Debriefing after simulation scenarios in undergraduate nursing education:

The New Zealand experience

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Abstract

Background
Simulation technology has advanced over the past fifty years to where it is today - embedded in the health care industry for the purpose of recognising and managing risks to patient safety. Originally stemming from the aviation industry, simulation has been developed for health professional education to allow low to high fidelity representations of clinical situations that are aimed at increasing the knowledge, skills and attitudes of students. For this study, the focus is on nurses. With this comes the need to reflect and review the experience both from a student’s and a teacher’s perspective.

Aim of the research
This research has sought to understand the design characteristic known as “debriefing” that follows any simulation teaching, and how it is applied in nursing education practice in New Zealand (NZ). Investigation of adult learning theory assists in understanding the key elements required when teaching nursing students. The debriefing session is explored in the context of clinical simulation scenarios where the educator and student come together for a shared understanding of the experience. The analysis uses frameworks to examine and discuss educational best practice. This approach focused on supporting teaching practice by assisting in informing and contributing to the development of educational standards for simulation debriefing in nursing education in NZ.

Methodology
For this study, a quantitative descriptive approach was used to gain the perspective of nurse educators on the use of debriefing simulation scenarios in the Bachelor of Nursing (BN) degree. A survey was sent to the 16 educational institutions that offer the BN degree in NZ. A total of 38 surveys were sent with 18 responses returned. Data was analysed statistically and descriptively, with emerging themes being examined individually.

Findings
Two themes that described simulation use and debriefing frameworks in undergraduate nursing education emerged from the data. The findings described an inconsistent approach to the way simulation and debriefing are approached in NZ nursing education. The reasons for this are related to curriculum differences, different teaching models and differing levels of support for staffing and implementing simulation laboratories in each institution.
Recommendations

Further research is required to address the gaps in NZ literature, and this thesis will support the development of simulation processes in NZ nursing education.
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Explanation of terms

**Ako Aotearoa National Centre for Tertiary Teaching Excellence (Ako Aotearoa):** Their vision is to promote the best possible educational outcomes for all learners. Their work towards this vision focuses on building strong and collaborative relationships with tertiary organisations, practitioners and learners to enhance the effectiveness of tertiary teaching and learning practices.

**Androgogy:** The methods or techniques used to teach adult learners.

**Bachelor of Nursing:** Full time three year level 7 degree which, on successful completion of state final examination, leads to qualification as a Registered Nurse.

**Council of Deans of Nursing and Midwifery (Australia & New Zealand):** The council is the peak organisation that leads and represents those who provide higher education for nurses, and fosters quality standards of university education for nurses and midwives.

**Health Care Worker:** Those employed to work in the health care industry, either primary, secondary or tertiary settings.

**Moulage:** The art of applying mock injuries for the purpose of training.

**Nurse Educator:** An academic staff member who has the equivalent of at least three years’ full-time, post-registration clinical nursing experience and must demonstrate currency of theory and practice knowledge appropriate to their teaching responsibilities. They must also have completed a programme in adult teaching and learning within two years of appointment (NCNZ, 2013, p. 84).

**Nursing Council of New Zealand (NCNZ):** The Nursing Council of NZ is the regulatory authority responsible for the registration of nurses. Its primary function is to protect the health and safety of members of the public by ensuring that nurses are competent and fit to practice.

**Simulation Fidelity:** The degree to which the simulation approaches reality, for example a low fidelity experiences might include working on a case study and a high fidelity simulation may use a human patient simulator to provide a high level of interactivity and realism for the learner.

**Simulation Scenario:** A clinical situation that resembles reality so that nursing students can practice clinical skills in a safe environment.
Chapter One: Introduction

I hear and I forget
I see and I remember
I do and I understand

Confucius (Chinese philosopher and reformer, 551 B.C. – 479 B.C.)

1.1 Background

Simulation in nursing education has developed over the past half century to engage and excite the adult learner. The development of equipment known as “skill trainers” in the early 1960s and 1970s provided health care workers (HCW) with the opportunity to practice skills such as Cardio Pulmonary Resuscitation (CPR) and insertion of intravenous catheters (Laerdal, 2013). The development of human patient simulators in the 1990s heralded a new focus and vision for health care simulation. Now, the HCW could engage in a fully immersive situation that could mimic reality allowing for a greater depth of learning.

Internationally, simulation in the form of practice on pseudo-patients (often students themselves), has been a part of the medical and nursing education landscape in the United States, Europe and Australia for many years. With the development of aircraft simulators in the aviation industry, simulation has expanded and developed to adopt similar approaches in the health industry over the past 20 years (Bruce et al, 2009). Human patient simulators were developed to mirror what the aviation industry had developed, by providing an opportunity for learners to train in a realistic environment. These environments have become so realistic due to the availability of highly technical and computerised human patient simulators, that they are defined by their fidelity or ability to imitate reality. The higher the fidelity, the more closely the simulator and scenario mimics reality and vice versa (Jeffries, 2007). It is important to note the distinction in fidelity as this can determine the level of time, engagement of students and the style of debriefing or reflection at the conclusion of the session. Nursing has adopted simulation at all levels, from low fidelity skills training sessions to high fidelity immersive scenario training that is useful for developing critical thinking skills, all with the aim of building knowledge (Bruce et al, 2009). It is interesting to note that Gaba (2004) described simulation as a technique and not a technology, which implies that, regardless of the
complexity of the equipment, the important matter is how it is used to deepen a student’s knowledge. Simulation has also been described by Jeffries (2007) as a replication of the essential aspects of a clinical situation so that when the students are working within the simulated environment, the situation is more readily understood.

Simulation facilities for teaching medical and nursing personnel are available in all universities and institutes that offer undergraduate and post-graduate health science courses in New Zealand (NZ). A search of internet sites that have Institute and University course information, identifies the University of Auckland’s “Simulation Centre for Patient Safety” and the University of Otago, Christchurch’s simulation centre among others, providing education using simulation. Torrie (2011) emphasises that simulation in healthcare education and research is rapidly increasing both in NZ and globally and believes that it is now an expectation to have simulation as a learning method in medical and nursing schools. Much of the NZ context mirrors international drivers for simulation, including acquisition of basic skill competencies, improving the quality and efficiency of learning and gaining exposure to situations that may not be common in the real world (Torrie, 2011).

1.2 Researchers’ interest

The use of simulation in undergraduate nursing education was a new concept to the researcher when commencing employment as a nurse educator in 2009. The researcher studied at the same tertiary facility that now employs her. Therefore, she has insight into some of the changes and advances in the way nursing education is delivered. However, it has also highlighted that while institutes may have purchased expensive equipment like computerised human patient simulators, if they are stored in cupboards and ignored, they are not useful. Hence, the researcher embarked on a journey of upgrading the current clinical facility to include a simulation suite, upskilling knowledge of how to use the equipment, and in general supporting the process of embedding simulation into the institute’s nursing curriculum. With this developing knowledge of simulation and contemporary teaching strategies that are frequently used by the researcher, specific knowledge relevant to this study is gathered and understood.

Simulation technology has become a part of the health education landscape, with the multidisciplinary health care team able to take part in training in larger simulation centres. Within nursing however, NZ’s nursing regulatory body, the Nursing Council of New Zealand (NCNZ), has no defined standards as to how this approach should be applied in
nursing education practice. In a recent article, Bamford-Wade (as cited in O’Connor, 2014, p. 11) was noted as saying that simulation has developed in an ad hoc way in NZ. Educational facilities seem to be creating their own individual policies for use, relying upon the “simulation champions” of the institute, to work out how best to acquire equipment, build suites, up-skill staff and learn how to run these facilities. Anecdotal evidence suggests that most nurse educators involved with simulation technology use it as an additional teaching modality to other forms of teaching rather than inclusive of them. Staff are therefore not solely employed to run simulations as their main teaching role. Also of note is that often the amount of simulation used in teaching is left to the individual educator’s discretion rather than being a structured and planned part of the school’s teaching plan. The question then remains of who sets the standards for ensuring a consistent and appropriate use of this technology in nursing education in teaching institutions. The education programme standards for nursing in NZ (NCNZ, 2012, p.65) state that “All students [must] have access to simulation learning resources in order to prepare them appropriately for clinical experiences to ensure the safety of health consumers, students and staff.” While this is a broad standard, it allows each institution to define how simulation technology is to be used within individual curricula. Foronda, Liu and Bauman (2013, p. e1) mirror this in the United States experience where,

... nursing faculty shortages, high workload demand, commitment to learning simulation-based technology, isolation within ones area of expertise or “silo” effect, and lack of experience in development of instrumentation and research may be reasons for the meaningful delay of vetted and effective simulation-based learning experiences throughout nursing curricula.

While tackling the requirements for embedding simulation technology in each institution, it also befalls the educator to learn how to use simulation techniques effectively, and with this, the essential debriefing time that should follow any simulated scenario. To be skilled in the art of debriefing would imply knowledge of how to do this effectively; however this aspect of simulation often occurs with very little, if any, formal training. Rall, Manser and Howard (2000) discuss debriefing as a crucial aspect of learning development and recommend training of instructors as integral to this process. This is also supported by Dreifuerst (2010) who believes that formal training is essential for teachers to undertake the role of facilitator. If this is the international experience, then within NZ where simulation uptake is more recent, there is a paucity of information that supports the notion that nurse educators are skilled in debriefing techniques. Brown et al (2012) wrote an article entitled “Clinical simulation in Australia and New Zealand: through the lens of an
advisory group”. What is interesting to note in this article, is that there is very little information related to the NZ experience of simulation. In fact, of the academics listed, from the group of ten authors, only one is from NZ and not from an academic institution but rather from a company that sells simulation equipment. Further it is interesting to note in this article that the focus is solely on “innovation and research in simulation learning in nursing in Australia” (Brown et al, 2012, p.179). Thus, little is known about how NZ undergraduate nursing educators run debriefing after a simulation scenario. What is known is that all of the 16 providers of undergraduate nursing programmes offer simulation in some form and therefore it can be assumed that the essential debriefing that follows it would also be offered. It is clear from the lack of literature regarding debriefing in undergraduate nursing programmes in New Zealand, much of the information will be anecdotal and related to the authors own experience. Using this perspective will strengthen the links between what is happening overseas in comparison to the NZ context.

1.3 Research aim

For the reasons stated in this chapter there is a need to undertake this research to identify the ways in which NZ nurse educators from the tertiary education sector, use the time after a simulation scenario to run debriefing sessions. Information gathered from this research will identify current practices within nursing education. Further, it could serve as groundwork to identify best practice in debriefing techniques. It could be argued that the debriefing session is as much a learning tool as the simulation process itself, and is therefore an important step to acknowledge and review in any simulation environment. Further, this research will provide additional information that may add to any development of structured simulation and debriefing practices, for education providers of BN degrees. In particular, to identify debriefing frameworks used by other educational institutes, if they exist, and to broaden the knowledge of what is commonly practiced in NZ. Additionally it could add to the existing body of knowledge provided by the NCNZ, NZ Nurses Organisation (NZNO), Council of Deans of Nursing and Midwifery Australia and New Zealand (CDNM ANZ), Health Workforce New Zealand (HWNZ) and stakeholders of clinical programmes where students have access to clinical placements. This is an important step because it is accepted that simulation is an emergent and important teaching methodology, yet little is published around debriefing frameworks to guide nurse educators through this process. It is important to acknowledge the development of
nursing education over the past one hundred years, as the move from an apprentice-style education to tertiary education facilities reliant on clinical placements has been a driver for the integration of simulation in these settings. Debriefing frameworks need to be linked to adult learning theory and to take this into consideration when facilitating the sessions after the simulation scenarios. It is also important to look at current nursing education theory to link the simulated scenarios to match the learning progression of the nursing students. The value of this research is to set the scene in terms of current practice in NZ undergraduate nursing programmes and to add to the development of future best practice in simulation debriefing.
1.4 Thesis overview

Chapter One: Introduction

The introduction of this thesis outlines the background to the study and examines the researcher’s interest in simulation and in particular debriefing frameworks. The introduction of simulation technology into health care is discussed and the significance of this technology aligned with nursing education theories and practice is explored. Key terms are used in this study to define the degree of reality used in simulation and must be understood to allow to determine the study findings.

Chapter Two: Review of Literature

The literature review is focused on the use of simulation technology and debriefing in nursing education. Historical aspects such as traditional nursing education approaches and early simulation technology provide a basis for further investigation into current trends.

Chapter Three: Methods

This chapter addresses the investigation into the NZ experience of debriefing after simulation in undergraduate nursing education. It discusses the design and method of the study and rationale regarding the use of this approach. Ethical and Māori considerations are made, to be able to undertake this research.

Chapter Four: Results and Findings

This chapter describes the research findings. Information related to two distinct emergent themes that characterise the use of simulation and debriefing are discussed. Information is sourced from nurse educators at the forefront of simulation use in undergraduate nursing, and describes details of simulation and debriefing frameworks used throughout NZ.

Chapter Five: Conclusions and Recommendations

The final chapter is focused on detailing the information that is relevant to nursing educators involved with simulation technology. Linked with this is the focus on educational support required to undertake this type of teaching methodology. The study recognises some limitations within the survey and recommendations for further research in this area.
Chapter Two: Review of Literature

2.1 Introduction

This review explores the topic of simulation and debriefing within nursing education and how it has developed to become a recognised teaching methodology. Specific aspects have been investigated to set the platform for this study and to identify gaps in NZ based literature related to the topic of simulation and debriefing use in undergraduate nursing programs.

2.2 Search strategy

An extensive search of electronic databases was carried out including, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), the Cochrane Library, Google Scholar, Science Direct and the NZ Educational Theses database. Search parameters were limited to research publications and journals printed between 2000 and 2013. Due to the rapid advances in simulation technology over the past twenty years, it was determined that this time range would adequately demonstrate information related to simulation in nursing education. A range of search keywords were used, including “simulation”, “nursing education”, “debriefing in nursing education” and “health care simulation”. Titles and abstracts were screened and studies not included if they did not discuss simulation in relation to nursing education. One study that was included related to a medical simulation as this paper discussed the global topic of debriefing and did not just relate this to medical simulation.

2.3 Search Outcome

Much of the literature that addressed the topic of nursing education and simulation came from overseas countries, specifically Australia and the United States. There was a paucity of literature published within the NZ context of simulation in nursing education, however there was information that could be identified in other thesis works such as Wilson, (2001), Hollis, (2012) & Liu, (2011), a NZNO article and unpublished commentary from NZ nurse educators via internet sources. These are included in this review.

2.4 From the aviation industry to health care

The origins of simulation come from training pilots. The aviation industry is known for using simulators to teach pilots how to fly aircraft in situations that are difficult to replicate in reality. Edwin Link, known as the “father of simulation” developed the Pilot
Trainer in the 1920s to allow trainee pilots to learn to fly by becoming familiar with the instrumentation whilst still on the ground rather than in a real flying situation (Rosen, 2008). Adopting this approach, health education simulation has attempted to replicate this by using a simulated clinical situation for the purposes of learning without affecting a patient, becoming familiar with situations before dealing with it in real clinical practice (Morton as cited in Jefferies, 2007). The concepts are the same in health care and the aviation industry; to have the ability to train people within a safe environment prior to working in a potentially unsafe environment. The development of the technology from aircraft to human patient simulators has occurred over the last half century to provide low risk training of students in managing clinical situations. Conference proceedings demonstrated the dissemination of information about simulation in 1988 and 1989 with manikin products showcased well before they became commercial. The growth in the simulation industry during this decade was the prompt that was needed for further development and research in techniques and educational methods using this technology (Rosen, 2008).

As with the aviation industry, simulation has progressed with technological advances capable of providing human patient simulators that are functionally lifelike and resemble a real person. While it is impossible to replicate humanity in its exact state, it is possible to imitate an approximation with moulage or a mask. Students must “buy in” to the technology. The experience needs to be clearly supported by the educational faculty in the creation of, and guidance with, an authentic scenario. Fey, Scrandis, Daniels and Haut (2014, p.e251) discussed the setup of a formative simulation where students were asked to sign a fictional contract, also described as “suspending disbelief”. This implies that there is a discussion held with students prior to attending a simulation, to ensure that students are able to put aside the reality of a plastic manikin and to believe it is a real human being. It also implies that there is a debriefing afterwards to allow students to return to the reality without the simulation.

2.5 Embedding simulation technology into NZ Education institutes

As indicated earlier in the chapter, simulation training in countries such as the United States, England and Australia has been available for many years. Simulation was originally developed to meet the training needs of several high risk industries such as the military, aviation and nuclear power production (Galloway, 2009). By the 1960s simulation models were available for resuscitation training and cardiac assessment training. It was however,
the development of technology in the final decade of the 20th century that transformed health education to what it is today (Jeffries, 2007). The link was thus established between the technology of replicating human responses and health education. As a result, simulation has become a prominent part of teaching methodologies today.

As previously suggested, it is known that simulation suites are being established in institutions that provide undergraduate nursing education in NZ. These are often at great cost to the education providers who are providing this so called “cutting edge” education. Lapkin and Levett-Jones (2011) noted the high financial costs to be associated with establishing simulation and then ongoing costs related to staff development and curriculum design or redesign as required. To allow for simulation suites, education institutes are reviewing their capital budgets to provide up-to-date equipment and space to provide for simulation technology. Costs invariably include purchasing of expensive computer-driven human patient simulators and simulation suites to house them. Another consideration that needs to be made when developing simulation within an institute is the provision of training, such as how to use simulators, to trouble-shoot and to repair the equipment. Anecdotal evidence suggests that in the recent past, simulators were kept in cupboards used solely as skill trainers (or not used at all), rather than being used to their full capacity. This was in evidence in one situation when the researcher began the role of nurse educator and found that highly expensive computerised manikins were not in use due to lack of staff training. Recent staff changes meant those with the expert knowledge had moved on. Other reasons why simulators may not be in use are lack of time to complete training or lack of evidence to support this teaching method.

Nursing experience shared with students can be an effective way of illustrating nursing in the classroom. The use of simulation with nursing students will become progressively more effective as nurse educators become more skilled in all aspects of simulation. Little can be found in creating standards for simulation in nursing education. However, following a review of literature in 2013 undertaken by an Ako Aotearoa collaboration, guidelines for undertaking simulation in nursing education in NZ were proposed. They suggested the following:

As a teaching method, simulation requires thorough planning and organisation to ensure relevance to clinical nursing practice, the student participants and the clinical environment. Adherence to carefully constructed scenarios utilising relevant nursing skills, nursing knowledge, clinical decision making and reflective thinking contributes to an effective learning environment that reinforces the critical thinking and learning for the student (Edgecombe et al., 2013, p 19).
In the US, the use of high fidelity simulation has grown exponentially, and is an extensive part of the curriculum (Solnick as cited in Neill & Wotton, 2011). This major step in the evolution of the training in the health sciences has occurred in the late part of the 20th Century (Rosen, 2008). This parallels the NZ experience where all BN programmes in one way or another offer simulation scenario training. Of the many benefits of simulation, one of the key points is the ability to demonstrate competence using basic-to-advanced patient care scenarios depending on the progress level of the student within the BN programme. There are unending possibilities to create scenarios that can improve patient safety and prevent human errors by allowing students to practice in a safe simulated environment; that which becomes real in practice (Mayville, 2011). This allows scenarios to be tailor-made to the curriculum, to be consistent with current health issues and to align with the NZ health strategy. There can also be a consideration to using the same patient details throughout the three years but increasing the complexity of the case over the years. Not only do students respond by becoming familiar with the health consumer over this period of time, but begin to link increasing knowledge and theory to the client as they progress. Tanner (2010) discussed the importance of new knowledge and the challenges within clinical education to provide opportunities to achieve this progressively. Brown et al. (2012) defined the key difference between learning in the simulated environment and the clinical environment as the ready availability of the nurse educator to provide teaching or peer support from fellow students.

There are challenges in determining how simulation technologies have been implemented in each NZ education institution due to the lack of available literature on the subject. What guidelines determine simulation use, what types of simulation training have faculty undertaken, and what are best practice strategies in the use of this technology, are questions that currently have no clear answer. Tanner (2010) discussed the need for reform in clinical models in the US. The current model was said to be focussed on repetitive tasks and not on higher-order thinking skills. Tanner found that the use of simulation may have a bigger part to play in deepening the students’ knowledge. Perhaps the lack of literature in the NZ context underpins why there are differences in clinical models and use of simulation in education facilities. This work aims to interpret the use of simulation within NZ education facilities and to determine how the design characteristic of simulation debriefing is manifested in each institution. In order to do this, it is prudent to discuss the development of nursing education in the NZ context.
2.6 The history of nursing education

No body of work that is focussed on nursing education would be complete without reference to the founder of modern nursing, Florence Nightingale. Nightingale wrote in the 1840s that, at its most basic, nursing education always contains a theoretical and a practical component which equates to the art and science of nursing (Nightingale, 1859). It struck Florence after she “nursed” her aunt at her deathbed that there was a necessity for training in nursing. This realisation shocked her as, until this time, it seemed that the only requirement needed to take care of the sick was to be a woman (Woodham-Smith, 1951). Unfortunately in these times, the women that were attracted to nursing were often considered of dubious nature and colourful background (Russell, 1991). Nursing can be considered as enshrined in human nature: since the beginning of time nursing could have been considered a normal function as the young take care of their elders, or the mother nurses her child. It wasn’t until Nightingale spent many years capturing the statistics that led to an understanding of conditions that lead to illness or prevented wellness that organised nursing education became established (Woodham-Smith, 1951). Early nursing education was apprenticeship-style training, where nursing students learned at the bedside rather than in the classroom. Nightingale then proceeded to strengthen this learning by teaching nursing in schools and hospitals by using both practical teaching and simple experiments; this was to demonstrate “what may be called the theory of it” (Nightingale, 1859, p. 114).

Nightingale herself received her training at the Lutheran hospital in Kaiserwerth, Germany, which was considered the cradle of modern nursing. Under the supervision of Pastor Fliedner and his wife, they took only nurses who were blameless and upright characters (Lind, 1982). Later Nightingale established a training school for nurses at St Thomas’ Hospital in London which led to reforms in nursing education, the result of which were adopted across what was then the British Empire (Russell, 1991).

In the capital of NZ, Wellington, the first training school for nurses was established in 1883. Untrained nurses were supplanted by “probationers, drawn from a higher order of society” and kept under the watchful eye of Miss Moore, the Lady Superintendent (McLean, 1932, p. 48).

The beginning of formalised education or training programmes began in 1901 with the enactment of the Nurses Registration Act which led to registration as a nurse in NZ (Papps & Kilpatrick, 2012). Underpinning this continuance of regulation of nurses is the Health
Practitioners Competence Assurance Act 2003 which provides a legal framework to maintain standards of competence, fitness to practice and quality assurance for health care in NZ (HPCA Act, 2003).

Nursing education has had many developments over the years to where it stands today. Entrance to the Register of Nurses is now only achievable through a Nursing Council accredited undergraduate degree. Prior to 1973, NZ nurse registration continued to be attained through the apprentice model with trainees having “full student status”. The transfer of nursing education to the general education system started in the 1970s after the NZ government review of nursing education (Carpenter, 1971). Dr Carpenter’s recommendation was that funding and responsibility for nursing education be transferred to the education sector (Rhodes, 2010). One of the main thrusts of this report was to highlight and identify nursing as a profession and, to do this, bringing nursing education into the tertiary education sector was the key. Another key recognition of nursing as a profession was the formation of professional bodies such as the Nursing Council of NZ (NCNZ) and the NZ Nurses Organisation (NZNO). Not only does the NCNZ regulate post-registration nurses, it also sets and monitors educational facilities and provides auditing of programmes to maintain educational standards (NCNZ, 2013). In the mid-1970s when nursing education was moved into the tertiary sector, this marked a radical challenge in the move from the apprentice style nursing education which had long been associated with a paternal and medically dominated health institution (Wilson, 2001).

Until the 1970s, as demonstrated, nursing education was an apprentice-style model where nursing students worked alongside and observed the activities of the registered nurse. The development of simulated experiences at this point could be classed as “low fidelity” as technology advances in computerised manikins were to come much later. The researcher’s memories of practicing the skill of giving an injection into an orange would not be an uncommon experience among nursing students of the time.

The move to tertiary education facilities and the classroom and away from the bedside, has potentially diluted practical skills. Papps and Kilpatrick (2012) argued that, if anything, there is a prevailing view that a “real” nurse only works in clinical practice. This has as its residual ethos that the process of becoming a nurse is more about exposure to large quantities of clinical experience than about undertaking intellectual activity. This would support the argument for retaining most clinical hours in a nursing programme to be at the bedside. Current literature supports the use of high fidelity simulation in nursing, but
there is very little supporting research to understand the extent of simulation as a substitute for traditional clinical experience (Gates, Parr & Hughen, 2012). While simulation will never replace clinical experience, it can be used to provide clinical situations that may not be easily accessible in practice. This could be, for example, a cardiac arrest, where students may not have to deal with this until they are registered, and, although simulated experience will never be exactly the same as patient care, it allows the student to experience a critical event before they are responsible for one in a working environment (Sanford, 2010).

Carpenter (1971) proposed that clinical and theoretical hours be sequenced to demonstrate progression over the training, and for nursing students to have the opportunity to learn something in the classroom and then apply it in the practical setting. This relates to the complexity of skills that the registered nurse requires, summed up by the International Council of Nurses (ICN, 2013, nd.) definition of a nurse being able to provide “...autonomous and collaborative care of individuals of all ages, families, groups and communities, sick or well and in all settings.”

Nursing is a profession in its own right. Pioneers of nursing education have worked long and hard to ensure the development of registered nurses who can demonstrate the ability to work autonomously and collaboratively alongside health consumers. As has been demonstrated, nursing has moved away from the apprentice model and into the classroom, resulting in the need for nurse educators to retain the ability to teach in a “mock” environment. It is with this in mind that the attention must turn to the process of adult learning and in so doing, provide a commentary on developments of nursing education in the 20th century to demonstrate how contemporary nursing education is delivered.

2.7 The development of simulation in nursing education in NZ

At the turn of the new century, reflection on NZ nursing’s past, and looking into the future was timely (Holloway, 2000). Similarities were drawn between nursing in the United Kingdom and NZ citing issues of concern such as the aging workforce, opportunities for skill acquisition in hospitals with high acuity and the reduction of Registered Nursing numbers (Holloway, 2000). Nursing education has to meet these challenges by preparing nursing students for a world where technology and knowledge are rapidly changing. One of the ways to achieve this can be to use technologically advanced human patient
simulators and immerse students into scenarios that are realistic and have the potential to provide meaningful learning experiences.

Simulation has been defined as “an imitation of some real thing, state of affairs or process, for the practice of skills, problem solving and judgment” (Rosen, 2008, p. 157). Simulation scenarios can be considered high, medium or low fidelity in relation to the level of complexity that is required to mimic reality. Nickerson and Pollard (2010, p. 102) describe fidelity as “the extent to which the appearance and behaviour of the simulation/simulator match the appearance and behaviour of the real world.” For example, a low fidelity simulation may be teaching nursing students how to pack a wound using gauze and test tubes, while a high fidelity simulation may be working through a scenario of a patient with diabetic ketoacidosis with a programmable simulator, props and moulage to recreate aspects as detailed as ketotic breath smell. Further, it is important to acknowledge that fidelity can be defined in terms of technical differences in equipment, and also how authentic the simulation experience is presented (Weaver in Brown et al. 2012). It could be argued that the use of simulation as a teaching methodology is not a new advance at all. The technology of the simulators and computer systems that run them has advanced, but simulation in nursing has been ongoing for more than 100 years. As early as 1911, patient simulator manikins were in use in the United States, having such realistic features as jointed hips, knees and elbows (Nickerson & Pollard, 2010). In 2014, NZ schools of nursing commonly have life size, computer-driven manikins that at their most complex can deliver high fidelity simulation scenarios designed to teach critical thinking, team work and management of critical situations. There needs to be a distinction made between the use of simulators, and teaching using simulation scenarios. Using a simulator can be a static process where the student may, for example, practice a skill such as administering an intramuscular injection where no other interaction is needed other than a cursory glance or a practiced introduction. However, the immersion of a student or students into a simulation scenario dramatically increases the fidelity of the situation, with an associated increase in the number of variables that now may arise.

Simulation as a teaching methodology is not a new phenomenon (Murphy, Hartigan, Walshe, Flynn & O’Brien, 2010, p. e142). Using representations to develop thought and strategy have been used over the ages. For example, early civilisations have recorded using chess and checkers in military strategy, or early knights participated in jousting events to hone battlefield skills (Nickerson & Pollard, 2010, p. 101). From early flight simulators used by the military to the automobile crash test dummy to provide testing
that would be considered too dangerous for the real world, simulation has expanded into many industries. Of the similarities to health care, many industries have one thing in common – to prevent human injury and perhaps save lives (Nickerson & Pollard, 2010, p. 101).

Asmund Laerdal designed one of the first simulation manikins called Resusci-Anne, released in 1960 for mouth-to-mouth resuscitation training and subsequently cardio pulmonary resuscitation (CPR). Laerdal, interestingly, was a Norwegian toy manufacturer who saw a huge gap in the health industry market. Manikins have since been developed to an increasingly sophisticated level where they can now “bleed”, produce “sweat” and “urine” and react physically (albeit under the control of a computer program) to a range of conditions and medications (Cassie, 2011). The development of human patient simulators in the 1990s heralded a new focus and vision for health care simulation where now the HCW could engage in a fully immersive situation that could mimic reality, allowing for a greater depth of learning.

With the early development of simulation in the aviation industry, the growth of the use of high fidelity simulation has expanded into the health industry over the past twenty years, particularly as technology has improved (Dreifurst, 2009). In the United Kingdom, simulation is also used in nursing programmes and carefully regulated by the Nursing and Midwifery Council, who support simulation as part of clinical practice hours as long as the environment supports development of direct care skills and is regularly audited (Nursing and Midwifery Council, 2010. R5.2.4). The Carnegie Report (Benner, Sutphen, Leonard & Day, 2009) has also challenged nurse educators to explore creative strategies for effective clinical teaching to meet the needs of students in the changing clinical environment (Senger, Stapleton & Gorski, 2012).

Since its introduction into nursing education, the use of high fidelity simulation in NZ has gained momentum with simulation suites in use in all educational facilities that provide undergraduate nursing education. While many factors, particularly finances or staffing, influence an institution’s ability to provide the most highly technical or complex scenarios, there is no doubt that this teaching methodology is gaining acceptance by nursing educators. The NCNZ require all nurse educators to be current in clinical practice and teaching methodology by ensuring qualifications are appropriate. “Using simulation is one example of nurse educators demonstrating that students are being exposed to commonly occurring critical situations rather than relying on chance in the clinical areas” (Murphy et
al, 2010, p. e147). Furthermore, Horan (2009 p. 28) states that, “the human patient simulator (HPS), increasingly used in schools of nursing, provides opportunities to interact in a critical clinical environment that is realistic and encourages the development of good clinical judgment and critical thinking skills”. Durham and Alden, (2008, pg. 3-231) also noted that:

the major advantage of using the patient simulator as an instructional strategy in nursing education is that it provides opportunity for active and interactive learning without risk to an actual patient.

The inclusion of simulation in nursing education has developed to now represent a significant component of the curricula (Neill & Wotton, 2011). NZ nursing education parallels the US, with all BN programmes including this methodology. What is more difficult to determine is how simulation use has been adapted within each NZ institution. There are no guidelines provided by NCNZ regarding where simulation “sits” within the curriculum for the BN degree. However, the NCNZ education standards determine that students should have access to simulation facilities.

As previously discussed, simulation is well embedded into the US nursing curriculum. A national study completed in 2006 concluded that it appeared “immersion in a simulation provides the opportunity to apply and synthesize knowledge in a realistic but non-threatening environment” (Jeffries, 2007, p. 158). However, there was a clear message that research in this field is limited by the lack of literature on this topic in the US, and this is mirrored in the NZ experience. There is a paucity of NZ literature to define specific standards for the use of simulation in nursing education. Because of this, there are unknown quantities related to simulation application in BN programmes. For example, the type of training the faculty undergoes to run simulation and/or debriefing sessions, the best practice guidelines to be followed, or for that matter what are best practice guidelines in relation to simulation. To understand the context of teaching nursing students, an understanding of adult learning theories is critical when using simulation as a learning environment.

2.8 Adult learning theory and simulation

The NCNZ is clear in their direction of nursing educators and their qualifications to teach in that role. NCNZ Education standard 5.1 directs nurse educators to use “Teaching and learning approaches that provide opportunities to meet various learning styles and an individual student’s learning needs” (2012, p. 66). While many theories have developed over the years, the earliest have been described as having either behaviouristic or
cognitive underpinnings (Bradshaw & Lowenstein, 2007). Rutherford-Hemming (2012) pondered which learning theory, cognitive, social or constructivist, would best explain how students would learn from simulation experiences. It can be acknowledged that nursing education focuses on the adult learner and that the ultimate goal is the achievement of clinical judgment skills and critical thinking. Traditional approaches to education, for example, didactic lectures and skill memorisation are becoming outdated as there is a move towards interactive classes focussing on experiential learning (Lisko & O’Dell, 2010).

Simulation can be defined as an active learning environment because the students are physically engaged in their learning, using all senses. Experiential learning is not a simple definition, however Kolb (1984, p.38) summarised it this way “Learning is the process whereby knowledge is created through the transformation of experience.” An understanding that students come to the simulation with prior knowledge is important, so the educator can build on previous experience and transform new experiences related to the simulation objectives. Another approach to learning which complements Kolb’s experiential learning theory, is the constructivist view of learning. Neill and Wotton (2011) described students attending HFS with prior understandings and with the ability to construct, elaborate or reshape their knowledge. Facets of the simulation for discussion should include the overall process, clarification of learning objectives, critique as necessary and the opportunity for reflection and ways to transfer the experience into practice (Mayville, 2011). Adult learning theory or Andragogy, as defined by Knowles in his critical work “The Modern Practice of Adult Learning” (1980), considers principles that can be applied to adults as learners. These principles, in essence, define the adult learner as internally motivated, self-directed, having knowledge and life experience, being goal and relevancy orientated, practical, and valuing respect within the classroom environment.

The NCNZ requires that all students have “access to simulation learning resources in order to prepare them appropriately for clinical experiences” (NCNZ, 2012, p. 65). While it doesn’t state specifically the extent of simulation required, with the progress of simulation technology, it is up to the individual organisation to embed this methodology into their programmes. Because simulation is rooted in adult learning theory, an understanding of these principles assists education providers to develop methodology to meet the adult learning. What fits within the simulation teaching arena is the ability to provide learning experiences that allow learning to occur on many different levels. Kolb (as cited in Lisko &
O’Dell, 2010) defined learning as a continuous process, and the creation of knowledge by transforming experience into cognitive frameworks therefore changing the way the person thinks and behaves. This is further supported by Rutherford-Hemming (2012) where the constructivist approach is defined as attaching meaning to an experience or activity. Simulation scenarios are by design created environments, where students attach meaning to the experience, and then connect this knowledge to a current or future situation to a patient. Richardson (as cited in Dreifeur, 2010) linked simulation learning as both a constructivist and experiential process, where knowledge is constructed individually and thought about, as learning occurs.

The concept of skill acquisition within a simulation framework can be linked to the Dreyfus model, where individual stages are linked in a progression – novice, advanced novice, beginner, competent, proficient and expert (Dunn, 2004). These concepts fit within nursing education well, and can be used in simulation scenarios to develop the progression of the nursing students by understanding the education level each student group is in. Nehring, Lashley, and Ellis (in Gates, Parr & Hughen, 2012), described how high fidelity simulation can be used throughout all years of a nursing degree curriculum, beginning with basic assessment skills and progressing to complex care situations. By far the most beneficial aspect of using simulation within nursing education is providing a safe environment where there is no risk of harm befalling a “real” patient. Harm can and does occur when students miss cues and provide incorrect assessment or treatment options, however learning is very powerful when a “rerun” can be done and a deconstruction of events under expert guidance occurs. Senger, Stapleton and Gorski (2012, p. 477) state that “simulation is a creative way for students and staff nurses to improve clinical reasoning and refine psychomotor skills in a safe and controlled environment.” This is what appeals most to nursing educators and students alike because sharing critical judgments is an essential part of learning, and it is important to do this in an environment that is safe and free from consequence (Rudolph, Simon, Dufresne & Raemer, 2006).

With the use of simulation, comes the need to reflect on the practice and to discuss the learning experience, known as “debriefing”. The next section will discuss the concepts around debriefing.

2.9 The definition of debriefing

Simulations most commonly follow a simple framework such as the instructor introducing the environment and the human patient simulator, leading the students through a
scenario, and then following the experience with a debriefing period to reflect on what has just occurred. Dreifuerst (2010, p. 48) described debriefing as “the period at the end of a simulated clinical encounter when the faculty and student re-examine the experience.” Chronister and Brown (2012, p.e281) discuss the “debriefing portion of the simulation exercise”, indicating that a simulation session should be followed by a period of reflection, the two should be inextricably linked. Shinnick, Woo, Horwich and Steadman (2011, p.e106) refer to debriefing as a “planned session” led by the instructor, again illustrating that a time of debriefing should follow a simulation session.

Debriefing follows the simulated experience and therefore should not be confused with a briefing at the start of the scenarios where students are introduced to the situation about to occur, and are allowed time to become familiar with the environment. While there are no rules governing how to run a debriefing session, the common thought is that it will run for longer than the actual simulation scenario itself. Waxman (as cited in Neill & Wotton, 2011) identified that the debriefing period should be at least 2-3 times longer than the scenario itself to allow sufficient time for the students to reflect on their performance. This is because the reflection on the work just undertaken and the unpacking of the behaviour and the skills is as important as the practice itself. This is particularly important in simulation where an emotional context such as a critical situation is being taught. Dreifeurst (2010) discussed the importance of emotional release after the simulation being acknowledged, this would also allow for the “redirection of the learner to a reflective and meaningful learning event” (p.55).

Debriefing following simulation scenarios can be described as “active interaction between the educator and the students” (Neill & Wotton, 2011, p. 161), and a process that encourages the learner to reflect on their performance. There are many methods of debriefing but what is commonly known is that the debriefing is the most critical part to the scenario simulation. Boet, Bould, Bruppacher, Desjardins, Chandra and Naik (2011) discuss debriefing as encouraging the learner to reflect on their performance, which is considered critical in the process of experiential learning. As with most aspects of educational theory, there are differing expert opinions; most, however agree that debriefing after simulation scenarios is an essential component. Shinnick, Woo, Horwich and Steadman (2011) propose that debriefing is the most vital component of the simulation experience, therefore adequate time and attention should be given to this part of the process.
The International Nursing Association for Clinical Simulation and Learning (INASCL) talk about debriefing occurring directly after the simulation session and using a “systematic debriefing sheet” (Garrett, MacPhee & Jackson, 2010, p312). They go on to describe aspects of the debriefing process, for example moving out of the simulation area to a private classroom, viewing video feedback of the scenario and estimating a time that the entire debriefing process would take. During this allotted time, the students are expected to recall the encounter, reflect on what happened, review learning objectives and discuss how they may now respond in the “real world” setting (Rutherford-Hemming, 2012).

Rudolph et al. (2006) agree that there is little guidance around the appropriate debriefing environment, but concludes that it must be able to provide for trainees to feel simultaneously challenged and psychologically safe and to be able to engage in rigorous reflection. One of the considerations for those planning the simulation lab environment would be an understanding when in the debriefing session that all information is kept confidential. Boet et al. (2011) also discuss the debriefing process as a means to provide feedback to support the reflective process. The central theme within adult learning is grounded in the premise that students come to HFS with prior understandings and the ability to construct, elaborate or reshape their knowledge (Neill & Wotton, 2011). The experienced debriefing facilitator would be able to enhance the linking of knowledge, skills and attitudes. The INACSL published standards for best practice in 2011 and indicated that debriefing sessions should be facilitated by an individual trained in the debriefing process and who had witnessed the simulation scenario (Dufrene & Young, 2014).

Debriefing was described by Jeffries (2007) as design characteristic which should be incorporated into a framework that also includes consideration of learning objectives, fidelity, problem solving and student support and acknowledges that simulations are “complex, multifaceted and challenging” (p31). The primary purpose of debriefing in this multifarious environment should therefore be to provide a non-judgemental atmosphere with the ultimate objective being to cultivate knowledge building (Chronister & Brown, 2012). A defined structure to the debriefing session incorporating predefined objectives along with instruction, clarification and critique was discussed by Mayville (2011) as expert advice for running a session.

Debriefing following simulation scenarios can be described as learning that comprises “active interaction between the educator and the students” (Neill & Wotton, 2011, p. 161) that encourages the learner to reflect upon their performance. There are many methods...
of debriefing but what is commonly known is that it is the most critical part to the scenario simulation. Boet et al. (2011) also confirm that the feedback process known as “debrief” which encourages the learner to reflect on their performance, is considered critical in the process of experiential learning.

2.10 Learning through debriefing

Chronister and Brown (2012) described the primary purpose of debriefing as to reinforce learning objectives in a non-judgemental atmosphere for the purpose of learning. With learning as the central theme of all commentary on debriefing, it behoves educators to use accepted theoretical approaches to provide best practice teaching. Chickering and Gamson (1987) proposed that some of the practices that defined positive undergraduate education were encouraging contact between students and faculty, reciprocity and cooperation among students, active learning, prompt feedback and focus on diverse ways of learning. Using simulation as a teaching modality covers all of these aspects and is an effective way of developing deeper learning when the educator demonstrates an understanding of theoretical approaches to learning. Gaba (2004, p.12) echoes many of the same sentiments by saying, “much as in real life, one can learn a great deal just from the experience itself, without any additional feedback.” However, deeper learning occurs when feedback is provided. In education institutes, learning is based on a curriculum defining the standards students must achieve to be successful in gaining a qualification. There is a need to understand how learners process information within simulation to determine whether simulation is an appropriate method of instruction (Rutherford-Hemming, 2012). Feedback from student evaluations in a study by Lisko and O’Dell (2010) demonstrated simulation-based learning as bringing together classroom knowledge and clinical practice which required the students to think critically. Clapper (2010) further supports this in a discussion regarding transformative learning which is the goal of any simulation experience, and the adult learning principle of active and experiential learning. Childs and Sepples (2006) further expand on this by linking nursing as a practice profession that requires students to learn numerous psychomotor skills, and then transferring this to the clinical area. This leads to a discussion of different models of the debriefing process.

2.11 Models of debriefing

Nurse educators involved in simulation worldwide, agree that debriefing is a critical component of clinical simulation, and there is acknowledgement that there are limited studies that discuss the outcomes on students’ ability to develop clinical judgement
Based on current literature, there are many models of running a debriefing session that can be used to improve the likelihood of attaining that goal. One study determined a list of objectives relating to topics that should be covered in a debriefing session. These are:

- Identifying the different perceptions and attitudes that have occurred;
- Linking the exercise to specific theory or content for the course;
- Linking the exercise to skill-building techniques;
- Developing a common set of experiences for further thought;
- Providing participants feedback on the nature of their involvement, behaviour and decision-making; and
- Re-establishing the desired classroom climate such as regaining trust, comfort and purposefulness. (Warrick, Hunsaker, Cook and Altman, 1979, p. 95)

This view on debriefing techniques includes aspects such as identifying the skills of the participants, reaching common objectives and experiences, and ensuring a climate of trust and comfort throughout the process. However, it does not determine who the session is facilitated by and to what degree the student is encouraged to be a reflective practitioner. Some debriefing sessions are run by facilitators that pose a series of questions to the participants. Waldner and Olsen (as cited in Bricker & Pardee, 2011) gave example questions that could be used in a debriefing session. Questions such as, What does the group feel was effective? What obstacles did you encounter? What would you change, if anything, in the future, and what behaviours do you plan on continuing in the clinical setting? (p. 35). In this example, the questions are broad and encourage the students to lead the discussion rather than the facilitator. The benefit of this type of debriefing style would be to allow the students to discuss the most important issues arising for them within the simulation. It allows for reflective thinking and linking theory to practice by group consensus of what the main aspects of the simulation scenario were. It may, however, be difficult to determine whether learning objectives were met.

Chickering and Gamson (1987) proposed positive attributes that encouraged fostering of faculty and student relationships in undergraduate nursing. The ability to encourage reciprocity and cooperation among students, giving prompt feedback to students and encouraging active learning are all taken into consideration when preparing simulation and debriefing sessions. The ability to do this successfully depends on the preparation of faculty for this process. The following section addresses this issue.
2.12 Educational preparation of nurse educators in simulation and debriefing techniques

The NCNZ (2010) standard related to nursing education (Standard three), states that “academic staff must have completed a programme in adult teaching and learning within two years of appointment” (p. 10). This is a broad qualification that recognises the importance of having specific knowledge to educate adult learners. As discussed so far, there is valuable evidence to support engaging adult learners in ways that are meaningful and promote knowledge building and transference of this to clinical practice. Jeffries (2005) determined that facilitation of a debriefing session is an important faculty role, and therefore, it is as critical for faculty to understand how to debrief students, as it is to prepare simulators and create scenarios. Durham and Altman (2008) felt that simulation was only as effective as the faculty who were using it. The ability to weave clinical knowledge, teaching expertise and technological ability were ultimate factors in the effective use of simulation. Alongside this are the skills required to be able to share critical judgements with the students, so learning can occur from the experience and appropriate actions taken in the real world setting (Rutherford-Hemming, 2012).

Rudolph et al. (2006) coined the phrase “debriefing with good judgement” to de-mystify the use of criticism to students following a simulation session. They discussed the dilemma of facilitators not wanting to appear confrontational when giving feedback, and trying to balance this with providing the appropriate feedback to the students without damaging the relationship with them. This can be a continual challenge as the instructor or nurse educator is often seen as having the most knowledge and therefore there is constant pressure to meet the expectations of the students. Clapper (2010, pg. e12) was direct when he stated:

It can be argued that if you cannot teach it for understanding, do not teach it at all. When it cannot be done right the educators are wasting their time, the learner’s time and accomplishing little to increase patient safety. In fact, if they do not understand it, learners might leave the simulation centre as confident incompetents.

These are strong words for nurse educators to ponder, as they seek to integrate these new methodologies into their classrooms, with little room for failure.

There is a need for faculty training for those involved with simulation technologies. However very little opportunity for specific training in simulation and debriefing exists in NZ that is linked to tertiary institutions; rather it is left to key business interests in the market of supporting simulation technology in education facilities. Jeffries (2005)
discussed the importance of faculty being involved in workshops where they could experience feelings similar to students so that they could identify with them when participating in new experiences. Neill and Wotton (2011, p. e162) state “The aim of debriefing is to reconstruct real time representations of students interactions and to build on existing knowledge to form mental representations of clinical problems through pattern recognition and cognitive inference.” Even the most competent and knowledgeable nurse educator requires specific expertise to manage student learning in debriefing sessions. Specific training in simulation and debriefing is essential to incorporate this into the classroom as it is a relatively new way of teaching students in nursing education (Nickerson & Pollard, 2010). With these observations in mind, and having identified gaps in NZ simulation literature, the study will now be presented.
3.1 Introduction

The literature review has shown that little is known about how NZ nursing educators run debriefing sessions after a simulation scenario. What is known is that all 16 providers of undergraduate nursing programmes offer simulation in some form. In 2012, as part of a collaborative effort to synchronise knowledge of NZ simulation in undergraduate nursing education, a two day workshop took place in Auckland as part of a project funded by Ako Aotearoa to establish links between these education providers. The mission statement of the collaboration was “to enhance quality simulation pedagogy in all undergraduate nursing programmes as required by the Nursing Council of NZ” (Edgecombe, 2013). From this workshop a number of initiatives were proposed to develop this community of practice, for example the development of teaching and learning guidelines, collaborative research projects and a repository for sharing resources. Edgecombe, (2013) note that, while these resources are still developing, there is acknowledgement of the small number of nurse lecturers engaged in simulation in NZ which could affect the engagement of educators in these activities.

While the use of simulation is not new in NZ, what is interesting are the differences between how each education provider establishes it within their programmes. It remains to be ascertained as to whether all nurse educators using this teaching methodology, are approaching it in similar ways. Thus far, there is little evidence to suggest the existence of formal standards for the use of simulation in BN programmes set by NCNZ. Standard 4.2 from the NCNZ education programme standards for the registered nurse scope of practice (2010, p. 11) does note that, “All students [must] have access to simulation learning resources in order to prepare them appropriately for clinical experiences to ensure the safety of health consumers, students and staff”. While this is a broad standard, it allows each institution to define how simulation technology is to be used within individual curricula.

This study seeks to be a representation of simulation and debriefing in NZ undergraduate nursing education. The aim is to identify themes, commonalities and differences in the use of simulation and to identify debriefing frameworks throughout NZ, and discuss interpretations in the use of these.
The purpose of this chapter is to describe the research design and provide a rationale for using both qualitative and quantitative data. This research focuses on the education providers of BN degrees where students have access to simulation.

3.2 Research design

Prion and Adamson (2013, p.e35) state “The purpose of research is to answer questions.” For this study a quantitative descriptive approach that allowed for free text responses was used. The use of a questionnaire for this study allows the researcher to seek information at a national level rather than using interviews or focus groups which are both cost and time prohibitive to the researcher. Shih in Crossan (2012, p.48) lists four considerations when choosing a research design, these being:

- the philosophical paradigm and goal of the research;
- the nature of the phenomenon of interest;
- the level and nature of the research questions, and;
- the practical considerations of the research and efficiency of resources.

Justification for using this design relates to the type of information that is being sought in relation to the use of debriefing after simulation scenarios. This research aimed to uncover phenomena that is specific to the use of debriefing after simulation and asserts that there is no one “right” way to do this, in fact there are many effective ways to use the skills of debriefing. As already stated, the purpose of research is to answer questions, and the success of this depends on the researcher’s ability to structure questions that promote useable data. Using both a qualitative and quantitative approach can offer a means of making research more meaningful, complete and purposeful rather than using one approach alone (Elliot & Thompson, 2007).

Descriptive study designs use a variety of ways to determine variables of interest (Elliot & Thompson, 2007). In this study these variables relate to the use of simulation in undergraduate nursing education and the frameworks used when participating in a debriefing session after a scenario. Therefore in this study, participants (nurse educators involved in simulation) were asked to offer insights into their day to day use of simulation and debriefing techniques. The purpose of this design was to define and describe variables as they exist, as this supported the provision of a commentary on simulation and debriefing techniques in undergraduate nursing education in NZ from the educators’ perspective.
3.3 Population and sample

A non-probability convenience sample was selected as the information was sought from a specific source. It was important to seek the information from nursing educators that used simulation technology as part of their teaching role, as they are the ones who would be able to answer the questionnaire knowledgeably. It is possible that two or more nurse educators from the same institution could have answered the survey independently of each other, however as Robson (1998) suggests this adds more data to the discussion that supports a more varied opinion. Given the small sample size, it was deemed appropriate to add the qualitative aspect of free text to the survey so that a richer data source could be revealed.

Sixteen institutes of technology or polytechnics and universities that offer BN undergraduate degrees were recruited for this study so that there was the potential for a broad NZ perspective. Thirty-eight potential respondents were recruited from a list propagated by the Ako Aotearoa collaborative group. This list was designed to increase networking amongst nurse educators involved in undergraduate nursing education. However, because demographic data was not collected to maintain confidentiality of education institutions, it would be possible for more than one person from one institution to answer. It is also possible that not all education institutions are represented in the sample. The aim of choosing this approach to sampling was to ensure internal and external validity where there is generalisability to the wider population (Schneider et al, 2007).

3.4 Ethical Approval

The research proposal was submitted for approval to the Eastern Institute of Technology (EIT) Health Sciences Faculty Academic Committee (reference number 38/13) and subsequently approved for 2 years from 27th September 2013. Approval was subject to rewording of the questionnaire to make explicit that taking part in the online questionnaire was the respondents’ agreement to partake in the study (see Appendix I).

The issue of bias was discussed with the research supervisors related to the fact the researcher works at an educational institution that offers undergraduate simulation. There was potential for the researchers colleagues to have responded to the
questionnaire, however as all responses were anonymous it was decided to be an ethically sound process.

The Health and Disability Ethics Committee (HDEC) was not approached for approval as this research met the criteria to not require approval from this source.

3.5 Consideration of Māori

This research was guided by Te Ara Tika, Guidelines for Māori research ethics: A framework for researchers and ethics committee members (Hudson, Milne, Reynolds, Russell & Smith, 2010). There was potential for inclusion of Māori participants within this study, however this was unknown unless disclosed by the person in the comments section of the survey and culture or ethnic diversity was not the focus of attention in this research. The “mainstream” approach will be taken which refers to research that may or may not have relevance to Māori and where Māori engage as research participants. Participants were recruited by their place of employment and ethnicity data not collected. It is accepted that this research would have little or no impact on Māori, and completion of survey questions was optional for any potential participant regardless of cultural orientation.

3.6 Data collection methods

The data collection method is an original questionnaire developed by the researcher for this study. Because the information sought for this study is specific to simulation processes, it was thought that devising a survey that would be able to answer the research questions explicitly, and also providing for individual comments from the respondents, would be appropriate. The questionnaire focussed on two main themes that are common to the simulation process – simulation design and debriefing methods. Nurse educators that run simulation within a BN programme were targeted for this study as they were deemed to be familiar with the terminology used in the questionnaire. Respondents were given the opportunity to forward the email to other colleagues working within the simulation area of their institution, also known as “snowball sampling” (Schneider, Whitehead, Elliott, Lobiondo-Wood & Haber, 2007, p.124).

The questions were designed to acquire information related to the experiences of how simulation was integrated within individual programmes. Question one to eight established the use of simulation to set the scene and identify the use of either low, medium or high fidelity simulation. This added knowledge of the extent of simulation use
within educational institutions in NZ. Further, the questionnaire (see Appendix II) contained some closed questions to determine rates of simulation within programmes, for example “Does your education facility provide simulation scenario training within your undergraduate nursing degree programme?” The questionnaire also contained open-ended questions to allow respondents to articulate their experience with the use of simulation within their programme. For example “Is the focus of debriefing student or educator led, please comment.” In most questions, there was the opportunity for respondents to clarify or expand on their answer to a closed question. Questions nine to twenty-two identified the use of debriefing after simulation and sought further knowledge on whether most institutes used frameworks or unstructured approaches in their debriefing sessions.

The questions for this survey were specifically designed to relate to the NZ context. The use of Survey Monkey™, a free online survey programme, allowed a web link to be attached to an email that gives participants access to the questionnaire and allows them to submit it anonymously. All 16 institutes that offer the BN programme were contacted to participate in this study. Consent to participate was implied if the nurse educator filled in, and submitted the survey.

3.7 Data Analysis

As this research project uses a quantitative descriptive approach, the data was analysed statistically and descriptively with the majority of questions offering statistical results complemented by descriptive themes. The questionnaire results were read and re-read to gain an overall sense of emerging themes, which were then examined individually. Data analysis continued with a fracturing, grouping and gluing style of analysis, looking at data in terms of identifying styles of simulation and debriefing use in NZ education institutions. (Schneider et al, 2007, p.143) Categorising groupings of common themes, for example debriefing frameworks used, simulation design and application was carried out to look for commonalities among NZ education institutes. Both qualitative and quantitative analysis was done simultaneously as information was linked and further expanded the understanding of the researcher. The data was reviewed numerous times in order to become familiar with the emerging concepts, and this formed the basis of the findings.

3.8 Reliability and validity

Reliability in research is concerned with consistency, precision, stability, equivalence and homogeneity (Elliott & Thompson, 2007). Therefore it is important to ensure the tool
used to collect the data is a reliable instrument. One of the considerations for this research is that the tool was devised specifically for this purpose as there has been no other NZ study collecting the same information.

The questionnaire was refined and critiqued by experts in the field of research prior to sending out to potential respondents. The questionnaire also allowed respondents to identify any other issue not covered within the questions so that all aspects that the respondents wished to address were available to them.

In order to support objectivity, the survey did not require the respondents to provide demographic data to maintain anonymity. The respondents were advised that submitting the survey implied consent to be involved with the study. The researcher works as a nurse educator and is involved in running simulations within the BN degree, therefore further support for an objective view of data has been provided by the supervisors of this thesis. To decrease the possibility of identifying respondents and/or institutions within the responses, all data was coded and recorded within the analysis without identifiers. There was potential for the researcher’s own institution to be included in the data, but anonymity ensured that all data was unidentifiable to an institution.

3.9 Limitations of research design

Due to the specific nature of the information required for this study, the survey was sent to respondents who were involved in simulation training in undergraduate nursing programmes. However, in individual circumstances, there may have been respondents who neither completed the survey nor forwarded it on to others in their institution for completion. It is possible that not all educational institutions are represented in these study results, despite being sent to representatives of all undergraduate nursing programmes in NZ. Further, it is possible that the respondents could have come from three or four institutes, or be a cross-section of all 16 institutes. This is unknown because of the anonymised nature of the study.

3.10 Conclusion

For this study a quantitative descriptive approach that allowed for free text responses was designed to demonstrate the use of debriefing after simulated scenarios in undergraduate nursing programmes in NZ. The use of a web-based survey as part of the research design that also incorporated specific sampling, data collection and ethical considerations was used and a rationale was provided for this approach.
Chapter Four: Results and Discussion

4.1 Introduction

The following chapter will describe and discuss the quantitative and descriptive results of the web-based survey. The quantitative results will be presented in tables and graphs, and incorporate qualitative data discussion in themes as described by each section heading. The survey was emailed to the 16 educational institutions that offer the Bachelor of Nursing three-year degree programme in NZ. A purposeful sampling selected nurse educators who worked with simulation in their teaching role, and they were then asked to forward the survey link to colleagues also working with simulation technology for them to complete the survey. Statistical analysis was limited to absolute numbers, percentages and means due to the relatively small response rate. A total of 38 surveys were emailed, with 18 responses returned, making a 47.3% response rate from this cohort. There is potential for the response rate to be unknown related to whether the original 38 surveyed forwarded the email to other nurse educators using simulation. Given the importance of research in this field of study, and the lack of information on the use of simulation in NZ nursing education, the response rate is a positive step in providing some valuable information on this contemporary topic in nursing education in NZ.

The information sought for this study was to be a representation of simulation and debriefing in NZ undergraduate nursing education with the aim being to identify themes, commonalities and differences in the use of simulation. It also sought to identify aspects of debriefing frameworks throughout NZ and discuss interpretations in the use of these. The literature review provided at the beginning of this research identified the use of simulation and debriefing strategies that are being used in countries like Australia and the United States. It was observed that there was minimal literature available to demonstrate the NZ context.

Information collected from the survey was organised into two distinct themes, these being simulation scenario frameworks and using debriefing as a method to engage students in a higher level of learning. Commonalities and differences of how simulation sessions are run in individual education institutes will be discussed. Following from this will be an understanding of different methods of debriefing after simulation scenarios. This will give an overall picture of how this is undertaken in NZ nursing education.
4.2 Simulation use

As the survey was sent to a select cohort of nursing educators involved in simulation, all respondents who answered the full survey consented to providing information about the simulation practices at their institute. Because the response rate was small, the comments that respondents made are included in the data. Information was not put through any analytic programme for the same reason. Although numbers are small, the information and trends emerging in relation to the use of simulation are important, given the paucity of data available in regard to the use of this teaching method in NZ.

The use of simulation seems to be relatively new, with most respondents (55.6%) indicating they had introduced simulation within their curriculum for the last 2-5 years. Response rates for various time frames are demonstrated in Figure 1.

![Figure 1 Use of simulation in NZ BN programmes](image)

In a report written by Sanford (2010, p. 1006), simulation in nursing was stated to be “an increasingly popular educational tool.” Four years later, in 2014, the question to be asked is whether simulation is considered to be a new educational teaching methodology in NZ? It would seem so if the majority of educational institutes that offer simulation in NZ have only used this technology for the past 2-5 years. While it can be accepted that using simulation methods like practicing intramuscular injections on oranges is not new in nursing education, it is clear that the use of fully equipped simulation labs able to run low to high fidelity simulation is relatively recent. Reasons behind this may be technological advances, the cost of setting up simulation labs and the available space to do this in each institute. It may also be issues related to having appropriately trained staff to either run the labs or take on simulation teaching on top of their usual teaching schedule. A
commentary by O’Connor (2014) mentions the frustration of a prominent nurse leader who felt that NZ was “way behind” the rest of the world in terms of using simulation technologies in nursing education. While education facilities have invested heavily financially to build simulation facilities, this is seen as only a small percentage of the cost of continuing to utilise simulation facilities. Galloway (2009) noted that while simulation and its associated costs may be high, the added value of incorporating simulation into educational facilities outweighs the cost of not doing so.

4.2.1 Use of structured processes in simulation

While most respondents (72.2%) claimed the use of a structured approach, there were various interpretations as to what “structure” referred to. One respondent referred to structure as a “strategy document,” while others demonstrated aspects of the use of simulation in the following way.

*Simulation work is used at pre practicum days.*

*Coordinators provide simulation scenarios for students to attend in their own time via a booking system.*

*Simulations are used for students who need reassessment if they have had a break away from the BN programme.*

*Simulations are also used for students who have failed clinical placements.*

*Simulation is also used in Summative Assessments.*

This highlights the ability to incorporate simulation into many aspects of the curriculum and demonstrates in this case that there is a specific role of coordinator of simulation.

Another respondent demonstrated structure by detailing the process of how simulation sessions were run in their institute. Information was provided relating to curriculum learning outcomes, pre-reading, pre-simulation work-up, handover, debriefing using “Lasater’s clinical judgement model” and consolidation post-simulation via a web-based programme.

Despite this, some comments did indicate a lack of consistency across the curriculum, for example,

*It is up to the individual course coordinators to determine the amount of simulation that they will have built into the course content and by also taking into account the number of hours that the CC[clinical co-ordinator] has access to the simulation lab.*

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1The Clinical Co-ordinator in this context is responsible for running simulation within the BN programme of this particular institution
The use of a structured approach for simulation brought different concepts to the discussion. In 70% of cases, respondents used a structured approach to simulation within their nursing programmes. Structuring simulation throughout undergraduate nursing programmes was varied, with interpretations referring to timetabling of sessions throughout a particular year of a degree, or to structured scenarios to meeting learning objectives. There is no research to date in NZ that defines whether simulation scenarios occur with more prevalence in a theory or clinical paper. What is identified in simulation research literature, is that there is a strong clinical focus with priority scenarios occurring in “mock” hospital settings. There is a wealth of pre-written simulation scenarios available, most of which require a clinical setting to be reproduced. There are, however, many other environments in which nurses work that are not commonly used in simulation scenarios, for example primary care or mental health settings. The NCNZ education standard 2.8 requires the undergraduate curriculum to be based on national health priorities, contemporary health care and practice trends (NCNZ, 2012). There is potential for simulation approaches to have wider use to support education of these key areas.

A structured approach to simulation use was also described as the availability of staff to “manage” the simulation components of the BN programme and where individual course coordinators used simulation within their programmes. Jeffries (2007) proposed a simulation model (see Appendix III) that characterised a design construct to formalise the process of simulation into nursing education. The model looks at the interconnectedness of such elements as the teacher, student and educational practices and how the design characteristics of a simulation can affect the outcomes of learning, i.e. skill performance, learner satisfaction, critical thinking and self-confidence. Jeffries is well known in simulation circles for her focus on research-based rationale for implementing simulation into nursing education.

4.2.2 Statistical review of simulation use

Each respondent was asked whether they kept statistics for the review of simulation (Figure 2), however three respondents skipped this question, which they were given the opportunity to do. However, no explanation was given.
Respondents discussed types of information collected. This could be categorised as minutes of meetings, student email feedback or attendance registers. Room usage, and the weighting of simulation within the paper to provide for preferential room bookings, moderation of papers and NCNZ auditing protocols were referred to as the paper trail to provide information, but in general auditing was not well documented. One respondent indicated that they were not sure what statistics were kept which potentially highlights an area for further development on useful statistical data related to simulation. Other responses support the lack of consistency in maintaining statistics for example,

*Over this year 2013 we have asked for feedback from students on the simulation scenario they undertook. This information is then collated and used to ascertain what students require in simulation, what they find useful in the process.*

*An attendance register is taken for each session*

*Not sure what the question really means. We keep student feedback data regarding simulation satisfaction and experience*

*We have a simulation steering group who meet monthly with minutes of meetings. Currently undertaking research*

The respondents were also asked whether their use of simulation was audited. While in most cases (76.5%) there was no auditing process, those responses confirming that simulation was audited demonstrates variability in whether an auditing process was carried out or not.

*Room usage weighting in the curriculum rehouse, timetable placement of sessions*

*A strict record of who is using the labs and what is being taught in it*

*I imagine that it is but I am unsure and have not participated in any audit*
The NCNZ is not prescriptive about the amount and content of simulation within a BN degree, therefore there are very few guidelines for nursing educators to follow. Professional and contemporary nursing practice is the standard and each nursing programme is to map their curriculum according to the prescribed domains of competence for the registered nurse. However, as part of the NCNZ monitoring requirement, the NCNZ provided Jeffries explanation of simulation (2005, p. 97), but only required access to simulation teaching.

### 4.2.3 Simulation fidelity

Participants were asked to indicate the level of simulation that was used in each year of the BN degree (Figure 3). The use of low simulation fidelity was most common (58.8%) in year one of the degree, with a decreasing percentage in year two (23.5%) and year three (11.8%). Moderate fidelity simulation was most commonly used in Year two of the degree with (70.6%) of the respondents using this level of fidelity. High fidelity simulation was also used in Year two of the degree, but only by 23.5% of the respondents. The third year of the BN degree saw an equal amount of use of either medium or high fidelity simulation (52.9% respectively) and very little (11.8%) use of low fidelity simulation.

![Figure 3 Fidelity prevalence over BN degree](image)

No comments were made for this section by the respondents. However, based on the degree of difficulty that is built into nursing curricula, as students’ progress to their final year, the use of high fidelity simulation in years two and three is appropriate. One of the key features of the BN degree is that the curriculum must be structured so that there is a demonstrable progression in the student’s knowledge and skill. It is clear from the data
that within NZ schools of nursing, simulation complexity and fidelity increases in tandem with knowledge growth over the three year Bachelor degree. Jeffries (2007, p 64) states

The complexity of the simulation should increase as students’ knowledge level expands, as they are expected to integrate more variables into their clinical decision making, and as they practice in increasingly ambiguous clinical simulations.

Nursing education standards are governed by the NCNZ who require a demonstrated progression of learning required throughout the BN degree. NCNZ Standard two requires that “The programme has a structured curriculum that enables students to achieve the programme outcomes and the Council’s Competencies for the registered nurse scope of practice” (December 2007). Further, standard 2.6 related to the structure of the curriculum clearly identifies that there is an expected progression and integration of academic and practice knowledge required through the BN degree (NCNZ, p. 2012, p.61).

To teach progression of knowledge and skills, learning theory has been integrated within definitions of the NZ Qualifications Framework (NZQF, 2013) to identify appropriate skills and knowledge and application, at specified levels. For example, NZQF level five is the first year of a BN degree and the requirement of skills and knowledge are to be specific to a particular field of work or study. In the second year or NZQF “level six” of the BN degree, the student should have progressed to having specialised technical or theoretical knowledge with depth, in the field of work or study. Simulation can be used to progress knowledge by increasing the fidelity of the scenario. For example, teaching blood pressure monitoring in year one by using a static blood pressure trainer can be progressed to a fully immersive scenario where not only blood pressure is monitored, but also the health consumer can be assessed. Nevertheless, the relationship between the levels of fidelity required to produce significant learning outcomes remains elusive according to Foronda et al (2013).

It was evident in this study that the most popular use for higher fidelity simulation was within the second and third year of the BN programme. This would fit with the supposition that students require underpinning knowledge and a “level” of psychomotor skill, to allow progression within the BN programme. Progressive learning models will be investigated further in association with immersive simulation and stair-casing learning.

4.2.4 Simulation dynamics.

One of the benefits of using simulation scenarios as has been discussed, is the ability to allow students to work in an environment where they are able to practice skills and
scenarios without putting the health consumer at risk. Defining what role will be played in a scenario usually happens prior to the simulation in preparation for participating. Common roles that might be used are a family member, a health care provider or as a patient. Question 7 asked respondents if students were directly involved in simulation as health care providers in any one time. The reasoning behind this question relates to how team work and decision making are accomplished within the scenario.

![Figure 4 Students as Health Care Providers in simulation scenarios](image)

The most common trend emerging in simulation protocols was that between 2-4 students were in the role of health care provider (see Figure 4). The health care provider could be involved as nursing or medical background dependant on the topic of scenario. There were commonalities related to viewing galleries and whether the institution had access to video feeds to classrooms where a larger student base could watch the scenario on closed circuit screens. Dependent on the set up of the simulation facilities, simultaneous simulations could run, effectively increasing the number of students who could participate at any one time. For example:

*We have different types of simulation and therefore use different numbers of students*

1. May use a medium fidelity manikin with 2 students as nurses
2. Use student as patient
3. 2 students as nurses
4. Use medium fidelity

*Due to class sizes sometimes there may be a large gallery within the simulation lab viewing the scenario.*
In a recent study by Bethards (2014) the role of the observer in simulation scenarios was studied. The authors found that regardless of the role the student assumed during the simulation, there were no differences among the students in knowledge gained, satisfaction with the experience, or self-confidence. The authors concluded that role assignment does not affect overall student learning outcomes (p. e66).

In this study half of the respondents had between 5-10 students observing the scenario rather than taking part in the simulation (Figure 5).

![Figure 5 Number of students observing scenarios](image)

The BN degree is set out in a curriculum document that requires approval and accreditation by the NCNZ to be delivered to students. The NCNZ prescribes educational programme standards in relation to simulation use, only in so far as to determine that its students must have access to “simulation learning resources” to prepare them to work with health care consumers. There is no minimum amount of simulation hours a student must achieve, or standards about where simulation fits within a curriculum to guide nursing educators how to best apply this in individual schools of nursing. As alluded to, the cost of setting up and stocking a simulation suite will be limited to each institution’s budget and this can be a deciding factor as to how simulation is implemented into each programme. One of the criticisms of setting up simulation is that often capital budgets are approved for equipment, but there is a failure to continue to support simulation costs and requirements after the building work has been done. Jeffries (2007) supports this and similar issues, for example up-skilling faculty, employment of simulation assistants and allowing time for training to be common issues in all simulation environments. Jeffries (2007, p.6) goes on to recognise that this maybe because simulation is at its “nascent”
stage and there is not the research available to support simulation as an educationally sound methodology at present. However, as time progresses there is more available literature on this subject, as noted in the literature review.

Simulation scenarios do not just happen. There is much time and energy required to manage all of the facets required. For example, scripting the scenario to match NZQF levels, meeting learning outcome requirements, having available and trained staff to manage technical aspects of the scenario (i.e. the simulator) and considering how to offer all students the same level of simulation experience. Again, this is dependent on the educational facility management of these resources. While some facilities employ people to work solely with simulation, other facilities use existing tutorial staff that have an “interest” in simulation to progress this within each programme (M. Howden, personal communication, May, 2011). Foronda et al. (2013) indicated the continual struggle to integrate simulation into existing curriculums was related to many factors, faculty shortages, high workload demands and the “sil/o” effect being some of them.

To meet the needs of the adult learner, and while working within the individual parameters of each simulation facility, nurse educators teach within the requirements of their institutions curriculum document. The NCNZ standard for nursing educators (2010, p. 10) states that academic staff must “have completed a programme in adult teaching and learning” as a requirement of their appointment into the education role. An understanding of adult learning theory is implied once this qualification has been attained. Therefore it makes sense to look at simulation training through an adult learning lens. There is an expectation for current technology to be used within teaching from both the student and from an experienced senior educator’s point of view. In the modern classroom, internet capability is a commonality amongst students who often have their laptops when attending classes. Millennial learners are used to using technology because they have been exposed to it from an early age. However, technology is only a tool that must fit within a learning plan and be closely linked to the desired learning outcome (Clapper, 2010). Therefore it is important to be able to determine the level of fidelity that is required to meet the learning expectations. For example, it would not make educational sense to develop a high fidelity simulation scenario to teach the skill of blood glucose testing. Fanning and Gaba (2007) note that much of the research around adult learning indicates that adults require “active participation” to learn effectively. Recreating clinical events via simulation scenarios demonstrates this effectively. It is the educators’ role to provide the environment that offers a sense of reality so that students can gain the
most value from the experience. There are many theories relating to the transference of knowledge, for example, cognitive, social and constructivist learning theory (Rutherford-Hemming, 2012). What is interesting about simulation is that the students are exposed to a “disorientating dilemma” that requires the student to react based on many different attributes. The deconstruction of these actions leads to the next phase of the simulation scenario known as debriefing.

Clapper (2010) echoed Nightingale’s words, in that simulation can be termed an “art” and “science” of supporting adult learning. Drawing upon a number of adult learning theories is the key to the success of simulation scenarios by bringing together theoretical knowledge and psychomotor skills that engage the learner and develop critical thinking ability (Rutherford-Hemming, 2012; Lisko & O’Dell, 2010). Research regarding how adults process information during simulation is currently under-represented in the literature. However, it could be useful in determining whether simulation is superior to other forms of learning (Rutherford-Hemming, 2012). The goal is to provide a transformative learning experience, and this is likely to occur in active and experiential learning environment such as a simulation scenario (Clapper 2010).

Childs and Sepples (2006) discussed nursing practice and the requirements for nursing students to transfer knowledge and skills to the clinical setting. The focus was on nursing as a practice profession in which acquisition of knowledge, critical thinking, psychomotor skills and self-confidence were critical to be able to care for patients. With the continued interest in simulation stimulating research, the nursing curriculum is increasingly using this approach as it fits within the constructivist, contextual, experiential and problem-solving pedagogy that is best used in adult learning environments (Dreifuerst, 2010). Including students in the observation of simulation is as important as participating in the actual simulation: both are learning experiences.

4.3 Debriefing

All participants in the survey indicated that, following a simulation scenario, a debriefing session was facilitated. When asked how long debriefings take, respondents indicated that this process commonly took longer than the simulation scenario, with 44.4% of respondents reporting the time to be between 15-30 minutes. One respondent declared this to be the time period where the “light-bulb” moments occurred (Figure 6).
4.3.1 Who facilitates debriefing sessions?

Debriefing sessions were facilitated 58.8% of the time by the nurse educator who participated in the scenario event. Simulation scenarios were supported by more than one staff member, and commonly a nurse educator worked in the control room running the human patient simulator (35.3%). This suggests that simulation has a useful place in teaching within the curricula, despite the lack of guidelines for such educational activities (Figure 7).

4.3.2 Qualifications to debrief

The participants were asked to state whether or not they had received any formal training in simulation debriefing, and in most cases (61.1%) the answer was no. Those with formal
Debriefing following simulation scenarios is common practice in NZ schools of nursing, and an essential strategy to engage learners. However, there is minimal research to support this, especially in NZ publications. Much of the commentary is published in the UK, Australia and United States although it does have relevance to the NZ context as there can be commonalities in debriefing frameworks. Fey et al (2014, p. e250) states “Debriefing and feedback discussions allow examination and self-reflection, are critical to student learning, and may be the most important part of the overall simulation experience.” NZ nurse educators were asked whether they had received “formal” training in regard to debriefing methods, and while the majority said no, others cited their beliefs as to what formal training meant. One respondent that stated they had completed a paper in a post graduate degree, while others’ comments related to conference attendance or informal review of literature related to debriefing techniques. While teaching qualifications for nurse educators are a NCNZ requirement, there is not necessarily any focus on debriefing techniques and simulation, this is may be because it is a specialty area in nursing education. Clearly debriefing sessions occur in the absence of a trained “debriefer”; due to limited research in this area, whether nurse educators make a “good job of it” is unknown at present. What is known is that there are barriers to NZ nurse educators accessing courses specifically related to debriefing, as there are few nationally available courses, and international courses are costly and may not be cross-credited into the NZ education system. For example, a Graduate certificate in clinical simulation at Monash University in Australia has a financial outlay of approximately $10 000 AUD (24 credit points) and there is no guarantee that they will accept International students unless strict criteria are met (Monash University, 2014).

Debriefing has been called the “heart and soul” of simulation training, and if done badly can be a source of severe harm to students (Rall, Manser & Howard, 2000). When observing first time simulation users, it is common for there to be a reticence to be involved in the scenario in front of peers. Nurse educators with years of nursing experience may fear the moment when they will have to “perform” in a scenario, just in case something goes wrong or they miss something. Negative consequences can and do
occur when things go wrong or debriefing is handled poorly. Rall et al. (2000) stated some of the elements to be avoided in the debriefing process as:

- closed questions, criticism using destructive language, concentrating on errors, blaming and ridiculing participants, focusing too much discussion on medical points rather than on crisis management aspects, too much instructor talking, too many teaching points, too long a debriefing period (p.516)

The important distinction to debriefing a scenario where a number of negative issues have occurred is to be able to introduce strategies that the students can learn from and reflect upon. Rudolph et al. (2006) proposed that there was no such thing as a “non-judgmental” debriefing, and developed a method called “debriefing with good judgment” which uses advocacy and enquiry as their solution to providing feedback following simulations. There can be a dilemma for many nurse educators to only focus on the positive in a scenario. This may lead to misconceptions about the appropriate steps to take and the students may miss a meaningful learning experience. The ability to master debriefing was seen by Fanning and Gaba (2007) as a specialised skill that required appropriate instruction, and is vital in ensuring the best possible learning experience for the student.

4.3.3 Technology use in debriefing sessions

The most popular tool used during debriefing sessions was the whiteboard with 87.5% of nurse educators using this tool to provide visual cues for the students during the debriefing sessions. Over half (56.3%) of NZ education institutions have the ability to record and play video clips of the simulation scenarios to be used in the debriefing sessions (Figure 8). Smart boards were used in 25% of cases, while specific debriefing packages such as Sim View™ had the lowest uptake of 12.5% which is reflective of the relative newness of this product on the market.

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SimView™ is an integrated debriefing solution that captures and records audio and video of simulation and other learning activities. Each simulation action can be recorded, studied, replayed and logged to give learners every opportunity to evaluate each learning experience individually.
4.3.4 Educator-led versus student-led debriefing sessions

In this question participants were asked whether the debriefing was student or educator led. It was a free text question that asked participants for their comments. Eighteen participants replied to this question. The responses were as varied as the number of participants replying, which further indicates the inconsistent approach which is individually led rather than following a national guideline for simulation and debriefing. Examples of this were;

*Educator led. We use the 5 clinical standards as learning objectives/outcomes and the Gibbs reflective cycle as the debriefing model.*

*Student led. The questions are written in a way that brings the focus to the student*

*Usually educator lead using a framework as the students’ progress in their use of simulation they become familiar with the framework and often start to be proactive in the process of debriefing*

*Educators ask open ended questions to get student responses and discussion follows. Debrief also covers applied patho, pharmaco to scenario, objective is to develop critical thinking.*

There were several themes running through the commentaries. First was the educator as a “coach” when running the debriefing by promoting reflection, making suggestions, asking open-ended questions to encourage discussion and to “unravel” the specifics of the scenarios. Another theme was the educator as the expert by controlling the questions that were asked, using technology such as a Smart board or, whiteboard, and video.

*Figure 8: Use of technology in simulation*
playback to critique and comment on performance within the simulation scenario. One respondent referred to this as “microteaching”.

There was also a trend in some institutes to begin debriefing with the nurse educator as the facilitator, but as the year moved forward, the students were expected to progress and start “taking ownership of the debriefing framework”. The students were expected to follow the debriefing format that was in place and eventually the nurse educator would step back to be a “guide” for the students.

Specific debriefing frameworks, like teaching methodologies are not enforced by the NCNZ. In fact, the NCNZ, as previously mentioned, does not prescribe the amount of simulation within each BN programme, nor where it sits within each paper in a curriculum. It is left up to the individual education facility to decide how best to use this teaching method within their organisation. There are no guidelines that determine best practice in debriefing methods, but literature investigation will provide many different interpretations of essential elements in the debriefing process.

Fanning & Gaba (2007) delineated debriefing of simulations to have either high, medium or low involvement, for example in high facilitation debriefing, where students are expected to run the session themselves with gentle guidance from the nurse educator. Low facilitation debriefing would then be at the other end of the spectrum where the nurse educator would take an intensive level of facilitation, leading the group through the debriefing stages and directing the discussion. In developing clinical judgment which is one of the focuses of simulation, NZ nurse educators must be aware that progression in knowledge, skills and attitude is required to achieve the NCNZ competencies. Foronda et al. (2013) claim that simulation is an effective andragogy for teaching select skills and knowledge, and is here to stay as technology only advances.

Fanning et al. (2007, p.117) stated seven elements that are involved in the debriefing process as; the debriefer, participants to debrief, the simulation scenario, the impact of the simulation, recollection of events, report and the time of the debriefing. How each element is approached will be affected by other factors such as, group size and when the debriefing is held, i.e. directly after the scenario or later on for example.

Data from this survey suggests that some nurse educators take on the role of “coach” within the debriefing process, for example, Educator-led but encouraging a lot of student reflection, observation, suggestions for modification improvement. Coaching style facilitation implies that the nurse educator in this role is an encourager, a director and a
person with more knowledge about the scenario than those on the “team”. This style of facilitation can be used effectively as it encourages a team approach which is especially important to develop in nursing. Not only is the nursing team approach important, there is also the interdisciplinary team to consider when using simulation. There were significant gains to be made in role clarity, anticipatory response, team work and cohesion as noted by Galloway (2009).

Essentially, world-wide, nursing students are adult learners and all must progress in knowledge, skills and attitude over their nursing education. Therefore understanding the necessity for providing time to reflect on a scenario, fits into this process of learning progression.

4.3.5 Student-led debriefing

Student-led debriefing brought a mixed response in relation to how the debriefing session was run. One respondent discussed the student leading the discussion with the nurse educator summarising at the end. Another respondent said that specific questions were written for the scenario that would focus on the student leading the debriefing. The use of a coaching style was also discussed within the framework of the students leading the debriefing session. In some situations there seemed to be an undefined lead in the debriefing sessions and it became a collaboration between students and faculty. For example, the facilitator asked what was done well and what was done poorly and then the nurse educator gave their feedback on the students’ performance. In a literature review by Dufrene & Young (2014) one of the topics studied was alternative methods of debriefing. They noted that teacher-facilitated debriefing was the most commonly practiced method of debriefing following simulation, but there was no evidence to suggest that this was the only effective method. Fey et al (2014) documented a study that sought to gather the students’ perspectives of their learning through different debriefing methods. One of the outcomes of this study was that students valued feedback from multiple sources including their peers where they could feel that they were all in it together (e253).

4.3.6 Student preparation for simulation scenarios

Participants were asked if they provided pre- or post-reading for the simulation. Seventeen answered this question with 83% saying that they did. Free text comments highlighted a variety of methods to prepare students for the simulation scenario. The following were the examples given:
Pre-scenario briefing for participants only

Pre-reading, for example a text book chapter related to the upcoming simulation

One hour pre-simulation “work” and a written reflection including literature following simulation

Scenario appropriate pre-reading and post simulation material following debrief provided via email

Multiple choice questions with rationale posted pre- and post-simulation provided in response to student feedback where they preferred this to just reading

Patient information supplied to students and a clinical picture is given to prepare the students for what may happen in the scenario

Students are expected to study and learning case studies prior to the simulation

4.3.7 Evaluation of debriefing sessions

In 50% of the cases, the debriefing sessions were evaluated. When asked by whom, the following results emerged (Figure 9):

*Figure 9 Feedback from simulation sources.*
Feedback could occur either informally after the debriefing session or formally via email or end of paper evaluations that are paper formal handed to the students at the end of the paper.

One respondent discussed having a tutor development representative to evaluate the debriefing sessions as part of the nurse educators ongoing self-assessment of practice.

Another respondent discussed having their own written scenarios given to “other” nurse lecturers for feedback.

4.3.8 Structured debriefing

Debriefing sessions can be structured or unstructured, i.e. having a defined framework, or allowing the debriefing to unravel dependent on the people involved. Brown et al. (2012, p.185) stated “Structured debriefing assists participants to optimise their learning and identify take-home messages from the activities … this includes what they now know and what they need to find out more about”. Structured debriefing themes emerged as frameworks that ranged from specific sets of questions to procedure frameworks based on nursing experts, for example “Thinking like a nurse” (Tanner, 2006).

When asked if a structured approach to debriefing occurred, 73% said that it was structured whilst 28% said that it was not.

One respondent interpreted the structured debriefing model they used as a series of questions, as follows:

- What was that experience like for you?
- What did you think was happening with the patient?
- What was going through your mind?
- What did you see as the patient’s main needs?
- Do you think you had adequate knowledge to assess and manage the patient?
- Was there extra information or support that you felt would have been helpful?
- How well did you think you communicated with the patient and each other?
- What did you think you did well?
- Were there aspects of your input into this simulation that you would like to improve?
- What aspects of this experience could you take into your future nursing practice?
- Can you think of any practical ways that you will apply this learning?

Another respondent gave examples of the types of questions asked, as follows:

- What went well?
What didn’t go well?
What would you do differently next time?
What did you identify as the primary nursing diagnosis?
Subjective/Objective data?
Using the pneumonic “OLDCARTS” to obtain data which was then linked to patho and then treatment options were linked to pharmaco

One respondent said, “Self designed debriefing tool” whilst another noted that, “A framework is governed for each scenario”

Three respondents discussed the use of frameworks such as “Lasater’s Clinical judgement model” (see Appendix IV) in their understanding of a structured debriefing framework. Associated with the use of this framework, different reflective tools were also used, e.g. Gibbs reflective model or Cooney. Terms used in Tanners model – Notice, Interpret, Respond and Reflect, were used as the basis of the structured debriefing process. Associated with this was the acronym “ABCPB”, which stands for Airway, Breathing. Circulation, Pain and Bleeding, were used to make sense of the simulation. Using these tools, enabled the students to identify priorities quickly, to enable the students to deal with what was happening in the scenario for “a moment in time”.

One respondent identified using Dreifuersts “Debriefing for meaningful learning tool (DML)”, stating that it was an “easy to use tool for those not familiar with debriefing” to use.

Simulation has been embedded into NZ education institutions as a teaching methodology for undergraduate nursing students. At some point in the BN degree as required by NCNZ, students would be expected to participate in simulation at some point. Whether the students gained benefit from simulation could depend on how the simulation environment has been set up and whether this contributes to positive outcomes for students. It became apparent through the survey that some nursing educators based their debriefing on the work of Christine Tanners “Thinking like a nurse” model of clinical judgment (Tanner, 2006). The terms Notice, Interpret, Respond and Reflect from Tanner’s framework, were used to base the debriefing session around, alongside other tools and acronyms common to the nursing and medical fields. Of importance to the educator is to progress their students through the development of clinical judgment and using this framework is an example of this. Tanner’s interpretation of these steps moves away from the nursing process by detailing how clinical judgment can be developed with knowledge of patients’ patterns of responses and the clinical or practical knowledge of similar
patients. For this reason, the “thinking like a nurse” frameworks fit well with simulation as the replication of lifelike events can help with the development of clinical judgment in students.

If a debriefing session was started with the statement “Tell me what you noticed about the patient in that scenario”, there is opportunity for the students to start to build data related to what would be expected of a nurse to know about a patient. For example, “the patient seemed blue around the lips”, or “she was making funny noises when she was breathing” are specific details that a student nurse would be expected to know if the scenario was based on a patient with a respiratory condition. In response the information that is provided by the students “noticing” the debriefing can then move forward to “interpreting” the data. This would be the most critical point in the debriefing process, it is the opportunity for students to use the knowledge they had gained so far in their training, and begin to apply this to the clinical context. This is one of the well-researched benefits of simulation, being able to work in a safe environment where poor decisions can be made, with the opportunity for reflection and no impact on an actual live patient. It highlights the importance of independent and active learning, where the nurse educator does not need to “take over” a situation as may happen on a clinical placement if the student is having difficulty with a skill or mishandling a situation (Jeffries, 2007).

Reflection after a simulation requires the student to understand their actions while in the simulation and again when taking part in the debriefing process to begin to look from the outside and with clarity once all the data is being presented back to them. Reflection is not limited to nursing students and substantial evidence is available that determines that developing reflection as a habit improves clinical reasoning, provided it occurs in an environment of colleagueship and support (Tanner, 2007).

Tanner’s work was closely linked to Lasater’s clinical judgment rubric which was developed to define progression of the student nurse within the education framework and this was particularly appropriate within a simulation context where variables could be controlled (Lasater, 2007). One of the benefits of a rubric, is to foster an open dialogue between faculty and student using language that is clear to both parties. Tanner (2006) implies that the nurse is constantly learning through interactions with each patient, therefore reflecting on clinical judgment develops the individual nurses’ expertise.

Lasater’s clinical judgment rubric was designed to assess students after a single episode requiring clinical judgment. Tanner’s four themes; noticing, interpreting, responding and
reflecting were developed with much greater detail by Lasater to define aspects that
developed clinical judgment. For example, “notice” becomes “effective noticing” and the
description becomes deeper as the student now must provide focused observations,
recognise deviations from expected patterns and know where to seek further information
(Lasater, 2007).

The expertise of the debriefing facilitator will be able to use this framework to define the
progression of the student. Overall, the use of this model not only defines progression,
but also develops the student’s clinical judgment skills. The use of a model that can assess
the outcomes of simulation is not only urged by nurse educators but medical professionals
as well (Jeffries, 2005). The provision of feedback to students is one of the most
important factors influencing the learning of students in simulations, as it monitors the
progress of skill acquisition and clinical judgment by encouraging the students to assess
their own performance (Bland, Topping & Wood, 2010)

4.3.9 Unstructured debriefing

Respondents who defined their debriefing process as unstructured discussed the available
flexibility with this approach. The use of video playback and Smart board technology
allowed for “flicking to sentinel moments or decision points” during the scenario that
could then be discussed as a group.

Open discussions with students allowed for information to flow back and forth between
the nurse educator and students, interspersed with references to Best Practice guidelines
and local DHB policy.

One respondent referred to using Christine Tanner’s framework as a directional tool and
having basic principles, but preferred to use their own version tailored to meet the needs
of the student.

One respondent stated that they gave the observers of the simulation scenario a checklist
to fill out during the scenario, to discuss during the debriefing.

4.4 Embedding simulation within BN programmes

The final question asked for participants to add any other comments. Five responded to
this question. The comments are provided here to the capture the sentiments and
importance that educators are placing upon the use of simulation as a teaching method.
Some of the comments below reflect this:
We have a long way to go with developing/adopting and integrating simulation into our undergraduate nursing programme in terms of: - integrating into 1st, 2nd & 3rd year – Moodle preparation and support - training staff to facilitate and debrief simulations, and to set up, operate / troubleshoot - utilising different technologies - developing the simulation team and facilities at all levels ..., within the classroom, Skills Lab and Sim Lab settings - selecting / developing debriefing model / consistency among lecturers - developing inter-professional collaborations – developing simulation for use with summative assessment - working with the Nursing Council in developing our existing Professional Diagnostic Assessments - developing sentinel scenarios for 3rd year students - strengthening ties with our industry partners and developing mutually beneficial simulations – we may consider the use of Mask-Ed here within the next 2 years

It’s an exciting area to develop further for student learning. There are so many opportunities for them using this method of teaching.

We use a lot of low fidelity simulation within the school (scenarios, models etc.) and OSCE\(^3\) for summative assessment in year one using human patient simulation. We use High fidelity in year one (manikin) for more acute scenarios (acute pain) but we have found anecdotally that using a Human patient simulator, the fact we have a person being able to act in pain and talk more realistically to the students creates more discussion and interaction and makes it seem “real” to the students.

Growing, advancement in technology, staff training (train the trainer), and Simulation Leaders

Simulation is very challenging as we seek to provide scenarios which reflect patient conditions seen in a Primary/Secondary Care setting and cover a broad range of clinical conditions across the lifespan.

Since taking on the CAT Coordinator role this past year, students are very receptive of the simulation scenarios offered which are embedded with communication, safety, clinical skills and critical thinking and undertaken in a safe, nurturing environment to enable the transition from thinking like a nurse, acting like a nurse to being a nurse.

We are also looking at a Tool such as a rubric for assessment to use for students undertaking non-mandatory scenario work.

All BN programmes in NZ offer simulation in some form, however as there is no one BN curriculum there is no standard way this is applied in practice. There is acknowledgment of the current state of simulation as having “a long way to go” within BN programmes. This may be the integration of simulation through the three years of the BN degree, or training staff to use the simulation equipment or run debriefing sessions. Working in collaboration within the relatively small number of educational institutes in an inter-professional collaboration was one idea to support the advancement of simulation in

\(^3\)OSCE: Objective Structured Clinical Examination
nursing education. Strengthening ties with industry partners, working with NCNZ to
develop standards for use of simulation and investigating current trends in overseas was
thought to be essential in progressing simulation in NZ.

4.5 Conclusion

The use of simulation in BN programmes throughout NZ is a common teaching
methodology, as noted at the Ako Aotearoa forum attended by representatives of all 16
institutes in NZ that offer BN degrees. In all cases the simulation is followed by a
debriefing session run predominantly by the educator/s involved in the scenario. While
the structures and frameworks are not well defined around the use of simulation in NZ,
simulation has been adopted by educational institutions as a recognised teaching
methodology. While research is still to determine the efficacy of simulation use in
undergraduate nursing education, it is a useful way to teach many aspects of nursing
including therapeutic skills, critical thinking and clinical judgement.
Chapter 5 Conclusions and Recommendations

5.1 Introduction
The final chapter presents a summary of the background, aims and objectives, design and findings of this study. Recommendations related to developing the use of simulation and debriefing frameworks are discussed and future directions offered. Finally, the strengths and weaknesses of this study are discussed and recommendations for future research projects suggested.

5.2 Summary
The results from the quantitative and descriptive data showed that:

1. When nurse educators use simulation as a teaching methodology, debriefing after a scenario is common practice.
2. Nurse educators largely drive the simulation development themselves and their approach is very individual, based on their own views and philosophical standpoints. Simulation technology has been used in NZ educational institutions predominantly for the past 2-5 yrs.
3. There is evidence to suggest that NZ nurse educators use simulation with increasing fidelity throughout the BN curriculum.
4. The Bachelor of Nursing curriculum in each institute is overseen by the Nursing Council of NZ, however, each institution decides on the best way to embed simulation into their curriculum.
5. There is no evidence to suggest that nurse educators have specific post-graduate qualifications related to simulation and debriefing.
6. There is evidence to suggest that nurse educators use researched frameworks (such as Lasaters Clinical judgement rubric, Appendix IV) for debriefing that are based on research related to debriefing, simulation and adult learning theories.
7. There is a need to further develop the use of simulation and debriefing in nursing education. With this comes the responsibility to support the structures that will embed simulation into each individual institute appropriately.
5.3 Conclusions

NZ nurse educators have the ability to drive the use of simulation in undergraduate nursing education to its maximum potential; however, this will not occur without planning and a coordinated effort to do so. Recently an article by O’Connor (2014), expressed an opinion on simulation in nursing education that defined areas that could be improved upon. One of these was the use of simulation to account for clinical training hours. Currently in NZ, all clinical hours must be attained in actual clinical practice and under the supervision of a registered nurse. By adding to current knowledge on this topic of simulation, this thesis has addressed a gap in understanding current trends on the use of simulation and debriefing in undergraduate BN programmes. This may also address the gaps in understanding the links between the use of simulation and debriefing and the progression of students’ clinical judgement and knowledge. It has been acknowledged that the use of simulation in nursing education has exceeded the evidence of its value, however, emerging research is building in its support (Lapkin, Levett-Jones, Bellchambers & Fernandez, 2011). This adds further value to NZ research that focuses attention on the state of simulation and debriefing in NZ undergraduate nursing programmes.

The nursing profession in NZ is guided by organisations that are responsible for the regulation of nurses in all areas of the health system. Therefore education providers must be able to demonstrate that what they are teaching is current and applicable to societal health trends. Foronda et al. (2013) encouraged educators to ensure that the curriculum they deliver is valid and provides a meaningful transition from the role of student to the role of clinician. At the very least, this means that the technology used in today’s health care environment is replicated in the training environment, and it is a small step from there to run simulation sessions to teach students how to use the equipment. Students give very positive anecdotal feedback related to learning in a simulated environment and offer a variety of reasons why, not least the opportunity to “practice” in a lifelike environment. Levett-Jones et al (2011) noted that students were generally positive regarding the use of simulation learning even though its effectiveness was still uncertain. Technology is improving but research is lagging behind. Educators must collaborate and share knowledge and experience. Improved educational and research efforts driven by evidence, nursing education will achieve the goal of improving patient care (Foronda et al, 2013).
Murphy et al. (2010) stated that teaching and learning have moved on from being teacher focussed to striving to challenge students to think for themselves. No longer is the classroom a spectator sport where students are asked to focus on the teacher and their words of wisdom, but are encouraged to take responsibility for their own learning. Simulation scenarios can be described as being the new spectator sport, but one where all who watch are involved in the learning environment. While there is much to be learned from the experience itself, for the complex scenarios feedback must be a part of the process of learning (Gaba, 2004).

5.4 Limitations

Although this research has identified some useful and meaningful data related to the use of simulation and debriefing in undergraduate nursing education in NZ, there are some limitations to be noted.

Data could not be identified as coming from every education facility that offers undergraduate nursing programmes in NZ. Therefore it cannot be determined that this study informs the reader of information related to the entire NZ context. While it is possible to determine that every educational facility in NZ that offers the BN programme has simulation capability by looking at the programme outlines online, there will be reasons why not all who were emailed, responded to the survey.

One of the common weaknesses in the use of simulation is that it is time and cost dependant. Having information related to the support people, for example technicians and administration staff and their roles would give a better understanding of the logistical support it takes to efficiently run a simulation suite, which would give a stronger business case for those seeking to maximise the use of simulation in their facility. Consideration to replicate the study that would encourage respondents to name their educational institution may be of benefit if this study were approved. However, there is no guarantee that it would offer any further useful data knowing this.

When researching in the NZ context it is common to be collecting data from a small cohort. In this case, there were a total of 16 educational institutes that offer the BN programme in NZ and, while all institutes offer simulation, there is a small percentage of staff that are involved in the use of this methodology. This is known from the information given at the Ako Aotearoa meeting. Having a small cohort can skew numbers and requires close examination alongside current literature on the subject. The comments from the
respondents themselves was therefore as important as the statistical data, as it has added another dimension to the information-gathering process.

Question eight in the questionnaire included a cross-over in two of the categories which meant that you could not distinguish if you had either 10 or 20 students.

5.5 Recommendations for future research

One of the main issues to be raised through this research was the lack of consistency in simulation approaches in NZ education facilities. Of interest to the researcher was the variation in styles of debriefing that emerged from the data. Tanner’s (2006) “Thinking like a nurse” framework used during debriefing featured as a well-used tool and linked well with common nursing language students are becoming familiar with. As this research sought to demonstrate the NZ experience in the use of simulation and debriefing, it is interesting to note that debriefing frameworks stem from overseas models or do not subscribe to any formal framework at all. Further research to develop debriefing frameworks that support the NZ context, with the opportunity to develop an educational qualification that would be a part of a post graduate qualification, will follow this thesis.

This study focussed purely on a discussion of simulation and debriefing practices in undergraduate nursing education. With the Diploma of Enrolled nursing offering a national curriculum requiring a simulation component of up to 200 hours (NCNZ, 2010, p.75) expanding the study to include this cohort would be valuable. The NZQF level for BN Year One and Diploma of Enrolled nursing are the same, therefore researching joint simulation scenarios could be beneficial to the education facility and the students, for example in regard to direction and delegation and scope of practice.

There is a need to train educators in simulation approaches and therefore a recommendation for this to be included in teaching qualifications is made.

There is a need for national guidelines from appropriate regulatory bodies to develop the use of simulation in nursing curricula. With the increasing use of simulation world-wide and within NZ, there is a need for further research in developing these guidelines to strengthen these processes. Given the small populations in NZ it would be appropriate also, to have consistency within a national framework of simulation and debriefing in health education.
Nurse educators require support in keeping information about the use of simulation within their programmes. This will support the quality of simulation and define teaching and learning outcomes.

Results from this study may also be applicable to nurse educators who work in the healthcare industry. While this was not the specific focus of the research, much of the information can be transferable.

5.6 The future of simulation in NZ nursing education

Simulation in nursing education is slowly gaining in profile on the policy maker’s agenda. Projects such as Edgecombe et al. (2013) who conducted a literature review to link best practice guidelines for NZ nursing education are becoming available to guide simulation growth and development. Health Workforce NZ’s national simulation strategy survey proposed in Nursing Review (2011) aimed to do the following;

- develop a national register of resources to enable sharing of expertise and possibly equipment;
- identify the current use of skills and simulation-based education by vocational and professional groups;
- identify the training and education needs of instructors, simulation technicians and clinical staff;
- The resulting data will go back to HWNZ’s four regional training hubs to help implement training programmes and regionally consistent training standards.

However, whether this has occurred is difficult to establish as there has been no information formally dispersed via their website or through other searchable media. The benefit of this type of survey would be to look at NZ as a whole as it is a relatively small country compared to the UK, Australia or the USA and therefore it would seem more feasible to share resourcing. This may also relieve some of the lack of information surrounding the state of simulation training in our country. With more information and research supporting this method of teaching, simulation may be put closer to the top of the agenda when looking at replacing clinical hours with simulated hours when discussing the difficulties perceived with finding clinical placements. While overseas research is focussed on this issue, it may not fit the NZ context due to differences in curricula and available clinical placements, but it is worth watching this space to see whether NZ will ever take the stand on allowing simulation to become more than just a teaching strategy but a valuable clinical learning model.
5.7 Reflection

The NCNZ require nurse educators to demonstrate currency of theory and practice appropriate to their teaching responsibilities and to hold a relevant master’s degree (NCNZ, 2012). This thesis was undertaken to deepen the researchers’ knowledge in simulation and debriefing techniques, to add to the dialogue on this emerging teaching methodology in NZ, and to meet NCNZ standard 3 (NCNZ, 2012) to be qualified and well prepared for the role of educator. Further research on simulation and debriefing in the NZ context will support and inform the researcher’s practice development and continue to develop frameworks for simulation in nursing education in NZ.
References


Lind, C. (1982). *Step by Step; The History of Nursing Education in Southland*. Invercargill:


Appendix I

Reference Number 38/13

14 October 2013

Andrea Knowler
C/- Faculty of Health Sciences
EIT

Dear Andrea

Thank you for providing clarification and further information to questions raised by the Reviewers. Your updated R&D form is also received.

I am pleased to inform you that your research project “Debriefing after simulation scenarios in undergraduate nursing education – the New Zealand experience” was approved by the Research Ethics & Approvals Committee at their meeting held on 27 September 2013 for a period of 2 years. You are requested to ensure that your questionnaire and participant information sheet include a consent to participate signature section.

You are reminded that should the proposal change in any significant way, then you must inform the Committee. Please quote the above reference number of all correspondence to the Committee.

Please provide the Committee with a progress report after one year of the project and a brief summary at the conclusion.

The Committee wish you well for the project.

Yours sincerely

Jeanette Ffifield
Secretary – Research Ethics & Approvals Committee
Appendix II

Survey

Debriefing after simulation scenarios in undergraduate nursing education

Study Overview

You are invited to participate in a research project being conducted by Andrea Knowler, a Master of Nursing student at the Eastern Institute of Technology.

The aim of this study is to explore the experiences of education providers who use high fidelity simulation in their undergraduate nursing programme and offer debriefing as part of the education process.

The title of the study is:

"Debriefing after simulation scenarios in undergraduate nursing education - the New Zealand experience."

This survey is anonymous. No one, including the researcher, will be able to associate your responses with your identity. Please do not indicate in your responses your name, institution or geographic region. Your participation is voluntary and you may choose to stop responding at any time during the survey.

The completion of the survey indicates your voluntary agreement to participate in this research project and your certification that you are 18 years of age or older at the time of the survey.

Ethical approval has been granted by Eastern Institute of Technology Research Ethics and Approval Committee.

(Ethics Approval Number 38/13)

Questions regarding this study can be directed to Andrea Knowler at andrea.knowler@sit.co.nz or Professor Bob Marshall at bmarshall@eit.ac.nz

Overview of Simulation

Throughout this survey simulation will be referred to in terms of “fidelity”. In this context, fidelity means "the extent to which a simulation mimics reality".

There are three levels - high, medium and low.

High fidelity would include a sophisticated, computerised human patient simulator that has chest rise and fall to mimic reality.

Medium fidelity would include the use of manikins that look real and have certain sounds, but does not include chest rise and fall.
Low fidelity would include static models with no extra features and are used as skill trainers.

**Use of Simulation**

1. **Does your education facility provide simulation scenario training in the Undergraduate nursing degree programme?**
   
   Yes  
   No

2. **If yes, how long has your facility used either high, medium or low fidelity simulation?**
   
   1-2 years  
   2-5 years  
   5-10 years  
   longer than 10 years

3. **Does your institution have a structured process for the use of simulation?**
   
   Yes  
   No

   Please clarify

4. **Does your institution keep statistics for the review of simulation?**
   
   Yes  
   No

   Please comment

5. **Is the simulation process and usage audited?**
   
   Yes  
   No

   If Yes, please indicated what is reviewed (cost, no. of students, days of use, problems etc)

6. **Indicate the level of simulation fidelity in each year of the BN degree**

   BN Year One: no use, low use, moderate use, high use  
   BN Year Two: no use, low use, moderate use, high use  
   BN Year Three: no use, low use, moderate use, high use

7. **How many students are directly involved in the simulation scenario as health care providers at any one time?**
   
   1-2  
   2-4
more than 6
Other (please specify)

8. Approximately how many other students are involved in observing the simulation scenario?

0-4
5-10
10-20
20 or more
Other (please specify)

**Debriefing in simulation**

The focus of this survey is to determine the use of the debriefing process in undergraduate nursing education.

The questions are designed to allow the respondent to discuss the way in which this is activated within their educational environment.

9. Do you spend time using a debriefing process after simulation scenarios?

Yes
No

10. If yes, how long approximately would the debriefing take?

0-15 minutes
15-30 minutes
30-45 minutes
45 minutes or longer
Other (please specify)

11. Who is involved in running debriefing sessions after simulation scenarios? (tick as many as appropriate)

The nurse educator who participated in the simulation
The nurse educator running the simulator in the control room
A nurse educator that was not involved in the simulation
Not a Nurse Educator
Other (please specify)

12. Have you had formal training in debriefing methods?
Yes    No
Please clarify answer

13. Does the debriefing session use any of the following technology? (tick as many as apply)
Video/Audio playback facilities
Debrief software packages (e.g. Sim View)
Whiteboard
Smart Board
Other (Please specify)

14. Do you use computer software in your debriefing session?
Yes    No
If yes, which software

15. Is the focus of debriefing student or educator led? Please comment

16. Do you provide pre or post-reading for the simulation?
Yes    No
Please clarify your answer

17. Is the debriefing session evaluated?
Yes    No

18. If you answered yes to question 17, by whom? (select all that apply)
Students involved in the scenario
Students involved in observing the scenario
Nurse Educators involved in the scenario
Other (please specify)
19. How is the feedback from simulation scenarios sought?

Email
Questionnaire
Online survey
Discussion groups
Other (please specify)

20. Does the facilitator of the debriefing session use a structured approach (i.e. use of a tool or framework), or an unstructured approach, (i.e. free discussion)?

Structured Debriefing
Unstructured Debriefing

21. If you use a structured approach to debriefing, please explain what tool you use and why.

22. If you use an unstructured approach to debriefing please describe why.

23. Are there any other comments you would like to make about simulation at your institution?

Thank you for your participation in this research study

Data collected from this research study will contribute to the growing body of knowledge related to the use of simulation in undergraduate nursing education in NZ.

It has been designed to strengthen links between nursing education providers so that frameworks for simulation use can be shared and adapted by all.

For further information please do not hesitate to contact me at andrea.knowler@sit.ac.nz

Thank you for your time in completing this survey.
The Nursing Education Simulation Framework

Teacher
- Demographics
  - Program
  - Level
  - Age
- Active Learning
- Feedback
- Student-Faculty interaction
- Collaboration
- High Expectations
- Diverse Learning
- Time on Task

Student
- Educational Practices

Outcomes
- Learning (Knowledge)
- Skill Performance
- Learner Satisfaction
- Critical Thinking
- Self-Confidence

Simulation Design Characteristics
- Objectives
- Fidelity
- Problem Solving
- Student Support
- Debriefing

Used with Permission of the National League for Nursing

(Jeffries 2007, p. 23)
## Appendix IV

### Lasater Clinical Judgement Rubric

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Exemplary</th>
<th>Accomplished</th>
<th>Developing</th>
<th>Beginning</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Effective noticing involves</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Focussed Observation</td>
<td>Focuses observation appropriately; regularly observes and monitors a wide variety of objective and subjective data to uncover any useful information</td>
<td>Regularly observes and monitors a variety of data, including both subjective and objective; must useful information is noticed; may miss the most subtle signs</td>
<td>Attempts to monitor a variety of subjective and objective data but overwhelmed by the array of data; focusses on the most obvious data, missing some important information</td>
<td>Confused by the clinical situation and the amount and kind of data; observation is not organised and important data are missed, and/or assessment errors are made</td>
</tr>
<tr>
<td>Recognising deviations from expected patterns</td>
<td>Recognises subtle patterns and deviations from expected patterns in data and uses these to guide the assessment</td>
<td>Recognises most obvious patterns and deviations in data and uses these to continually assess</td>
<td>Identifies obvious patterns and deviations, missing some important information; unsure how to continue the assessment</td>
<td>Focuses on one thing at a time and misses most patterns and deviations from expectations; misses opportunities to refine the assessment</td>
</tr>
<tr>
<td>Information seeking</td>
<td>Assertively seeks information to plan intervention; carefully collects useful subjective data from observing and interacting with the patient and family</td>
<td>Actively seeks subjective information about the patients situation from the patient and family to support planning interventions; occasionally does not pursue important leads</td>
<td>Makes limited efforts to seek additional information from the patient and family; often seems not to know what information to seek and/or pursue unrelated information</td>
<td>Is ineffective in seeking information; relies mostly on objective data; has difficulty interacting with the patient and family and fails to collect important subjective data</td>
</tr>
<tr>
<td><strong>Effective interpreting involves</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prioritising data</td>
<td>Focuses on the most relevant and important data useful for explaining the patient’s condition</td>
<td>Generally focuses on the most important data and seeks further relevant information but also may try to attend to less pertinent data</td>
<td>Makes an effort to prioritise data and focus on the most important, but also attends to less relevant or useful data</td>
<td>Has difficulty focussing and appears not to know which data are most important to the diagnosis; attempts to attend to all available data</td>
</tr>
<tr>
<td>Making sense of data</td>
<td>Even when facing complex, conflicting, or confusing data, is able to (a) note and make sense of patterns in the patients data, (b) compare these with known patterns (from nursing knowledge base, research, personal experience, and intuition), and (c) develop plans for interventions that can be justified in terms of their likelihood of success</td>
<td>In most situations, interprets the patients data patterns and compares with known patterns to develop and intervention plan and accompanying rationale; the exceptions are rare or in complicated case where it is appropriate to seek the guidance of a specialist or a more experienced nurse</td>
<td>In simple, common, or familiar situations, is able to compare the patients data patterns with those known and to develop or explain intervention plans; has difficulty, however, with even moderately difficult data or situations that are within the expectations of students; inappropriately requires advice or assistance</td>
<td>Even in simple, common, or familiar situations, has difficulty interpreting or making sense of data; has trouble distinguishing among competing explanations and appropriate interventions, requiring assistance both in diagnosing the problem and developing an intervention</td>
</tr>
<tr>
<td>Dimension</td>
<td>Exemplary</td>
<td>Accomplished</td>
<td>Developing</td>
<td>Beginning</td>
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</tr>
<tr>
<td><strong>Calm, confident manner</strong></td>
<td>Assumes responsibility; delegates team assignments; assesses patients and re-assures them and their families</td>
<td>Generally displays leadership and confidence and is able to control or calm most situations; may show stress in particularly difficult or complex situations</td>
<td>Is tentative in the leader role; reassures patients and families in routine and relatively simple situations, but becomes stressed and disorganised easily</td>
<td>Except in simple and routine situations, is stressed and disorganised, lacks control, makes patients and families anxious or less able to cooperate</td>
</tr>
<tr>
<td><strong>Clear communication</strong></td>
<td>Communicates effectively; explains interventions; calms and reassures patients and families; directs and involves team members, explaining and giving directions; checks for understanding</td>
<td>Generally communicates well; explains carefully with patients; gives clear directions to team; could be more effective in establishing rapport</td>
<td>Shows some communication ability (e.g. giving directions); communication with patients, families and team members is only partly successful; displays caring but not competence</td>
<td>Has difficulty communicating; explanations are confusing; directions are unclear or contradictory; patients and families are made confused or anxious and are not reassured</td>
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<tr>
<td><strong>Well planned intervention/flexibility</strong></td>
<td>Interventions are tailored for the individual patient; monitors patient progress closely and is able to adjust treatment as indicated by patient response</td>
<td>Develops interventions on the basis of relevant patient data; monitors progress regularly but does not expect to have to change treatments</td>
<td>Develops interventions on the basis of the most obvious data; monitors progress but is unable to make adjustments as indicated by the patients response</td>
<td>Focuses on developing a single intervention, addressing a likely solution, but I may become confused, confusing, and/or incomplete; some monitoring may occur</td>
</tr>
<tr>
<td><strong>Being skilful</strong></td>
<td>Shows mastery of necessary nursing skills</td>
<td>Displays proficiency in the use of most nursing skills; could improve speed or accuracy</td>
<td>Is hesitant or ineffective in using nursing skills</td>
<td>Is unable to select and/or perform nursing skills</td>
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<tr>
<td><strong>Effective reflecting</strong></td>
<td><strong>Evaluations/self-analysis</strong></td>
<td><strong>Evaluates and analyses personal clinical performance, noting decision points, elaborating alternatives and accurately evaluating choices against alternatives</strong></td>
<td><strong>Even when prompted, briefly verbalises the most obvious evaluations; has difficulty imagining alternative choices; is self-protective in evaluating personal choices</strong></td>
<td><strong>Even prompted evaluations are brief, cursory, and not used to improve performance; justifies personal decisions and choices without evaluating them</strong></td>
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<tr>
<td><strong>Commitment to improvement</strong></td>
<td><strong>Demonstrates commitment to ongoing improvement; reflects on and critically evaluates nursing experiences; accurately identifies strengths and weaknesses and develops specific plans to eliminate weaknesses</strong></td>
<td><strong>Demonstrates a desire to improve nursing performance; reflects on and evaluates experiences; identifies strengths and weaknesses; could be more systematic in evaluating weaknesses</strong></td>
<td><strong>Demonstrates awareness of the need for ongoing improvements and makes some effort to learn from experience and improve performance but tends to state the obvious and needs external evaluation</strong></td>
<td><strong>Appears uninterested in improving performance or is unable to do so; rarely reflects; is uncritical of himself or herself or overly critical (given level of development); is unable to see flaws or need for improvement</strong></td>
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</tbody>
</table>