This research supports the praxis of significant learning experiences as postulated by Fink, but the following three characteristics were identified as a particular contribution in terms of meaningful simulation learning experiences in the paediatric nursing programme.

### **CHARACTERISTIC 5:**

#### **DELIBERATE PRACTICE**

Deliberate efforts in focussing on performance improvement changed the paediatric nursing students' habits of ineffective practice, and the repetition of simulation learning experiences had a cumulative effect on the development of students' competence and thinking abilities. Transfer of learning was promoted because the students attained competence in a context-based, near-to-life environment.

**CHARACTERISTIC 6:  
AUTHENTIC LEARNING ENVIRONMENT**

A context-based, simulation environment that is relevant to real life helped the paediatric nursing students to achieve optimal immersion and deep learning during simulated scenarios, thereby promoting learning transfer from the simulation environment to the clinical environment.

**CHARACTERISTIC 7:  
RELEVANT STUDENT PREPARATION**

Apart from appropriate academic preparation, a thorough orientation to the simulation environment mitigated anxiety and was necessary in managing cognitive load. Hence, students could pay attention to learning tasks such as knowledge construction and skill acquisition whilst participating in simulation.

The seven characteristics described above relate well, but also add to Fink's definition of meaningful learning experiences, both in terms of the process dimension and the outcome dimension. In terms of the process dimension, meaningful learning experiences can be achieved through all seven characteristics. As shown in Figure 6.1, the outcome dimension is demonstrated by aspects such as improved confidence, improved competence, learning transfer and a paradigm shift in terms of nursing practice.

## **6.4 Summary**

In this chapter, I presented the finalised strategy for meaningful simulation learning experiences in a postgraduate paediatric nursing programme. The characteristics of meaningful simulation learning experiences were identified and described in relation to Fink's definition and taxonomy of significant learning. Additions to Fink's definition were highlighted and the application of the seven characteristics was described in terms of how students achieve meaningful learning experiences through simulation. In the concluding chapter, I present the relevance of the study with regard to simulation practice in nursing, nurse educators who use simulation, and child nurse practice.

# Chapter 7

## Study Relevance, Final Retrospection, and Conclusion

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*I sought to explore the process of change, concluding that insider action research and reflective practice should be seen as a vital ingredient in sustainable educational innovation.*

Casey (2013:149).

### 7.1 Introduction

Through the succession of three action cycles, I have developed, refined, re-implemented and finalised a proposed strategy comprising of specific action items intended to provide postgraduate paediatric nursing students with meaningful simulation learning experiences. In this final chapter, I discuss the relevance of the strategy for simulation practice in nursing, nurse educators currently using simulation, and child nurse practice. I offer recommendations for future research and for nurse educators who are contemplating initiating a similar project and I describe the limitations of this study. I conclude the chapter with a final retrospection on the outcome of the study in terms of my own learning and professional development.

### 7.2 Relevance regarding simulation practice in nursing

This study contributes to the limited number of in-depth qualitative studies that exist regarding the simulation learning experiences of postgraduate nursing students. It is the first known action research study that used a combination of educator and postgraduate nursing students' perceptions of learning through simulation to develop a strategy for meaningful simulation learning experiences.

As evidenced in this study, thorough orientation and preparation of students for simulation learning experiences contributes to the management of cognitive load and anxiety, active student engagement during simulation learning opportunities, and overall student satisfaction. Realistic scenarios conducted in an appropriately prepared authentic simulated environment facilitate suspension of disbelief and optimal immersion, thereby enhancing learning through simulation.

A group consisting of three to four students, randomly selected, who work together as a team throughout the academic year facilitates interdependence and the co-construction of knowledge within an established community of learning. The inclusion of at least seven to ten simulation learning experiences gives students opportunities for deliberate practice which

results in skill acquisition, improved competence and the replacement of incorrect thought patterns and/or nursing practices with correct knowledge and practice.

Findings of this study are in disagreement with the practice of having a facilitator present during all simulation learning experiences. On the contrary, scaffolding helps students to learn through challenging situations such as anxiety and complex simulated scenarios. As a result, students develop independent learner behaviour and increased self-confidence as they take ownership of their learning.

An additional point of disagreement relates to the practice of ending scenarios at the set time limit. Findings in this study indicated that allowing students enough time to complete scenario objectives facilitates the meaning-making process during knowledge construction and creates a positive experiential learning experience for the students. In addition, completed scenario objectives or tasks facilitate meaningful discussion during debriefing sessions because the educator can determine performance areas that need improvement based on how the students completed their tasks.

### **7.3 Relevance for nurse educators using simulation**

The strategy developed in this study endorses the use of constructivist learning theory and Kolb's experiential learning theory to achieve meaningful simulation learning experiences. Although the strategy may not be appropriate for all educational settings, it may offer ideas that may assist nurse educators in making simulation a meaningful learning activity for postgraduate nursing students. In order to achieve higher levels of learning and thinking, nurse educators should use teaching practices in promoting such learning and thinking. As evidenced in this study, the integration of appropriate classroom preparation with learning through simulation supports the notion that students effectively integrate new knowledge with existing knowledge through a meaning-making process whilst participating in simulation.

Through applying instructional design methods based on the principles of constructivism, authenticity, scaffolding and constructively aligned simulated scenarios are developed. By activating existing knowledge in the classroom prior to students participating in simulation learning experiences, the nurse educator identifies correct and incorrect thought patterns/nursing practice. Upon the identification of incorrect thought patterns/nursing practice, the educator can take steps to prevent the construction of new knowledge on incorrect schemas during simulation learning experiences. Appropriate academic preparation facilitates the transfer of learning from the classroom to simulation to clinical practice. Although it was not an objective in this study, assessment tasks following simulation learning

experiences can provide tangible evidence of the measure to which knowledge and competence have increased.

As students progress through Kolb's cycle of learning at least seven to ten times, they have several opportunities to complete the learning cycle in a safe and supported environment. Through the repetition of cycles, students develop competence, increased confidence in their abilities, skills such as reflection-on-action, and effective communication and teamwork; they also demonstrate evidence of best practice, all of which indicate their development as practitioners who can take on the demands of child health care. An iterative process of effective learning through reflection, self-directedness, and simulation experiences has a cumulative effect on the confidence and competence of students. A non-judgmental approach to students' performance stimulates introspection, creates positive learning experiences, and facilitates the development of a trusting relationship between students and nurse educator. In contrast,

As evidenced by this study, nurse educators should be careful to assume that mature students entering postgraduate studies have the characteristics of adult learners as proposed by Knowles's adult learning theory. A mismatch between the nurse educator's expectation of mature students and actual learner conduct may result in disappointment and even frustration for both educator and student. Early recognition of dependent learner behaviour and lack of self-direction should prompt the educators to initiate steps to support mature students in developing effective learning techniques and in becoming self-directed lifelong learners. Examples of supportive actions are the creation of student-centred learning environments that facilitate independence and ownership of learning, scaffolding, and opportunities for deliberate practice.

## **7.4 Relevance regarding child nurse practice**

As evidenced by this study, meaningful simulation learning experiences contribute to increased knowledge and skills, and positive changes in student behaviour, all of which help in the preparation of paediatric nurses who are expected to demonstrate high levels of competence in demanding healthcare environments. Through a process of repetition and deliberate focus on problem areas, the deconstruction of incorrect thought patterns and nursing skills is achieved. As a result, the students move from habits of ineffective practice to correct nursing practice and a sense of salience in providing appropriate nursing care to a vulnerable patient population. The students in this study demonstrated evidence of best practices, enhanced teamwork, and strengthened nursing values, all of which could affect patient outcomes positively.

Furthermore, the students expressed willingness and readiness to transfer what they had learned through simulation to the clinical environment. Although I do not have tangible evidence at this stage that the students did indeed transfer their learning to the clinical environment, I witnessed their progress in terms of skills and competence as they applied themselves in simulation. In particular, the second group of paediatric nursing students had such a strong sense of the potential harm their incorrect nursing practices could do (and have brought) to children that it is difficult to conclude that nursing students who participate in various simulation learning experiences as presented in this study will not transfer what they have learned to the clinical setting. If the students have organisational support, I am confident that such transfer will occur based on the clear connection observed between their learning and behaviour (Clark, 2008:235; Grossman & Salas, 2011:104). Hence, this study contributes to the minimal evidence of learning transfer to clinical practice following simulation-based training.

## **7.5 Limitations**

Although I have attempted to provide a detailed description of the fieldwork in order for nurse educators using simulation to decide whether the findings and methodology of this study can be used in their situations, I acknowledge that the study was confined to a particular context and does not necessarily apply to all educational environments. Furthermore, the quantitative data in this study were obtained from a small sample of postgraduate students, which means that findings might not be representative of all postgraduate students who participate in simulation.

The discovery that my paediatric nursing students were dependent on me as their educator and reluctant to take responsibility for their own learning cannot be generalised. Students entering my programme may have an entirely different approach to postgraduate learning to which I was not sensitive from the beginning. Although it was not the intention of this study to explore the possible cultural influences on adult learner behaviour, I acknowledge this issue and accept that it warrants further research.

A limitation in my research method is that I did not request the students to keep a reflective journal on their simulation learning experiences. Their reflections could have added depth to the findings and could have given them a stronger sense of ownership in terms of compiling a strategy that would ultimately be to their own benefit. Furthermore, an unforeseen shortage of simulation team members on a number of simulation days obliged me to manage additional preparatory tasks. I could therefore not always pay full attention to the students and make detailed field notes while they participated in simulated scenarios. However, to

keep the field notes as detailed as possible, I returned to my journal as soon as possible after the completion of daily events.

## 7.6 Recommendations

Findings from this study open the door for future research on the simulation learning experiences of mature nursing students. One area of research is the extent to which postgraduate nursing students display self-directed learning readiness. Students in this study acknowledged that a lack of self-preparation for simulation learning experiences hindered their learning. I would recommend that postgraduate students complete a self-directed readiness scale at the beginning of the training course. Early detection of dependent learner behaviour can help nurse educators to take steps towards the development of student independence and to motivate ownership for learning.

Since the construction of meaningful knowledge is a significant outcome of the strategy, further investigation might bring insight regarding the extent to which nursing students develop essential thinking skills such as clinical reasoning, critical thinking, clinical judgment, and metacognition, all of which point to a student's ability to self-regulate learning and their practice of nursing.

Although the strategy combines significant elements of simulation practice such as appropriate scenario design, comprehensive student and environment preparation, realism, gradual increase in scenario complexity, repetition and the practice of reflection-on-action, the action items are by no means exhaustive in terms of everything that simulation has to offer as a teaching and learning strategy. A follow-up study might explore to what extent the strategy links with the elements of simulation practice as proposed by the Pamela Jeffries Simulation Framework, and how it influences the quality of students' simulation learning experiences.

The expected outcomes presented in the strategy are based on students participating in at least seven to ten simulation sessions. It should therefore not be assumed that the same results can be achieved in situations where students participate in fewer simulation sessions. Although it was not my intent to determine the exact number of simulation experiences that constitute meaningful learning experiences, this is an important issue and should be included in a follow-up study. Furthermore, the strategy combines a number of simulation features intended to provide meaningful simulation learning experiences and should therefore be implemented as a complete unit because the expected outcomes might not be the same if only certain sections are used.

## 7.7 Professional development

Based on my experience as a learner as well as a nurse educator, I found educational action research to be an extremely effective and enjoyable mode of research due to the immediate relevance that the process had for me and for the paediatric nursing students. This journey brought about change on two levels: (a) the result of my work as presented in the final strategy, and (b) my own professional development. I learned some of the most valuable lessons in my entire career as a nurse educator because of this endeavour.

I followed a teacher-centred approach until I discovered the significance of allowing the students to self-discover their learning needs and their potential for becoming independent practitioners. Although it was very difficult at times, I had to refrain from being a fountain of knowledge and had to become someone students turned to once their peers' understanding was exhausted. The more I 'listened' and gave the students space to develop, the more they took ownership of their learning – and became proud owners of the knowledge and skills that they had acquired. I learned that it is extremely work-intensive to facilitate meaningful learning – it is much easier and less time-consuming to present lectures.

The students played a vital role in shaping and guiding my learning experience as I developed understanding and knowledge throughout my study. Because of my own paradigm shift from being teacher-centred to understanding the significance of being learner-centred, I can never (and never want to) go back to the way I practised nursing education before. I now stand transformed in the world of nurse educators, having learned that for any learning opportunity to be meaningful, it should be adapted to accommodate the learner and not the educator.

My view of mature students has changed – no longer are they empty vessels waiting to be filled; they are adults capable of deep learning if afforded the time and opportunity to discover their own potential as learners. I see a huge potential for simulation as a vehicle through which many more discoveries about students and their learning experiences will be made. However, it will require of nurse educators to leave behind the comfort of well-rehearsed slide shows or lectures and to become facilitators of learning through simulation.

## 7.8 Conclusion

A strategy for meaningful simulation learning experiences emerged from this educational action research project where two separate groups of postgraduate paediatric students and I engaged in three cycles of action research over a period of two years. The research objectives culminated in a strategy consisting of context-specific action items and definite

outcomes upon their implementation. The students' involvement in the generation of the final strategy was one of the strengths of this action research. Since the students were involved in more than one data collection process the strategy could be refined, re-implemented and the outcome determined after each action cycle. The fieldwork has been described extensively and efforts to conduct rigorous, ethical action research have been clarified and applied throughout. In the process of developing a unique strategy, the concept of meaningful learning experiences expanded from a two-dimensional definition to a list of seven features that describe meaningful simulation learning experiences. The emancipatory effect that the process had on my educational practice is evidence that educational action research can be a highly effective method to transform educators for the benefit of students. I am of the opinion that my research question: *How can meaningful simulation learning experiences be achieved in the postgraduate paediatric nursing programme?* has been successfully answered as a result of this endeavour.

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**Appendix A**  
**Approval from Ethics Committee**

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Ms H Strauss/hv

2014-03-07

REC Reference nr 230408-011  
IRB nr 00006240

MS C SPIES  
C/O PROF Y BOTMA  
SCHOOL OF NURSING  
IDAHLIA LOOTS BUILDINGS  
UFS

Dear Ms Spies

**ECUFS NR 36/2014**

**MS C SPIES**

**SCHOOL OF NURSING**

**PROJECT TITLE: STRATEGIES TO OPTIMISE THE LEARNING EXPERIENCES OF  
PAEDIATRIC NURSING STUDENTS THROUGH SIMULATION.**

1. You are hereby kindly informed that the Ethics Committee approved the above study at the meeting held on 4 March 2014.
2. 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.
3. Any amendment, extension or other modifications to the protocol must be submitted to the Ethics Committee for approval.
4. The Committee must be informed of any serious adverse event and/or termination of the study.
5. All relevant documents e.g. signed permission letters from the authorities, institutions, changes to the protocol, questionnaires etc. have to be submitted to the Ethics Committee before the study may be conducted (if applicable).
6. 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.
7. Kindly refer to the ETOVS/ECUFS reference number in correspondence to the Ethics Committee secretariat.

Yours faithfully



.....  
PROF WH KRUGER  
CHAIR: ETHICS COMMITTEE

Cc Prof Y Botma

## **Appendix B**

### **Simulation Development Tool**

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# Simulation Development Tool

*Theme:*

**Programme**

**Module name**

**Coordinator**

**Estimated Time**

Simulation: \_\_ min

Debriefing    min

## Authentic problems



<b>Outcomes for this simulation</b>	1. 2. 3.
<b>PLANNING</b>	
<b>Context/situation</b>	1. Environment? 2. Patient age/condition? 3. What happened? 4.
<b>Prerequisite knowledge</b>	1. Activation of knowledge in classroom 2. Engage with new knowledge in classroom and clinical area
<b>Pre-requisite practical skills</b>	1. 2. 3. 4.
<b>Essential references</b>	1. 2. 3. 4.  <i>(Attach documents to scenario for simulation preparation)</i>



<p><b>Documents</b></p>	<ol style="list-style-type: none"> <li>1. Outcomes for simulation in writing</li> <li>2. Check lists</li> <li>3.</li> <li>4.</li> <li>5.</li> </ol>
<p><b><u>Moulage</u></b></p>	
<p><b>Description</b></p>	<p><b>Location</b></p>
<p><b>Other</b></p>	

Preparation of Students and Impies		
Number	Roles of student	Instructions
<p style="text-align: center;"><b>Instruction of participating students regarding outcomes for the simulation:</b></p> <ol style="list-style-type: none"> <li>1. Explain the purpose of simulation</li> <li>2. Have a video</li> <li>3. Have a discussion about the purpose for simulation</li> <li>4. Check lists</li> </ol> <p><b><i>Students must receive instructions in writing</i></b></p>		
<p><b>Activity of non-participating students while simulation is taking place</b></p>		

<b>Initial state of the patient</b>					
<b>Scenario graph</b>					
<b>IMPLEMENTATION</b>					
<b>Facilitator's notes</b>	<b>key</b>	1. Remember pre-check 2. 3.			
<b>Clinical progression of patient</b>	<b>Pt assessment findings</b>	<b>Noticing and clinical reasoning</b>		<b>Provide information/lab result if requested</b>	<b>Prompts, questions and teaching points</b>
<b>Authentic problem I</b>		√/x			
<b>Simulation coordinator notes</b>					
<b>Authentic problem II</b>		√/x			
<b>Simulation coordinator notes</b>					

Clinical progression of patient	Pt assessment findings	Noticing and clinical reasoning/judgment action		Provide information/lab result if requested	Prompts, questions and teaching points
Authentic problem III		√/x			
Simulation coordinator notes					
Authentic problem IV		√/x			
Simulation coordinator notes					

Guided reflection	
Allocate tasks for student group	Student responsible name (team leader)
<b>Vertical strands</b>	
<b>1. Safety</b>	<ul style="list-style-type: none"> <li>• Identification</li> <li>• Infection control standard/universal and aseptic techniques</li> <li>• Bed rails</li> <li>• Bedside bell</li> </ul>
<b>2. Communication</b>	<ul style="list-style-type: none"> <li>• Verbal and nonverbal patient communication appropriate</li> <li>• Communicates effectively with all team members/ delegate</li> <li>• Read <u>back</u> to clarify orders</li> <li>• Asks for assistance when needed</li> <li>• Polite and caring</li> </ul>

	<ul style="list-style-type: none"> <li>• Assertive / Leadership</li> <li>• Provide patient and family information</li> <li>• Culturally sensitive</li> </ul>
<p><b>3. Nursing care /Clinical judgment process</b></p>	<ul style="list-style-type: none"> <li>• Notices signs of change in condition (Assessment (history, physical assessment, management, diagnostic and lab results complete according to condition)</li> <li>• Exhibit clinical judgment/ prioritizes care</li> <li>• Take appropriate action according EBP</li> <li>• ? failure to rescue</li> <li>• Effective reflection</li> <li>• Comprehensive care</li> </ul>
<p><b>4 Professional behavior</b></p>	<ul style="list-style-type: none"> <li>• Adheres to patient rights</li> <li>• Introduces self</li> <li>• Insures privacy</li> </ul>

	<ul style="list-style-type: none"> <li>• Adheres to ethical, legal issues professional responsibilities</li> <li>• Record keeping</li> </ul>
<p><u>Notes for Reflection</u></p>	
<p><b>Essential knowledge</b></p>	
<p><b>Essential skills/ correct action</b></p>	
<p><b>Compiled by:</b></p>	
<p><b>Date compiled</b></p>	

<b>Revised by:</b>	
<b>Date revised</b>	
<b>Notes</b>	
<b>Teaching needs of student identified in scenario to be addressed in class</b>	
<b>Learning of educators</b>	
<b>Learning of simulation staff</b>	

**Appendix C**  
**Information Sheet and Consent Form**  
**Paediatric Nursing Students**  
**(Afrikaans and English)**

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## **A Strategy for meaningful simulation learning experiences in a postgraduate paediatric nursing programme**

You are being invited to take part in a research study. Before you decide whether or not to take part in this study, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Do contact me if there is anything that is not clear or if you would like more information. It is important that you take time to decide whether or not you wish to take part.

Thank you for reading this information piece.

### **What is the purpose of the study?**

The School of Nursing at the University of the Free State recently inaugurated a new teaching and learning facility for nursing students. The Nursing Education Facility provides nurse educators the opportunity to use its authentic learning environments for skills development and simulation. The paediatric nursing programme for which you enrolled includes simulation as a learning strategy. As your educator, I would like to develop action plans optimise your simulation learning experiences.

### **Why have I been chosen?**

You, along the other enrolled paediatric nursing students, were selected to participate in the study. During the course of the year, you will be exposed to simulation training and can therefore provide me with valuable information about your own learning experiences. As your educator, I value your contribution to improve simulation as a learning strategy and provide you with meaningful simulation learning experiences.

### **Do I have to take part?**

No, you do not have to take part in this study; it is entirely up to you to decide whether or not to take part. If, after careful consideration, you do decide to take part, you will be asked to sign a consent form and return it to me. Even if you do decide to take part and return the consent form, you are still free to withdraw from the study at any time and you do not need to give a reason. Please be assured that the decision not to take part or a decision to withdraw from the study at any time during the research will not affect the standard of education that you receive from me, or other nurse educators who are involved with your education.

### **What does my participation involve?**

If you do decide to take part, you will participate in a nominal group discussion and focus group discussions led by an independent person in terms of this research. The sessions will last between 60 to 90 minutes. During the sessions, we will gather information regarding your simulation learning experiences. Information will be used to decide upon better ways to use simulation so that it will be to your and subsequent students' benefit. With your permission, I would like to tape and video record our conversations. That is so we can then make notes from our conversations afterwards. This will help me to analyse everybody's thoughts, needs and suggestions. From time to time, I will make field/reflective notes as I observe your performances. I would like to emphasise again that you can withdraw from the research study at any time, even during our meeting and conversations.

At the UFS School of Nursing it is standard procedure to make video recordings of all simulation encounters. This footage is used for educational purposes during debriefing and feedback sessions. Apart from this, I consider the video footage as a source of data and would like to include it for the purpose of this study. I assure you that all footage is considered highly confidential material which will be destroyed after the study.

**What are at the possible disadvantages and risks of taking part?**

There are no known risks associated with your participation. It is possible that, during our conversations, you may become distressed. If that were to happen, then if you wish, you will be allowed to leave the venue. If, during or following our meeting, you feel that you would like to talk to someone else about how you are feeling, you will be given details of someone whom you can contact.

**What are the possible benefits of taking part?**

You, along with other students taking part in this research study, will have an opportunity of informing me as your educator about your learning needs and whether you think your needs are being met. This will allow me and other nurse educators to evaluate the effectiveness of our educational practice, and, if possible, to improve them. There is, however, no remuneration for your participation.

**Will my taking part in this study be kept confidential?**

Although, with your permission, simulation and subsequent debriefing sessions will be recorded, only members of the research team will have access to the tape recording and transcripts of your recording. These will be kept in a locked cabinet at the University of the Free State and will be destroyed at the end of the research study, once the report has been written. No one will be able to identify who has or has not taken part in the research from the final report. Your own names will not be used and no personal information about yourself will be given in the final report. When I make field notes, I will use pseudonyms in cases where I refer to a student – therefore, none of your actions or performances could be linked to your name.

**What will happen to the results of the research study?**

The results of the research study will be used to write a report. As mentioned in the paragraph above, you will not be identified in this report. Results from the research will be published in professional medical and nursing journals, and will also be presented at professional conferences, in order that people from outside of the UFS School of Nursing will be able to benefit from the results.

**Who has reviewed the study?**

This research study has been reviewed and approved by the University of the Free State, Faculty of Health Sciences Ethics Committee. Permission to conduct the study at the School of Nursing was granted by the head of the School of Nursing, the Dean of the Faculty and the Vice Rector, Academic.

**Contact for Further Information**

If you have any further questions or wish further information, then please do not hesitate to contact me:

Ms C. Spies, UFS School of Nursing

I would like to take this opportunity to thank you for taking the time to read this information sheet and, whether or not you decide to take part in the research, to thank you for considering it.

Signature \_\_\_\_\_

**Consent form: Paediatric Nursing Students**

**A Strategy for meaningful simulation learning experiences in a postgraduate paediatric nursing programme**

Name of Researcher:

*Ms Cynthia Spies*

Please initial the box below each question:

1. I confirm that I have read and understand the information sheet dated \_\_\_\_\_ for the above study and have had the opportunity to ask questions.
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my right to nursing education or my legal rights being affected.
3. I agree to take part in the study.

\_\_\_\_\_  
SIGNATURE OF PARTICIPANT

\_\_\_\_\_  
DATE

\_\_\_\_\_  
SIGNATURE OF WITNESS

\_\_\_\_\_  
DATE

I have explained the implications of participation in the study to the above-mentioned participant and have sought his/her understanding for informed consent.

\_\_\_\_\_  
SIGNATURE OF RESEARCHER

\_\_\_\_\_  
DATE

## **'n Strategie vir betekenisvolle simulasiel eerervaringe in 'n nagraadse kinderverpleegkunde program**

U word hiermee uitgenooi om aan 'n navorsingstudie deel te neem. Dit is egter belangrik dat u eers sal verstaan waaroor die navorsing gaan en wie die deelnemers gaan wees voordat u besluit om deel te neem. Neem asseblief u tyd om die volgende inligting noukeurig deur te lees en dit met ander persone te bespreek indien u behoete het. Kontak my gerus indien enige iets onduidelik is of u dalk meer inligting benodig. Dit is belangrik dat u die nodige tyd sal neem om te besluit of u wil deelneem al dan nie.

Dankie dat u hierdie inligtingstuk lees.

### **Wat is die doel van die studie?**

Die Skool vir Verpleegkunde aan die Universiteit van die Vrystaat het onlangs 'n nuwe leer- en onderrig fasiliteit vir verpleegstudente geopen. Die verpleegonderrig fasiliteit stel verpleegdosente in staat om die leerruimtes vir simulasiel gebruik asook vir die ontwikkeling van vaardighede. Die kinderverpleegkunde program waarvoor u ingeskryf het gebruik onder andere simulasiel as 'n leertegniek. As u verpleegdosent sou ek graag aksieplanne wil ontwikkel wat studente se simulasiel leerervaringe sal optimaliseer. .

### **Waarom word ek genader om deel te neem?**

U, saam met die ander ingeskrewe kinderverpleegkundestudente, was gekies om aan die navorsing deel te neem. Deur die loop van die jaar gaan u gereeld aan simulasiel-gebaseerde onderrig blootgestel word en kan my dus van waardevolle inligting rakende u eie leerervaringe voorsien. As u verpleegdosent beskou ek u bydrae tot die bevordering van simulasiel leerervaringe as waardevol.

### **Moet ek deelneem?**

Nee, u hoef nie aan die studie deel te neem nie, dit is by uitstek u besluit om deel te neem al dan nie. Indien u na sorgvuldige oorweging besluit om deel te neem, sal u versoek word om 'n toestemmingsvorm te teken en dit aan my terug te besorg. Selfs al besluit u om deel te neem en besorg die toestemmingsvorm aan my terug, is u steeds vry om enigietyd van die studie te onttrek. U hoef nie 'n rede vir u onttrekking te verskaf nie. Wees asseblief versekerd dat u besluit om nie deel te neem nie geensins die standaard van onderrig wat u by my of ander dosente ontvang, sal beïnvloed nie.

### **Wat behels my deelname?**

Indien u sou besluit om deel te neem, sal u gevra word om deel te wees van nominale groepsbesprekings asook fokusgroeponderhoude wat deur 'n onafhanklike persoon gelei sal word. Die sessies sal elk tussen 60 to 90 minute duur. Gedurende die sessies sal ons inligting insamel met betrekking tot u simulasiel leerervaringe. Die inligting sal gebruik word om planne te beraam sodat ons simulasiel meer doeltreffend kan aanwend en sodoende betekenisvolle leerervaringe daar te stel. Met u toestemming sal ek graag ons gesprekke op band wil opneem. Dit is sodat ek agterna notas kan maak. Dit sal my help om almal se idees, behoeftes en voorstelle te analiseer sodat ons uiteindelik 'n verslag kan saamstel. Ek sal van tyd tot tyd veldnotas neem terwyl ek u optredes observer. Ek wil dit weer beklemtoon dat u enige tyd van die studie kan onttrek, selfs gedurende onderhoudsessies of gesprekke.

Dit is standaard prosedure by die UV Skool vir Verpleegkunde dat video opnames van alle simulasiel sessies gemaak word. Hierdie beeldmateriaal word vir onderrigdoeleindes gebruik gedurende terugvoersessies. Behalwe hiervoor beskou ek die beeldmateriaal as 'n bron van data en sal dit graag wil by die studie wil insluit. Ek verseker u dat alle beeldmateriaal uiters vertroulik hanteer word en sal vernietig word na afloop van die studie.

### **Wat is die moontlike nadele of risiko's van deelname?**

Daar is geen bekende risiko's geassosieer met u deelname nie. Dit is wel moontlik dat u tydens ons gesprekke ongemaklik kan voel. Indien wel en u sou so verkies, sal u toegelaat word om die kamer te verlaat. Indien u voel dat u graag u gevoelens met iemand anders wil deel, sal ek die kontakbesonderhede van so 'n persoon aan u verskaf.

### **Wat is die moontlike voordele van deelname?**

U, saam met ander studente wat aan die studie deelneem, sal die geleentheid hê om my as u verpleegstudent te verwittig van u leerbehoefte en of u voel dat daar aan u leerbehoefte voldoen word. Dit sal my en ander verpleegdosente in staat stel om die effektiwiteit van ons onderrigpraktyk te evalueer en indien moontlik daarop te verbeter. Daar is egter geen besoldiging vir u deelname nie.

### **Sal my deelname aan die studie vertroulik gehou word?**

Al word simulasie en daaropvolgende terugvoersessies op video geneem, sal slegs lede van die navorsingspan toegang tot die beeldmateriaal en transkripsies van opnames hê. Hierdie beeldmateriaal word op 'n veilige plek by die Skool vir Verpleegkunde toegesluit en sal na afloop van die studie vernietig word nadat die finale verslag saamgestel is. Niemand sal hierin kan bepaal wie of wie nie aan die studie deelgeneem het nie. U naam of enige persoonlike besonderhede sal onder geen omstandighede in die finale verslag verskyn nie. Wanneer ek veldnotas neem en van 'n student melding maak sal ek van skuilname gebruik maak – dus sal geeneen van u aksies met u naam verbind kan word nie.

### **Wat sal met die resultate van die studie gebeur?**

Die resultate van die studie sal gebruik word om 'n verslag te skryf. Soos in die paragraaf hierbo bevestig, sal u nie in die finale verslag geïdentifiseer word nie. Resultate sal in professionele mediese- en verpleegjoernale gepubliseer word en sal ook by konferensies bekend gemaak word. Dit sal persone wat nie aan die Skool vir Verpleegkunde verbonde is nie in staat stel om voordeel uit die resultate te trek.

### **Wie het die studie nagegaan en goedgekeur?**

Die studie is deur die Universiteit van die Vrystaat, Fakulteit van Gesondheidswetenskappe se Etykkomitee nagegaan en goedgekeur. Toestemming om voort te gaan met die studie is ook deur die Hoof van die Skool vir Verpleegkunde, die Dekaan van die Fakulteit en die Vise Rektor (Akademies) verleen.

### **Kontak indien verdere inligting benodig word**

Indien u enige verdere vrae of inligting benodig kan u my gerus kontak by:

Ms C. Spies, UVS Skool van Verpleegkunde

Ek wil u graag bedank dat u tyd geneem het om hierdie inligtingstuk deur te lees. Of u gaan deelneem of nie, byvoorbaat dank vir u oorweging.

Handtekening \_\_\_\_\_

**Toestemmingsvorm:                    Kinderverpleegkundestudente**

**STRATEGIEE OM DIE LEERERVARINGE VAN KINDERVERPLEEGKUNDESTUDENTE TE OPTIMALISEER DEUR SIMULASIE**

Naam van die navorser:

*Ms Cynthia Spies*

Parafeer asseblief in die blokkie onderaan die vraag:

1.     Ek bevestig dat ek die inligtingsvorm gedateer \_\_\_\_\_ gelees het en die inhoud daarvan verstaan. Ek het die geleentheid gehad om onduidelikhede uit te klaar.
  
2.     Ek verstaan dat my deelname vrywillig is en dat ek vry is om enige tyd van die studie te ontrek sonder om 'n rede daarvoor te verstrek. My reg tot verpleegopleiding en wettige regte sal geensins beïnvloed word nie.
  
3.     Ek stem in om aan die studie deel te neem

\_\_\_\_\_  
HANDTEKENING VAN DEELNEMER

\_\_\_\_\_  
DATUM

\_\_\_\_\_  
HANDTEKENING VAN GETUIE

\_\_\_\_\_  
DATUM

Ek het die implikasies van deelname aan die studie aan die bogenoemde student verduidelik en probeer verseker dat die student die ingelig is en verstaan waaroor die studie handel.

\_\_\_\_\_  
HANDTEKENING VAN NAVORSER

\_\_\_\_\_  
DATUM

**Appendix D**  
**Simulation Evaluation Form**

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## UNIVERSITY OF THE FREE STATE

### FACULTY OF HEALTH SCIENCES

#### SCHOOL OF NURSING

#### SIMULATION EVALUATION FORM / SIMULASIE EVALUERINGSVORM

#### INSTRUCTIONS/INSTRUKSIES

- Please complete all questions in this survey. *Voltooi asseblief al die vrae op die vraelys.*
- By completing this questionnaire, you consent to use the information for research purposes. / *Deur voltooiing van hierdie vraelys stem u in om die inligting vir navorsingsdoeleindes te gebruik.*
- Your answers are ANONYMOUS. / *Jou antwoorde is ANONIEM.*

PLEASE EVALUATE THE STATEMENTS BELOW ON A 4-POINT SCALE, USING THE FOLLOWING KEY /  
EVALUEER ELKEEN VAN DIE VOLGENDE STELLINGS OP 'N 4-PUNT SKAAL DEUR DIE VOLGENDE  
SLEUTEL TE GEBRUIK

1. Disagree strongly / Stem glad nie saam nie	2. Disagree / Stem nie saam nie	3. Agree / Stem saam	4. Agree strongly / Stem volkome saam
1. Simulation was an enjoyable learning experience / Simulasie was vir my 'n aangename leerervaring			
2. I was thoroughly orientated for my first simulation experience / Ek was deeglik vir my eerste simulasie ervaring geïnterees			
3. The facilitators spent enough time to prepare me for simulation / Die fasiliteerders het genoeg tyd spandeer om my vir simulasie voor te berei			
4. I made use of opportunities to acquaint myself with the simulation environment before my first experience / Ek het van geleenthede gebruik gemaak om aan die simulasie omgewing gewoond te raak voor my eerste ervaring			
5. The simulation environment felt authentic (real-life) / Die simulasieomgewing het geloofwaardig gevoel			
6. The equipment needed for a scenario was always available / Die toerusting wat tydens 'n scenario nodig was, was altyd beskikbaar			
7. The documents that were used for a scenario was always available iate / Die dokumente wat vir 'n scenario gebruik is, was altyd beskikbaar			
8. I received information about upcoming simulation sessions at least a week in advance / Ek het inligting oor opkomende simulasiesessies ten minste een week voor die tyd ontvang			

9. Simulation scenarios were aligned with information given beforehand in class / <b>Simulasie scenarios was bely n met inligting wat vooraf in die klas gegee is</b>				
10. Simulation scenarios were aligned with course content / <b>Simulasie scenarios was bely n met kursusinhoud</b>				
11. Simulation scenarios were aligned with current child health practice / <b>Simulasie scenarios was bely n met huidige kinderverpleegkunde praktyk</b>				
12. I made an effort to prepare myself for simulation sessions / <b>Ek het moeite gedoen om vir simulasiesessies voor te berei</b>				
13. I did some extra reading work to prepare myself for simulation sessions / <b>Ek het ekstra leeswerk gedoen om vir simulasiesessies voor te berei</b>				
14. I prefer to have a facilitator in the simulation room at all times / <b>Ek verkies om te alle tye 'n fasiliteerder in die simulasiekamer te hê</b>				
15. I prefer to have preset tasks to complete during scenarios / <b>Ek verkies om voorafopgestelde take te hê wat gedurende die simulasie afgehandel moet word</b>				
16. Scenarios were too complicated / <b>Scenarios was te gekompliseerd gewees</b>				
17. Enough time was allocated to complete expected outcomes / <b>Daar was genoeg tyd om verwagte uitkomst te bereik</b>				
18. My ability to work as a member of a team improved as a result of simulation / <b>My vermoë om as lid van 'n span te werk het as gevolg van simulasie verbeter</b>				
19. My ability to plan nursing care improved as a result of simulation / <b>My vermoë om verpleegsorg te beplan het as gevolg van simulasie verbeter</b>				
20. I developed self-confidence as a result of simulation / <b>Ek het selfvertroue ontwikkel as gevolg van simulasie</b>				
21. Previously I had some habits of ineffective practice, but that changed as a result of simulation / <b>Ek het voorheen enkele gewoontes van ondoeltreffende praktyk gehad, maar dit het verander as gevolg van simulasie</b>				
22. The debriefing sessions were meaningful / <b>Die ondervragingsessies (debriefing) was betekenisvol</b>				
23. The debriefing sessions were too long / <b>Die ondervragingsessies (debriefing) was te lank</b>				
24. Enough feedback about my performance during the simulation session was provided at debriefing / <b>Daar was genoeg terugvoer oor my optrede gedurende die simulasiesessie gegee tydens die ondervragingsessies</b>				
25. I want to watch the video of the simulation during debriefing sessions / <b>Ek wil die video oor die simulasie gedurende die ondervragingsessies kyk</b>				
26. I felt judged during debriefing sessions / <b>Ek het veroordeel gevoel tydens die ondervragingsessies</b>				
27. Debriefing helped me to improve on performance during next simulation sessions / <b>Die ondervragingsessies het my gehelp om op volgende simulasiesessies te verbeter</b>				
28. Ten simulation sessions per year are too many / <b>Tien simulasiesessies per jaar is te veel</b>				

29. I will be able to apply what I have learned in simulation in the clinical environment / <b>Ek sal in staat wees om dit wat ek in simulاسie geleer het in die kliniese omgewing toe te pas</b>				
30. I am thinking of ways to implement what I have learned / <b>Ek dink aan maniere om dit wat ek geleer het te implementeer</b>				
31. I think simulation should be used to assess student performance / <b>Ek dink simulاسie moet gebruik word om studente te assesseer</b>				
32. I feel that there are aspects of simulation that need improvement / <b>Ek voel dat daar sekere aspekte van simulاسie is wat verbeter kan word</b>				

THANK YOU FOR YOUR TIME! DANKIE VIR JOU TYD!

## **Appendix E**

### **Foreign Body Aspiration Scenario**

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<b>SIMULATION TOPIC:</b>	<b>FOREIGN BODY ASPIRATION (1<sup>ST</sup> DEGREE OBSTRUCTION)</b>
<b>SIMULATION TOPIC:</b>	1 <sup>st</sup> session
<b>Theme:</b>	<b>Respiratory related conditions</b>
<b>Coordinator:</b>	C Spies
<b>Programme:</b>	Post basic Diploma in Child Health Nursing
<b>Module name:</b>	KDV116
<b>Simulation environment:</b>	Children's Ward
<b>Estimated Time for Simulation in minutes</b>	15 - 20 minutes
<b>Estimated time for debriefing in minutes</b>	30-45 minutes
<b>Brief summary:</b>	Foreign body aspiration – first degree obstruction of (R)-primary bronchus

<b>PLANNING</b>	
Context / situation	<ol style="list-style-type: none"> <li>1) 5 year old boy brought to casualty department after suspected foreign body aspiration. His initial diagnosis is a first degree obstruction with foreign body lodged in the (R) primary bronchus. He is transferred to the ward for observation. The ER physician ordered a chest X-ray and arterial blood gas and that the child be kept NPO. The chest X-ray is included in the patient's casualty file, but the ABG result will be sent to the ward a few minutes after handover. The child does not have an IV-line or oxygen in situ.</li> <li>2) Context: General children's ward</li> <li>3) Child to be admitted thoroughly by day staff</li> <li>4) Recognise the signs and symptoms of FBA</li> <li>5) Take baseline vital signs during admission</li> <li>6) Check and interpret chest X-ray</li> </ol>

	<ul style="list-style-type: none"> <li>7) Interpret the arterial blood gas result ( ABG)</li> <li>8) Commence with oxygen therapy</li> <li>9) Communicate with other members of the multidisciplinary team by using SBAR principles</li> </ul>
Documents needed	<ul style="list-style-type: none"> <li>1) Progress report from casualty department</li> <li>2) Admission assessment form</li> <li>3) Care plan document</li> <li>4) Observation chart</li> <li>5) Fluid balance chart</li> <li>6) Medication prescription /administration chart</li> <li>7) Patient file</li> <li>8) Treatment instructions</li> <li>9) ABG-result</li> <li>10) Chest X-ray</li> </ul>
Essential references:	Best practice guidelines for management of foreign body aspiration

Equipment nr		Consumables nr		Drugs dose	Documents	nr
Bed & rails	1	Syringes 1ml	5		Admission forms	1
Oxygen cylinder	1	Needles green	5		Progress report	1
Oxygen mask Nasal prongs		Needles black	5		ABG result that shows a respiratory acidosis	1
Saturation monitor		Alcohol swaps	10			
Stethoscope		Hand rub			Chest X-ray with FB noticeable	1
BP monitor		ID-bracelet		Oxygen	Name tags to explain student	

Equipment nr	Consumables nr	Drugs dose	Documents nr
			roles
Thermometer			
Kidney basin			
Sterile kidney basin	Venturi devices		
Suction apparatus	Linen saver		
Latex tube	Butterfly 21G		
Sharps container	IV line		
Dustbin	PMS		
X-ray view box	Ringers Lactate		
Medication trolley (Paeds)	$\frac{1}{2}$ Darrows		
	200ml Saline		
	Bandage Zink oxide		



<u>Moulage</u>	Description	Location
	"dirty"-appearance – boy was playing outside	Arms and face, legs

Facilitator's preparation of simulator/s/ tablets (clinical data)		
Roles of participants and numbers	Nr	Role and tasks
Student roles	4	(member of sim-team to hand over the child) RN in charge RN 1 RN 2
Facilitators	1	Cynthia Spies Anne-Marie <u>Welman</u> Maria Phillips
Simulator coordinator	1	Maria Phillips
Technicians	2	Bennie Botha
Dr	1	Telephonic (Maria's office)
SP	0	
Family member	0	

## Preparation information for simulation

### Context, history & current clinical status

**Context:** General children's ward  
5-year old boy with foreign body aspiration admitted from casualty department

**History:** The mother reported that the boy was playing outside with his dog when he came running into the house while coughing profusely. The boy said that he was chewing on a piece of plastic while playing when he accidentally inhaled a piece of the object. She took him to the casualty department because he did not stop coughing and had slight difficulty to breathe. The boy told his mother that his chest feels "tight".

**Casualty department:** Diagnosis: first degree obstruction with foreign body lodged in (R)-primary bronchus. (viewed on X-ray and based on clinical findings)

Vital signs in casualty department:

Heart rate:	96bpm
Respiration:	26 and slightly laboured
BP:	100/55 mmHg (normal for age)
Temp:	36.7 °C
SaO <sub>2</sub> :	88% (room air)

Dr's request: Admit to ward for observation and possible removal of object.

Patient is admitted to the children's ward. Hand over takes place between the RN from casualty department and staff working the afternoon shift. The child has a short drip in situ. Admitted to the ward without oxygen in situ. He has a patient identification bracelet with correct information. He lies flat in the bed.

**Current clinical status in the ward:** Wheezing audible with diminished breath sounds in R-lung, good aeration of L-lung, Paroxysmal (episodic) coughing and slight ~~dyspnea~~ ~~dyspnoea~~.

Vital signs on admission:

Heart rate:	94bpm
Respiration:	25 and slightly laboured
BP:	100/55 mmHg (normal for age)
Temp:	36.8 °C
SaO <sub>2</sub> :	86% (room air)

Chest X-ray shows foreign object lodging in (R) primary bronchus

Initial ABG shows slight hypoxemia and nearing respiratory acidosis:

pH: 7.33

PaCO<sub>2</sub>: 47 mmHg

PaO<sub>2</sub>: 87 mmHg

St Bic: 23 mmol/l

SaO<sub>2</sub>: 87% (room air)

O<sub>2</sub>-saturation just below normal (student will need to provide oxygen therapy via face mask)

Implementation				
Flow diagram of clinical progression	<p><b>Phase 1:</b> Admission to ward, Baseline vital signs, Perform basic assessment of respiratory system; Interpretation of chest X-ray, ABG and findings of P/E, Plan care.</p> <p><b>Phase 2:</b> Implement nursing care (provide oxygen therapy, position in semi-fowlers to facilitate breathing). Respiratory condition deteriorates. Detect change in condition.</p> <p><b>Phase 3:</b> Phone physician (SBAR), report on clinical status and blood gas result, document Dr's suggestions. End session.</p>			
Facilitator's notes				
Clinical progression of patient	Pt assessment findings	Minimal behaviours expected	Provide information/lab result if requested	Prompts, questions and teaching points
Phase 1	Vital signs on admission: Heart rate: 94bpm Respiration: 25 and slightly laboured BP: 100/55 mmHg (normal for age) Temp: 36.8 °C SaO2: 87% (on room air)	<ol style="list-style-type: none"> <li>1. Complete admission documents</li> <li>2. Obtain history from the mother</li> <li>3. Interpret the vital signs shown on the monitor</li> <li>4. Interpret the chest X-ray (locate FB)</li> </ol>	Receive ABG result from lab during admission to the Ward	

	<p>Paroxysmal coughing</p> <p>Wheeze audible during P/E</p> <p>Diminished air entry R-lung</p> <p>Good aeration L-lung</p> <p><b>ABG result:</b></p> <p>pH: 7.33</p> <p>PaCO<sub>2</sub>: 47 mmHg</p> <p>PaO<sub>2</sub>: 87 mmHg</p> <p>St Bic: 23 mmol/l</p> <p>SaO<sub>2</sub>: 87% (room air)</p>	<ol style="list-style-type: none"> <li>5. Do P/E of the chest (especially auscultation)</li> <li>6. Interpret findings</li> <li>7. Receive ABG and interpret</li> <li>8. Plan care based upon physical assessment and lab results</li> </ol>		
Phase 2		<ol style="list-style-type: none"> <li>1. Place child in semi-fowlers position</li> <li>2. Give oxygen – humidified via face mask, 40%</li> <li>3. Monitor if there is a change in condition</li> </ol>	Physician ordered an ABG and request that a higher oxygen percentage be administered	Phase 2
Phase 3	<p>Vital signs will deteriorate</p> <p>Heart rate: 102bpm</p>	<ol style="list-style-type: none"> <li>1. Notice deterioration</li> <li>2. Phone the physician on call</li> </ol>		

	<p>Respiration: 28 and more laboured (insp and exp. stridor)</p> <p>BP: 110/55 mmHg (normal for age)</p> <p>Temp: 36.8 °C</p> <p>SaO2: 76% (on 40% face mask)</p> <p>Patient shows signs of cyanosis around his lips</p> <p>Paroxysmal coughing</p> <p>Wheeze audible during auscultation</p> <p>Diminished air entry R-lung</p> <p>Good aeration L-lung</p>	<p>3. Document or communicate the physician's request</p>		

Vertical strands	
Identification	
Communication	
Legal/ethical issues	
Safety	
Comprehensive care	
Infection control	
Documentation	
Patient and family education and support	

Notes for improvement /change of scenario

Notes for improvement /change of scenario

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#### DECLARATION

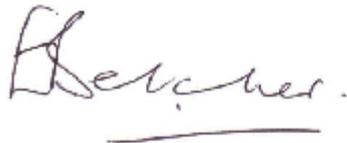
I hereby certify that the doctoral thesis mentioned below has been properly  
language edited.

#### Title of thesis

A strategy for meaningful simulation learning experiences in  
a postgraduate paediatric nursing programme

#### Candidate

Cynthia Spies



*Belcher.*

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27 January 2016